Detailed Project Report

Of

***M/s.* KRN HVAC Products Private Limited**

For

New HVAC Plant At

Plot No. F-50, G-51, EPIP, RIICO Industrial Area, Neemrana, Rajasthan, 301705 (Project – 1)

&

SP1-24 KOLILA JOGA, Neemrana, Rajasthan (Project -2)

By

Q-Serv Consultants Private Limited

303, Shitiratna Complex, B/s Radisson Blu Hotel,

Nr. Panchwati Circle, Ambawadi, Ahmedabad, - 380006

Contact No. +91 79 4899 9595/ E-mail: qservconsultants@gmail.com

Confidential

August 20th, 2024

M/s. KRN HVAC Products Private Limited,
Plot No. A-60, Green Acre,
Neemrana, Alwa,
Neemrana RJ 301705

Dear Sir,

Detailed Project Report for M/s. KRN HVAC Product Private Limited

Please refer to your mandate letter dated 26/08/2023 regarding the above mentioned assignment. With reference to above mandate, we hereby forward the Signed Copy of Detailed Project Report for **M/s. KRN HVAC Products Private Limited.**

Kindly acknowledge the receipt.

Thanking you.

Yours faithfully,

Reviewed and Verified By:

For Q-Serv Consultants Private Limited,

For, Q-SERV CONSULTANTS PRIVATE LIMITED
DIRECTOR

Harshit Shah
Director
Enclosure: As Above.

305, Shitiratna, B/s. Radisson Blu Hotel, Nr. Panchvati Circle, Ambawadi, Ahmedabad-380006. Gujarat, INDIA.
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This report is prepared by Q-Serv Consultants Pvt. Ltd. (Q-Serv). Q-Serv hastaken utmost care to ensure accuracy and objectivity while developing this Report based on the information provided by **M/s. KRN HVAC Products Private Limited** and information obtained from sources believed by it to be accurate and reliable. The views expressed herein do not constitute the opinion of Q-Serv to buy or invest in the **M/s. KRN HVAC Products Private Limited** and are also not a recommendation to enter into any transaction with the Company in any manner whatsoever.

The report has to be seen in its completeness; the selective review of portions of the report may lead to inaccurate assessments. For the purpose of this report, Q-Serv has relied upon the information provided by the officials/ consultants of the **M/s. KRN HVAC Products Private Limited.** The Project cost estimates and Financial Projections presented in this report have been reviewed and analyzed for the limited purpose of circulation to the potential investors of the **M/s. KRN HVAC Products Private Limited** and presented based on the bestof Q-Serv's knowledge and belief. All Projections and forecasts in this report are based on assumptions provided by the officials/ Consultant of **M/s. KRN HVAC Products Private Limited** and considered to be reasonable by Q-Serv; however, the actual outcome may be materially affected by changes in theindustry and economic circumstances, which could be different from the Projections. Q-Serv recommends that the user of the report seeks a review if the **M/s. KRN HVAC Products Private Limited** experiences material changes in the Project and/or operations which could have an impact on the performance of the **M/s. KRN HVAC Products Private Limited.**

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List of Abbreviations:

Abbreviations	Full Form
AoA/MoA	Articles of Association/Memorandum of Association
CAGR	Compounded Annual Growth Rate
CIN	Corporate Identification Number
CDSL/NSDL	Central Depository Services Limited/ National SecuritiesDepository Limited
CY/FY	Calendar Year/Financial Year
DIST	District
DPR	Detailed Project Report
DRHP	Draft Red Herring Prospectus
DSCR	Debt-Service Coverage Ratio
EBT/PBT	Earnings Before Tax/ Profit Before Tax
EBIT/PBIT	Earnings before Interest & Tax/ Profit before Interest & Tax
EAT/PAT	Earnings after Tax/ Profit after Tax
FDI	Foreign Direct Investment
HVAC	Heating, Ventilation And Air Conditioning
FMCG	Fast Moving Consumer Goods
INR/Rs.	The Indian Rupee
IPO	Initial Public Offering
IRR	Internal Rate of Return
Kg/KL	Kilo-gram/Kilo-litre
Sqm	Square Meter
Q-Serv	Q-Serv Consultants Private Limited
MCA	Ministry of Corporate Affairs

MTS/MTPA/MTSPA	Metric Tonnes/Metric Tonnes per Annum
Sq. Ft./psf	Square Feet/ per square feet
TL	Term Loan
$/US$	United States Dollar
w.r.t.	With Respect to
YoY	Year on Year
Company / KHPPL	KRN HVAC Products Private Limited
Holding Company / KHERL	KRN Heat Exchanger And Refrigeration Limited
Group	KRN HVAC Products Private Limited & KRN Heat Exchanger And Refrigeration Limited
Associate Concern	Krncoils Private Limited
Project – 1 / Phase – 1/ Proposal -1 (Address)	Plot No. F-50, G-51, EPIP, RIICO Industrial Area Neemrana Neemrana Rajasthan 301705
Project – 2/ Phase – 2/ Proposal – 2 (Address)	SP1-24 Kolila Joga,Neemrana, Rajasthan

Contents

Chapter 1

Executive Summary

- The company was incorporated on 07th April, 2023 in the name of M/s. KRN HVAC Products Private Limited. The registered office of the Company is located at Plot No. A-60, Green Acre, Neemrana, Alwar, Rajasthan-301705. M/s. KRN HVAC Products Private Limited is a manufacturer and exporter specializing in Aluminum / Copper Fins and Copper Tubes Heat Exchangers, Water Coils, Condenser and Evaporator Coils, Bar and Plate Heat Exchanger, Oil Cooling units.

- KRN Heat Exchanger and Refrigeration Limited holding 99.99% stake in the company KRN HVAC Products Private Limited and together would be referred as "Group"

- M/s KRN Heat Exchanger And Refrigeration Limited (Holding Company) was incorporated on 25th August 2017 in the name of M/s. KRN Heat Exchanger And Refrigeration Private Limited and then the same has been converted into Public Limited Company w.e.f 03rd April, 2023 in the name of M/s. KRN Heat Exchanger And Refrigeration Limited. Registered office of the Company is located at Plot No. F-46, 47, 48, 49 EPIP, RIICO Industrial Area, Neemrana, Rajasthan, India - 301705.

- The KRN Heat Exchanger And Refrigeration Limited (The Holding Company) is certified by an ISO 9001:2015 in recognition of organization's Quality Management System, ISO 14001:2015 in recognition of organization's Environment Management System, ISO 45001:2018 in recognition of organization's Health and Safety Management System, IS 11329:2018 in recognition of quality of Finned type Heat Exchanger for room air conditioners from Bureau of Indian Standards, BS ENISO 13134 in recognition of approved brazing procedure from Brazing Procedure Specification, BS EN ISO 13585 in recognition of approved brazer qualification test, CE 2215001 conformity certificate Issued by SZUTEST, TURKEY for the quality assurance.

- The Company is promoted by M/s. KRN Heat Exchanger and Refrigeration Limited - A Holding Company of KRN HVAC Products Private Limited which is intending to raise the funds from the public and go for the Process of Listing its Equity on Main Board Platform of Recognized Stock Exchange(s).

- The Group manufactures Fin and Tube type Heat Exchangers for the Heat Ventilating Air Conditioning and Refrigeration Industry. These Heat Exchangers are made of non-ferrous metals primarily Copper and Aluminum. The sizes of Heat Exchanger Tubes manufactured by the group ranges from 5MM to 15.88 MM. Group's product range includes Condenser Coils, Evaporator Units, Evaporator Coils, Header/Copper Parts, Fluid and Steam Coils and Sheet Metal Parts etc. These Heat Exchangers are manufactured in various shapes and sizes as per the requirement of the customers and / or demand in the market.

- The Company is going to manufacture Bar & Plate Heat Exchanger, Oil Cooling Unit with Blower & Motor, Roll Bond Evaporator. These Heat Exchangers are manufactured in various shapes and sizes as per the requirement of the customers and / or demand in the market.

- The Group has prestigious customers including Daikin Air-conditioning India Pvt Ltd, Schneider Electric IT Business(I) Pvt Ltd India, Voltas Limited, Carrier Air Conditioning & Refrigeration Ltd., Eberspacher Suetrak Bus Climate Control System India Pvt. Ltd., Eberspacher Sutrak Gmbh & Co. Germany, Kirloskar Chillers Pvt. Ltd, Swegon Blue Box Pvt. Ltd., Swegon Operations S.R.L., Italy, Knorr-Bresme India Pvt Ltd, among others, attest the commitment of delivering top-notch products and outstanding service.

- The Group's business model allows to monitor and control the quality of their products on the supply side and provides the ability to respond quickly to their customers' needs and preferences on the demand side. The Group adheres to some of industry's best quality product accreditations.

- The Company has proposed Phase –1 to expand their business by setting up a new unit at F-50, G-51, EPIP, RIICO Industrial Area, Neemrana, in the land area of 4036 Sqm along with total Project cost of Rs. 1,378.50 Lakhs. The company has proposed to bring the entire amount as per details mentioned below.

Particulars	Amount (in Lakhs)
Shareholder's Fund	**500.00**
Unsecured Loan From Holding Company	**878.50**
Total	**1,378.50**

- The Company has proposed Phase – 2 to expand their business by setting up a new unit at SP1-24, Kolila Joga, Neemrana, Rajasthan in the land area of 71,924 Sqm. Along with a total Project cost of Rs. 27,890.57 Lakhs. The company has proposed to bring the entire amount as per details mentioned below.

Particulars	Amount (in Lakhs)
Shareholder's Fund	**24,246.10**
Unsecured Loan From Holding Company	**3,644.47**
Total	**27,890.57**

- The proposed expansion Project – 1 at Neemrana is on a 4036 Sqm of land. The land/plot has already been acquired by the company vide registry dated 20th July, 2023 with respect to Plot F-50 and dated 17th July, 2023 with respect to G-51.

- The proposed expansion Project – 2 at Kolila Joga is on a 71,924 Sqm of land. Which was already secured by the company by way of allotment letter dated 23rd August 2023 from Rajasthan State Industrial Development & Investment Corporation Ltd (RIICO). Later Standard Allotment letter dated 20th September, 2023 has been received. Out of total amount of Land, 25% is paid on date of allotment and balance 75% (Rs. 2,999.23 Lakhs) of amount will be paid in 11 Quarterly Installments, each consisting of an equal Principal Amount of Rs. 272.66 Lakhs, along with an Interest rate of 8.50%. Repayments of the same has been Commenced from 18th January, 2024.

- For the Proposed expansion Project -1 at Neemrana, The Company had allotted Construction Work to **Taj Builders** for construction of structure vis Development of Building of Proposed Project. As per Current Scenario as on 15th July, 2024, the Construction of the Building has been completed and production has commenced.

- For the Proposed expansion of Project-2, the Company has identified **M/s. Rajiv Associates** as their Technical Consultant who is looking after Design, Drawing, Construction, Supervision and other ancillary activity, the company has submitted the quotation from various suppliers, details of the same are disclosed from page no. 59 to 102.

- The company has submitted the quotations of the machinery involved for production. The Cost of the project after negotiations is estimated to be Rs 29,269.07 Lakhs (Project 1 + Project 2) as per the quotation received from the supplier.

- As Construction for proposed Project is not entirely started, nevertheless the company has obtained Utility such as Borewell for Water Supply and Electricity Connection as mentioned below.

- For Proposed Project -1: -
  - Water supply line available around factory boundary plot and it can be easily accessible after getting water connection update.

  - Water requirement for this plant would be around 600 liters per day and the same shall be fulfilled from RIICO. The company would have underground storage tanks for the water to cater the requirement of water by Manpower, Plantation and Manufacturing Process.

  - 11KV power supply line available around factory plot boundary and it can be easily accessible after electricity connection update.

- The company proposes to acquire power via 11 KV HT from Jaipur Vidyut Vitran Nigam Limited. The proposed connected load for the project would be around 10 KVA and, For the critical power back up company plans to install 500 KVA diesel Generator.

- For Proposed Project -2: -
  - Water supply line available around factory plot boundary and it can be easily accessible after getting water connection.

  - Water requirement for this plant would be around 16000 liters per day and the same shall be fulfilled from RIICO water supply. The company would have underground storage tanks for the water to cater the requirement of water by Manpower, Plantation and Process.

  - 11KV power supply line available around factory plot boundary and it can be easily accessible after electricity connection.

  - The company proposes to acquire power via 11 KV HT from Jaipur Vidyut Vitran Nigam Limited. The proposed connected load for the project would be around 2000 KVA and the operating load would be 2000 KVA, For the critical power back up company plans to install 1000 KVA diesel Generator (CPCB IV).

- The basic raw materials to manufacture HVAC Products are Aluminum Foil, Copper Foil, Copper Tube, Galvanize Sheet, Brass Sheet, Copper Sheet, Aluminum Sheet, Stainless Steel etc. These materials are easily available indigenously in abundance and there is no scarcity of the materials. The materials can however be imported and there are no restrictions whatsoever on these. As per the extant Import-Export Policy of India 2019-2024, these materials are not under negative list i.e. these can be imported freely.

- The Group is purchasing their Raw Materials from various vendors (incl. TATA Steel, India) and have a good clientele based on their business relations. The company is having the necessary statutory and regulatory approvals for the existing facility. However, for the proposed plant company is in the process of taking necessary statutory as well regulatory requirement/ approvals.

In view of anticipated demand, experience of promoters, Board of Directors in the similar industry, location of the Project, debt-service indicators, other operational aspects and risk mitigation suggestions detailed in the report, it may be concluded that the proposed unit(s) of M/s. KRN HVAC Products Private Limited mentioned in the report is economically and technically viable subject to achievement of Projections, receipt of regulatory as well statutory approvals required for the Project.

Chapter 2

Management Assessment of the Company

Brief Profile of Group:

Company Name	Structure of Company
KRN HVAC Products Private Limited	Wholly Owned Subsidiary of KRN Heat Exchanger and Refrigeration Limited
KRN Heat Exchanger and Refrigeration Limited	Holding/ Parent Company
KRN Coils Private Limited	Sister Concern

1. Holding Company Profile:

Name of Company	M/s. KRN Heat Exchanger And Refrigeration Limited (Erstwhile M/s. KRN Heat Exchanger And Refrigeration Private Limited)
Year of Incorporation	**25th August 2017**
Registered office	**Plot No. F-46,47,48,49 EPIP, RIICO Industrial Area, Neemrana, Rajasthan-301705**
CIN	**U29309RJ2017PLC058905**
ROC Code	**RoC-Jaipur**
Registration Number	**058905**
Project Location	**RIICO Industrial Area, Neemrana, Neemrana.**
Nature of Business	**Heating, Ventilation And Air Conditioning**
Company Category	**Company limited by Shares**
Company Sub-Category	**Non-govt company**
Class of Company	**Public**
Authorised Share Capital	**Rs. 72,00,00,000/-** **(Rupees Seventy Two Crores Only)**
Paid Up Share Capital	**Rs. 46,13,66,000/-** **(Rupees Forty Six Crores Thirteen Lakhs and Sixty Six Thousands Only)**

- **Brief Profile of the Company:**

Name of the Company	M/s. KRN HVAC Products Private Limited
Year of Incorporation	07th April, 2023
Registered office	A-60, Green Acre, Neemrana, Alwar, Rajasthan 301705
ROC Code	Roc- Jaipur
Registration Number	086784
CIN	U28191RJ2023PTC086784
Nature of Business	Heating, Ventilation And Air Conditioning
Company Category	Company limited by Shares
Company Sub-Category	Non-govt company
Class of Company	Private
Authorised Share Capital	Rs. 10,00,00,000/- (Rupees Ten Crores Only)
Paid Up Share Capital	Rs. 5,00,00,000/- (Rupees Five Crores Only)

- **Brief Profile of the Sister Concern:**

Name of theCompany	M/s. Krncoils Private Limited
Year of Incorporation	23rd February, 2021
Registered office	Plot No F-46-47, EPIP RIICO, Industrial Area, Alwar, Neemrana, Rajasthan, India, 301705
ROC Code	Roc- Jaipur
Registration Number	073633
CIN	U52339RJ2021PTC073633
Nature of Business	Heating, Ventilation And Air Conditioning
Company Category	Company limited by Shares
Company Sub-Category	Non-govt company

Class of Company	Private
Authorised Share Capital	Rs. 10,00,000/- (Rupees Ten Lakhs Only)
Paid Up Share Capital	Rs. 1,00,000/- (Rupees One Lakhs Only)

2.1 Particulars of Directors & Key Managerial Personnel of Holding Company as on 15.07.2024:

Name	Designation
Mrs. Anju Devi	Whole time Director
Mr. Santosh Kumar Yadav	Chairman and Managing Director
Mr. Manohar Lal	Non- Executive Director
Mr. Deepak Batheja	Independent Director
Mr. Ketan Sharma	Independent Director
Mr. Srinivasa Rao Anasingaraju	Independent Director
Mr. Praveen Kumar	Company Secretary
Mr. Sonu Gupta	Chief Financial Officer

Note: - Above mentioned details are extracted from the certificate received by Q-serv dated 15.07.2024 from Company.

2.2 Particulars of Directors of the Company as on 15.07.2024:

Name	Designation
Mrs. Anju Devi	Director
Mr. Santosh Kumar Yadav	Director

Source: As per MCA & Company data

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2.3 Company Assessment:

The company was incorporated on 07th April, 2023 in the name of M/s. KRN HVAC Products Private Limited. The registered office of the company is located at Plot No. A-60, Green Acre, Neemrana, Alwar, Rajasthan-301705. M/s. KRN HVAC Products Private Limited is a manufacturer and exporter specializing in Aluminum / Copper Fins and Copper Tubes Heat Exchangers, Water Coils, Condenser and Evaporator Coils, Bar and Plate Heat Exchanger, Oil Cooling Units, Roll Bond Evaporator.

M/s KRN Heat Exchanger And Refrigeration Limited is a Holding Company as well as promoter of the company, which holds 99.99% of Company.

The Parent Company is certified by an ISO 9001:2015 in recognition of organization's Quality Management System, ISO 14001:2015 in recognition of organization's Environment Management System, ISO 45001:2018 in recognition of organization's Health and Safety Management System, IS 11329:2018 in recognition of quality of Finned type Heat Exchanger for room air conditioners from Bureau of Indian Standards, BS ENISO 13134 in recognition of approved brazing procedure from Brazing Procedure Specification, BS EN ISO 13585 in recognition of approved brazer qualification test, CE 2215001 conformity certificate Issued by Szutest, Turkey for the quality assurance.

The Group's senior management team comprising of Group's Promoters who have extensive experience and knowhow in engineering sector, including, business development, operations, administration, marketing and human resource management. They leverage the understanding and the experience of Group's senior management in successfully managing their operations and growth. Group's founder, Promoter and Director Santosh Kumar Yadav has over 20 years of experience in the business of manufacturing Heat Exchangers and Refrigeration units. His leadership and vision have helped Group to grow and manufacture winding wires. Group also benefit significantly from the qualified and experienced senior management team and workforce who have an entrepreneurial vision and the technical capability to further expand Group's business and operations. In addition, Group have a dedicated team of engineers along with other skilled and technically qualified workforce. Group

continuously strengthen their engineering expertise by providing in-house training to Group's workforce, to diversify and update their skill sets and keep them updated with the latest changes in manufacturing technologies and processes. The faith of the Management in the workforce and their dedicated performance has enabled them to build a niche player in the market. The vast experience of Group's senior management team has resulted into streamlined processing, improved product quality and increased profitability which give them a competitive edge over competitors.

2.4 Directors Profile:

I. Mr. Santosh Kumar Yadav

Full Name	Mr. Santosh Kumar Yadav
DOB	November 17th, 1980
Age	43 years
Nationality	Indian
DIN	07789940
Designation	Chairman And Managing Director
Address	B-1004, Vasundhra Nagar, UIT Colony, Bhiwadi, Rajasthan-301019
Other Directorship	M/S. KRN Heat Exchanger And Refrigeration Ltd. M/S. KRN Coils Private Limited
Qualification	Diploma In Business Management & Diploma in Mechanical Engineering
Experience	• In the feild of Mechanical Engineering with more than 20 years of rich experience in Heat Exchangers and Refrigeration units manufacturing. • Worked as "DGM – Coli Shop Production" in Lloyd Electric & Engineering Limited w.e.f. 01-10.2010 • Worked as "Manager - Operations" in Lloyd Electric & Engineering Limited w.e.f. 01-10.2010 • Due to his exemplary operations skills in manufacturing, he was deputed at Luvata Czech plant in Czech Republic for around two years w.e.f. June 2008 • Worked as "Assistant Manager - Production" in Lloyd Electric & Engineering Limited w.e.f. 01-03.2008

	• Worked as "Sr. Engineer" in Lloyd Electric & Engineering Limited w.e.f. 01-04.2007 • Worked as "Sr. Engineer - Coil Shop" in Lloyd Electric & Engineering Limited w.e.f. 01-10.2006 • Joined Lloyd Electric & Engineering Limited as a Trainee w.e.f. 02-04-2003 He is also on the Board of various private limited and public companies.

II. Mrs. Anju Devi

Full Name	Mr. Anju Devi
DOB	April 14th 1982
Age	42 years
Nationality	Indian
DIN	06858442
Designation	Wholetime Director
Address	B-1004, Vasundhra Nagar, UIT Colony, Bhiwadi, Rajasthan-301019
Other Directorship	M/S. KRN Heat Exchanger And Refrigeration Ltd. M/S. KRN Coils Private Limited
Experience	• Wide Experience in handling HVAC Coils manufacturing process and handling the coil shop. • Worked as a Consultant with Lloyd Electric & Engineering Limited from 01.04.2012 till 31.03.2014 • Work as a key person to the Company and has over 10 years of industry experience in various fields across multiple industries

III. **Mr. Deepak Batheja**

Full Name	Mr. Deepak Batheja
DOB	November 05th 1982
Age	41 Years
Nationality	Indian
DIN	10555193
Designation	Independent Director
Address	Flat No - EG27, Ashiana Garden , Bhiwadi, Rajasthan-301019
Term	For a period of five (05) years w.e.f. March 20, 2024 until March 19, 2029
Qualification	Chartered Accountant (CA), B.Com, LLB
Directorship	M/S. KRN Heat Exchanger And Refrigeration Ltd.
Experience	• Practicing Chartered Accountant based in Bhiwadi and had over 3 decade of varied experience in the field of Auditing, Company Law Matters and Direct Taxation as well as indirect tax matters.

IV. **Mr. Manohar Lal**

Full Name	Mr. Manohar Lal
DOB	February 28th 1977
Age	47 Years
Nationality	Indian
DIN	10040507
Designation	Non-Executive Director
Address	S/o Balbir Singh, H.No 136, Near Dharamshala, Heengwawahera, Alwar, Rajasthan -301411
Qualification	Senior Secondary
Directorship	M/S. KRN Heat Exchanger And Refrigeration LTD.

Experience	• In administrative department of KRN Heat Exchanger And Refrigeration Limited Served Indian Army From 15.02.1999 Till 31.10.2021

V. Ketan Sharma

Full Name	Mrs. Ketan Sharma
DOB	September 26th 1986
Age	37 Years
Nationality	Indian
DIN	10541058
Designation	Independent Director
Address	19/10/2,West Moti Bagh,Street No 2,Sarai Rohilla,Delhi,110035
Term	For a period of five (05) years w.e.f. March 20, 2024 until March 19, 2029
Qualification	Fellow Chartered Accountant (FCA), Bachelor of Computer Science(BCS)
Directorship	M/S. KRN Heat Exchanger And Refrigeration LTD.
Experience	• Practicing Chartered Accountant and a working partner in a firm named Deepti & Co. having registered address at Ambala and place of business at Delhi & Bhiwadi for the last 10 years. • Varied experience in the field of Accounts & Audits, Direct & Indirect taxation, Project Finance and Company Law related Matters.

VI. Mr. Srinivasa Rao Anasingaraju

Full Name	Mr. Srinivasa Rao Anasingaraju
DOB	June 02nd , 1972
Age	52 Years
Nationality	Indian
DIN	10541655
Designation	Independent Director
Address	502, Shivathirtha, Erandwane,Pune 411038

Term	For a period of five (05) years w.e.f. March 20, 2024 until March 19, 2029
Qualification	F.C.S, LL.B., ICMA, Insolvency Professional, PGD PMIR & LW, M. Com, B. Com
Directorship	M/S. KRN Heat Exchanger And Refrigeration LTD.

a. **Shareholding Pattern of Holding/Parent Company:**

Sr. No.	Shareholders	No of Shares	% Holding
1	Santosh Kumar Yadav	2,02,99,950	44.00
2	Anju Devi	2,37,00,000	51.37
3	Others	21,36,650	4.63

Comment:

- ***Q-Serv has received the signed statement related to shareholding pattern on the letter head of the company along with duly signed and stamped.***
- ***Above shareholding pattern is as at 15th July, 2024.***

b. **Shareholding Pattern of Company:**

Sr. No.	Shareholders	No of Shares	% Holding
1	Santosh Kumar Yadav	500	0.01
2	M/s. KRN Heat Exchanger And Refrigeration LTD	49,99,500	99.99

Comment:

- ***Q-Serv has received the signed statement related to shareholding pattern on the letter head of the company along with duly signed and stamped.***
- ***Above shareholding pattern is as at 15th July, 2024.***

c. **Promoter's Net Worth**

Promoter	Designation	% of Holding in KRN HVAC Products Private Limited	Net worth
M/s. KRN Heat Exchanger And Refrigeration LTD	Holding Co.	99.99	Rs. 13,077.97 Lakhs

As on 31.03.2024

Comment:

- ***Q-Serv has taken net worth certificate from audited financial of the company as at 31.03.2024***

d. **Overall Management Assessment**

The Group is involved into running a business of manufacturing & specializing in Aluminum / Copper Fins and Copper Tubes Heat Exchangers, Water Coils, Condenser and Evaporator Coils and is currently running units located at RIICO Industrial Area, Neemrana, Rajasthan. The majority of Finished goods are purchased by vendors such as Daikin Air-conditioning India Pvt Ltd, Schneider Electric IT Business (I) Pvt Ltd India, Voltas Limited, Carrier Air Conditioning & Refrigeration Ltd., Eberspacher Suetrak Bus Climate Control System India Pvt. Ltd., Eberspacher Sutrak Gmbh & Co. Germany, Kirloskar Chillers Pvt. Ltd, Swegon Blue Box Pvt. Ltd., Swegon Operations S.R.L., Italy, Knorr-Bresme India Pvt. Ltd, among others. The group is also having a good client base depended on their vendor-customer relationship.

At Present, Group has plant situated at RIICO Industrial Area to produce HVAC Products. Nevertheless, with a view to driven by the demand and industry analysis of HVAC Products, The Group proposes to make a foray into the manufacturing of new product related to Heating, Ventilation and Air Conditioning (HVAC) industry by proposing Phase- 1 & Phase- 2 at a place as mentioned herein above nearby from the existing facilities with a total capital expenditure (Phase 1 & Phase 2) of Rs.29,269.07 lakhs. For which Holding Company have proposed to file DRHP with respective stock exchange and list

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their equity share for public funding. Please refer in the COP/MOF Table referred at chapter no. 5 "Project Proposal".

For the purpose of expansion, presently, in Phase -1, The Company has already acquired the land and construction of the building has been completed and in Phase -2, for plot no SP 1-24, Neemrana, it has already secured the E-auction bid and received the offer for allotment letter from RIICO dated 23rd August, 2023. Later Standard Allotment letter dated 20th September, 2023 has been received. Out of total amount of Land, 25% is paid on date of allotment and balance 75% (Rs. 2,999.23 Lakhs) of amount will be paid in 11 Quarterly Installments, each consisting of an equal Principal Amount of Rs. 272.66 Lakhs, along with an Interest rate of 8.50%. Repayments of the same has been Commenced from 18th January, 2024.

Chapter 3

Technical Assessment

3.1 Project Rationale

M/s. KRN Heat Exchanger And Refrigeration Limited (Holding Company) manufacturer and exporter specializing in Aluminum / Copper Fins and Copper Tubes, Heat Exchangers, Water Coils, Condenser and Evaporator Coils since its inception in 2017. The company had started its business at their Plant of Neemrana, Rajasthan in RIICO Industrial Area.

Based on the increase in customer base and up gradation in technology and manufacturing process, the Group will expand another unit in subsidiary company, KRN HVAC Products Private Limited at Neemrana, Rajasthan by setting up a Project 1 & Project 2 as mentioned above. The Group has active market and very high customer base, increasing demand for Heat Exchangers and increasing trend of sales, The Group Goes For Expansion in Manufacturing of Heat Exchangers, Condenser Coils, Evaporator Coils, Heating Coils, Refrigeration Equipments, Copper Fitting/Components, Copper Tubes, Cross Flow Fans/Blower, IDU units, ODU units, Air Conditioner, Chest Freezer, Deep Freezer, Water Cooler, complete HVAC units, Refrigeration Evaporators, Cold Rooms IDU and ODU sheet metal components and other HVAC Components, MCHX, Radiator, Plate & Bar Heat Exchanger. The company has proposed to setting up new plant at Phase-1 & Phase-2 for the purpose of the same to maximize the profit and reach at top in this industry.

Capex requirement of Rs. 29,269.07 Lakhs shall be meet by raising the investment from Parent / Holding Company. The parent company may raise the stake in the company by funding the same from its Internal Accruals or by raising the funds from Private Lenders / Investors / Institutions or Public by way of Initial Public Offering (IPO) respectively or in combination of any or all as per the suitability of the same.

In this project, the working capital requirements will be met through funding from the parent company by way of equity or debt as and when needed. This strategic approach ensures a stable financial foundation by utilizing the company's own resources, minimizing external dependencies and optimizing the overall financial structure for successful project execution.

The Group is having valid regulatory/statutory approvals with respect to their existing plant. However, they need to obtain the new statutory as well regulatory approval from respective authority related to proposed plant for which company has already initiated process related to the same.

3.2 Project Location

The Group is having existing unit, which is located at E-46, 47, 48, 49, EPIP, RIICO Industrial Area, Neemrana Rajasthan-301705,

Plant Location:

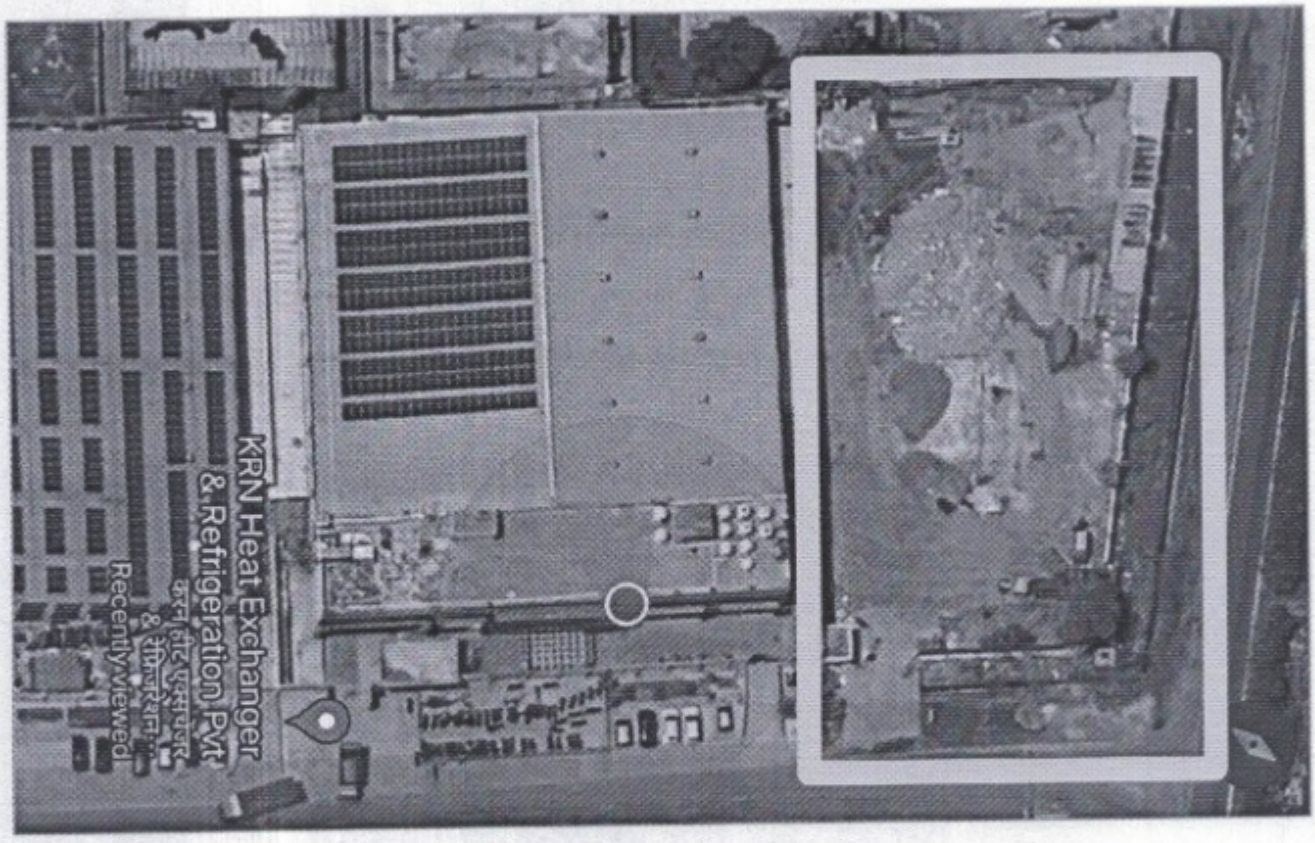
Helicopter View

(Source: maps.google.com)

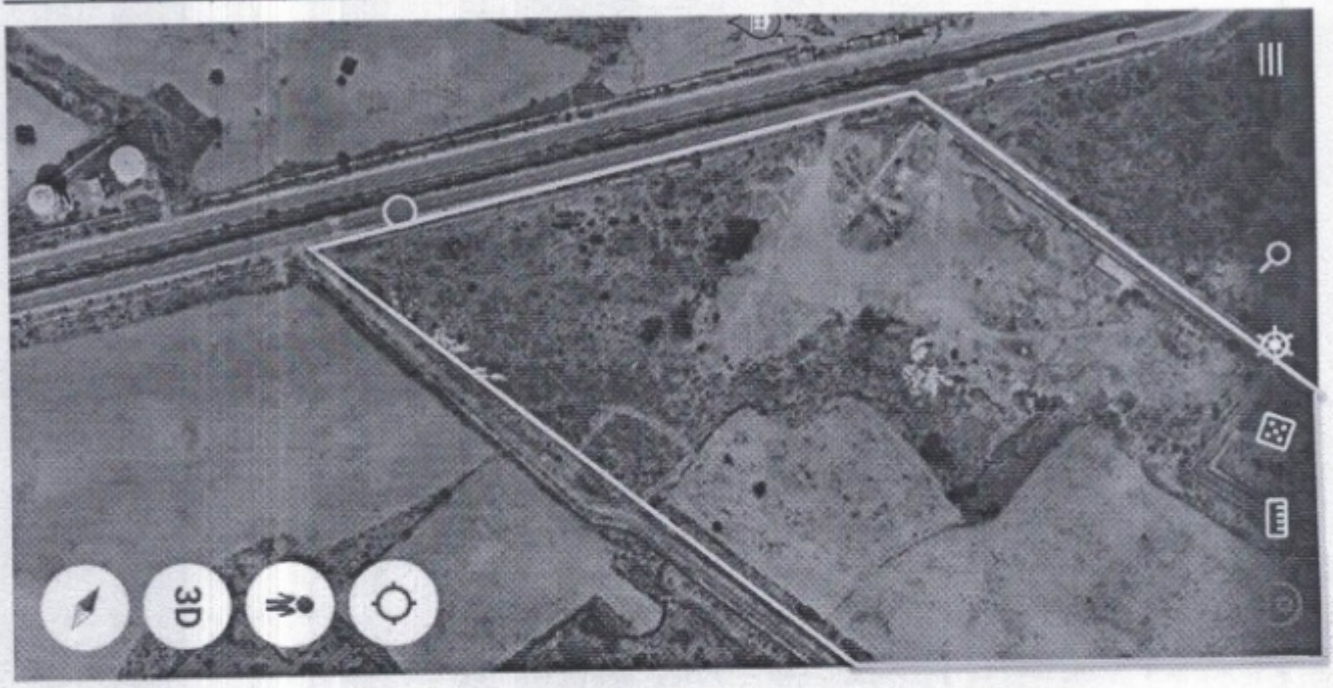
Proposed Plant Location (Project -1):

The proposed expansion would be setting up at Unit located at F-50, G-51, EPIP, RIICO Industrial Area, Neemrana, Rajasthan-301705.

Helicopter View (Project-1)



Helicopter View (Project-2)



(Source: maps.google.com)

The detail of the said location is as follows:

- RIICO Industrial Area is an area in the Tehsil of Neemrana District, Neemrana of Rajasthan.
- Neemrana is a village with a total population of 9,600 estimated.
- The nearest town to Neemrana is Alwar at a distance of approximately 66 km.

(Source: Google)

3.3 PROPOSED EXPANSION:

A GENERAL OVERVIEW OF THE HEATING, VENTILATION, AND AIR CONDITIONING UNITS (HVAC):

Throughout the industrial sector, Group are constantly in search of ways to maximize profits while cutting costs and conserving space. HVAC system are to help maintain good indoor air quality (IAQ) through adequate ventilation with filtration and provide thermal comfort. HVAC systems are among the largest energy consumers in schools.

The first step is to design and construct a progressive Fin Dye, which is a specialized tool used to stamp and shape the Fins. The Dye contains a series of progressively sized cavities or ridges that create the desired shape of the Fins on the Aluminum Sheets. These Fins can be straight, wavy, or other configurations based on the Heat Exchanger's requirements.

In the second step of the process, the utilization of a CNC controlled automatic hairpin bender is employed to transform Copper Tubes into the desired size and shape of large hairpins. This specialized device combines precision engineering with Computer Numerical Control (CNC) technology to achieve accurate and consistent bending results.

In the third phase of the process, the assembly of Fin Sheets and Copper Tubes is achieved with the help of vertical and horizontal expanders. The Fin Sheet, typically made of a durable and Heat-Conductive material, contains a series of holes pre-drilled in specific patterns to accommodate the Copper Tubes. These Tubes, also known for their excellent thermal conductivity, play a crucial role in enhancing the overall efficiency of the system.

In the design of a Heat Exchanger, the U-bend, Header, and Distributor play crucial roles in ensuring efficient refrigerant flow and Heat transfer. The Copper Tube, serving as the main conduit for the refrigerant, has openings at its ends where these components are mounted.

The initial phase of ensuring the quality of Heat Exchangers involves two vital tests: the Helium Leak Test and the Water Leak Test. Firstly, the Helium Leak Test is conducted, where high-pressure helium gas is passed through the Heat Exchanger in a specialized chamber. This process allows the detection of any potential leaks in the Heat Exchanger, as the escaping helium gas can be traced and identified.

In conclusion, the strategic bending of Heat Exchangers serves as a pivotal technique to optimize space utilization, enhance surface area, and elevate the performance and safety of the Final product.

Driven by the above the Company proposes to manufacturing of HEATING, VENTILATION, AND AIR CONDITIONING UNITS (HVAC) at a place nearby from the existing facilities with a total capital expenditure of Rs.29,269.07 lakhs, by setting up Project 1 & 2 as mentioned above.

3.4 HVAC Industry in India

India's economy is showing signs of resilience with GDP estimated to grow by approximately 7.2% in FY 2023. Although this translates into a moderation in demand (compared to FY 2022), the estimated GDP growth in FY 2023 represents a return to pre pandemic era growth path. Despite this moderation in growth, India continues to remain one of the fastest growing economies in the world.

There are quite a few factors that is aiding India's economic recovery – notably its resilience to external shocks (ongoing Russia – Ukraine conflict) and rebound in private consumption. This rebound in private consumption is bringing back the focus on improvements in domestic demand, which together with revival in export demand is a precursor to higher industrial activity. Already the capacity utilization rates in Indian manufacturing sector are recovering as industries has stepped up their production volumes. As this momentum sustains, the increasing capacity utilization would lead to fresh round of capacity expansion plan. The universal vaccination program by the Government has played a big part in reinstating confidence among the population, in turn helping to revive private consumption.

Realizing the need to impart external stimuli, the Government stepped up its spending on infrastructure Projects which in turn had a positive impact on economic growth. The capital expenditure of central government increased by nearly 64% during the first 8 months of FY 2023. This has provided the much-needed confidence to private sector, and in turn attracted private investment.

On the lending side, the Financial health of major banks have witnessed an improvement which has helped in improving the credit supply. With capacity utilization improving, there would be demand for credit from corporate sector to fund the next round of expansion plans. Banking industry is well poised to address that demand. Underlining the improving credit scenario is the credit growth to micro, small and medium enterprise (MSME) sector which increased by nearly 31% in January – November 2022 period, compared to corresponding period previous year2. The extended Emergency Credit Linked Guarantee Scheme (ECLGS) by the Union Government has played a major role in improving this credit supply.

India's GDP in FY 2023 is expected to grow by 7% compared to 9.1% in the previous fiscal on the back of slowing domestic as well as external demand owing to series of interest rate hikes globally to tackle high inflation. The year-on-year moderation in growth rate is also partly due to a fading impact of pandemic-induced base effects which had contributed towards higher growth in FY 2022. On quarterly basis, the country growth moderated in Q2 and Q3 of FY 2023 which highlights impact of slowing economy on the back of monetary tightening. During Q3 FY 2023, the country's GDP grew by 4.36% against 6.28% y-o-y increase in the corresponding quarter last fiscal.

Sectoral analysis of GVA reveals growth tapered sharply in industrial sector which is estimated to grow by just 3.6% against 11.6% in the previous fiscal. In the industrial sector, growth across major economic activity such as mining, manufacturing, construction sector slowed and it registered a growth of 3.38%, 0.56% and 9.12% in FY 2023 against a decline 7.07%, 11.05% and 14.82% in FY 2022, respectively. Utilities sector too observed a marginal moderation in y-o-y growth to 9.15% against a decline of 3.6% in the previous years.

Talking about the services sectors performance, the trade, hotel, transport, communication, and broadcasting segment continued to strengthen and grow by 14.18% in FY 2023 against 13.75% in the previous year and Financial services, real estate and professional services sector recorded 6.85% y-o-y growth against 4.73%. However, overall service sector growth was curbed by moderation in public administration and defense services sector which recorded 7.12% yearly increase against 9.7% increase in the previous year.

After experiencing three years of deteriorating industry growth, the country's Index of Industrial Production (IIP) index registered 11.3% y-o-y growth where growth was evenly spread across all sub-segments. Manufacturing index, with 77.6% weightage in overall index, registered 11.7% y-o-y growth in FY 2022 while mining sector index registered the highest growth. On use-based classification basis, infrastructure/construction goods, capital good, intermediate good and consumer durable outperformed over the other sector and registered healthy double-digit growth.

Currently, a large number of industries that are manufacturing HVAC Units:

- Voltas Limited
- Blue Star Limited
- Daikin Airconditioning India Pvt. Ltd.
- LG Electronics India Pvt. Ltd.
- Carrier Airconditioning & Refrigeration Ltd.
- Mitsubishi Electric India Pvt. Ltd.
- Samsung India Electronics Pvt. Ltd.
- Whirlpool of India Ltd.
- Danfoss Industries Pvt. Ltd.
- Emerson Climate Technologies (India) Pvt. Ltd.

Features:

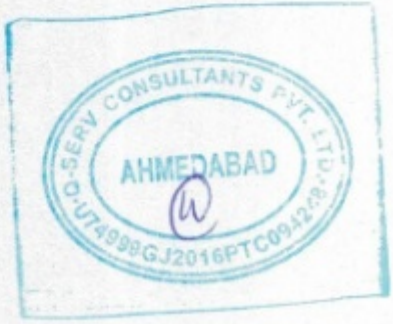
- The design and type of ductwork
- Return-air considerations
- Air-filter location
- A filter dryer
- Location of the outdoor unit
- Balance dampers in the ductwork
- The refrigerant
- Location of the indoor unit
- Efficiency
- The condenser (outside) coil type

Industry view:

Indian market for Heat exchanges reached USD 625 million per annum in 2022, with annual industry turnover increasing by a CAGR of 10% between 2019 and 2022.

Rapid industrialization and urbanization, coupled with aggressive drive on infrastructure front have all accelerated the demand for Heat Exchangers. The strong annual growth in revenue is a result of these supporting factors. In addition, the ubiquitous nature of Heat Exchanger – which Finds application across all major industry segments – have ensured that a general growth in industrial activity and positive economic sentiment translate into demand for the product.

Apart from these direct demand drivers, the increasing focus on efficient energy usage to contain carbon emissions is shaping up as an indirect demand driver. Heat Exchangers with its ability to facilitate efficiency Heat transfer helps in optimizing energy demand. Given the dominant role played by hydrocarbon energy sources, any optimization in energy demand will directly translate into lower carbon emissions. So, Heat Exchangers is expected to play a major part in India's sustainable development journey.



3.5 Group's Product

Proposed Product –

1) BAR & PLATE HEAT EXCHANGER:

About Bar & Plate Heat Exchanger Product:

The Bar & plate Heat Exchanger is a device that permits recovery of the Heat contained in a fluid being transferred to another fluid. Both fluids never touch each other because they are separated by metallic sheets. These sheets, which are called plates, are very Fine and grooved to enable the diffusion of the greatest amount of Heat through each surface unit. The plate Heat Exchanger has been made to guarantee a Heat interchange with the highest security.

These bar & plate Heat Exchanger are widely used in different industry such as:

- Oil And Gas Industry
- Chemical Industry
- Power Industry
- HVAC Systems
- Food And Beverage Industry
- Refrigeration

And many more.

RAW MATERIAL:

The raw materials required for making of Bar & plate Heat Exchanger are stainless steel, titanium and aluminum.

SUPPLIER OF RAW MATERIAL:

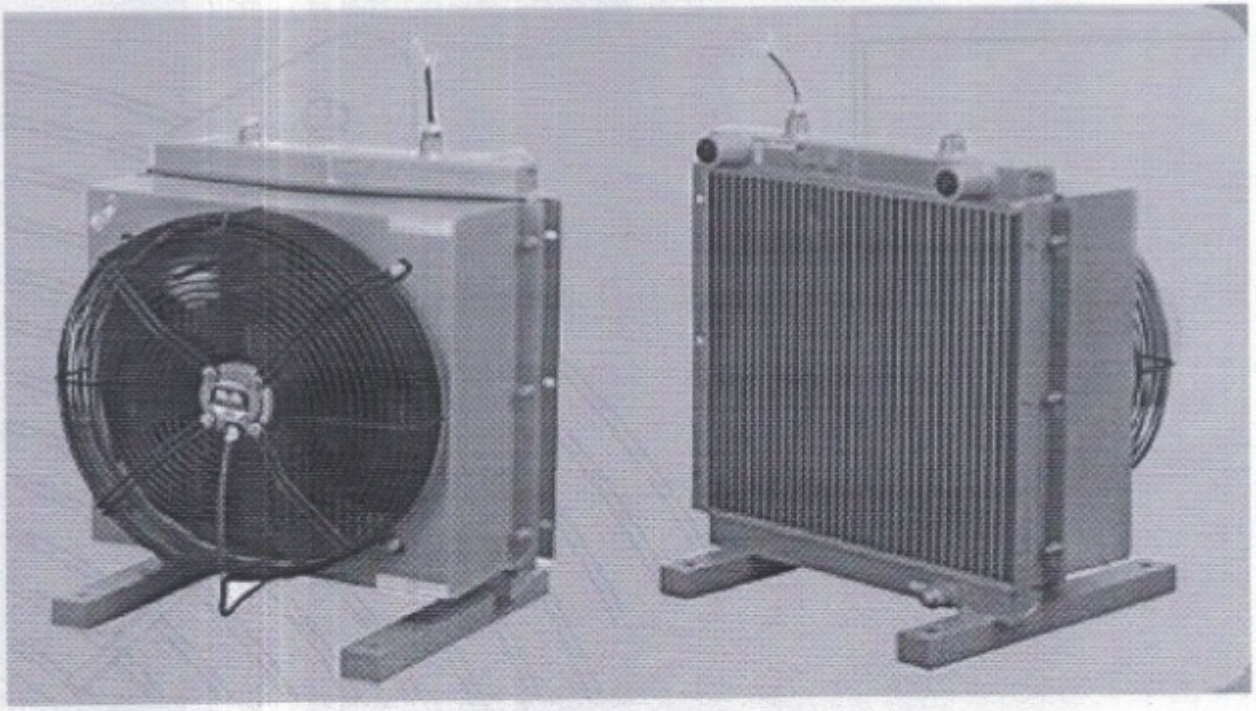
- Alcoa, China
- HD Metals, China
- Jindal, India
- Ganga Extrusions, India
- TATA Steel, India
- Sri Ram Chemicals, Delhi
- Havels, India
- Copland, Thaiwan

The materials can however be imported and there are no restriction whatsoever on these. As per the extant Import-Export Policy of India 2019-2024, these materials are not under negative list i.e. these can be imported freely.

Major Customers

- Daikin Air-conditioning India Pvt Ltd
- Schneider Electric IT Business(I)Pvt Ltd
- Voltas Limited
- Carrier Air Conditioning & Refrigeration Ltd.
- Eberspacher Suetrak Bus Climate Control System India Pvt.Ltd.
- Eberspacher Sutrak Gmbh & Co. Germany
- Kirloskar Chillers Pvt. Ltd
- Swegon Blue Box Pvt. Ltd.
- Swegon Operations S.R.L.,Italy
- Knorr-Bresme India Pvt Ltd.

2) OIL COOLING UNIT WITH BLOWER & MOTOR:



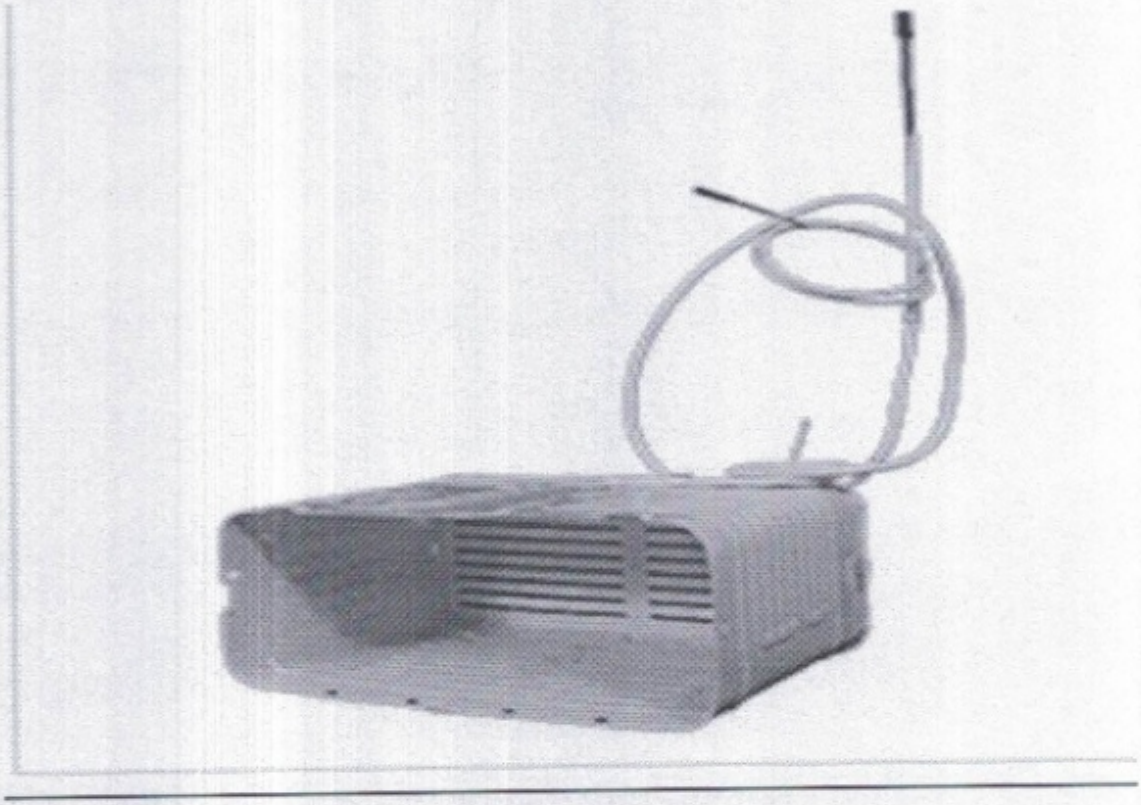
About Oil Cooling Unit with Blower & Motor

An oil cooler is a separate, smaller radiator to an engine's main radiator, which maintains an oil supply at a consistent, optimal temperature. Its purpose is to cool the oil passing through the coils, thus improving the engine and the transmission's lifetime. They are situated in front of an engine's cooling system.

RAW MATERIAL:

The raw materials required for making of Bar & plate Heat Exchanger are stainless steel, titanium and aluminum.

3) Roll Bond Evaporator:



About Roll Bond Evaporator

Roll bond evaporator panel is used as heat exchanger in production of freezers and refrigerators industry. OSF, OSEF evaporator is two-layered evaporator panel with channels on the one side. It is produced from two Al strips (layers), same or different thickness of the layers.

RAW MATERIAL:

The raw materials required for making Roll bond evaporator is aluminum sheet.

Major Customers

LG

Samsung

Whirlpool

Godrej

Videocon

Haier

3.6 Manufacturing Process

(A) Existing Product

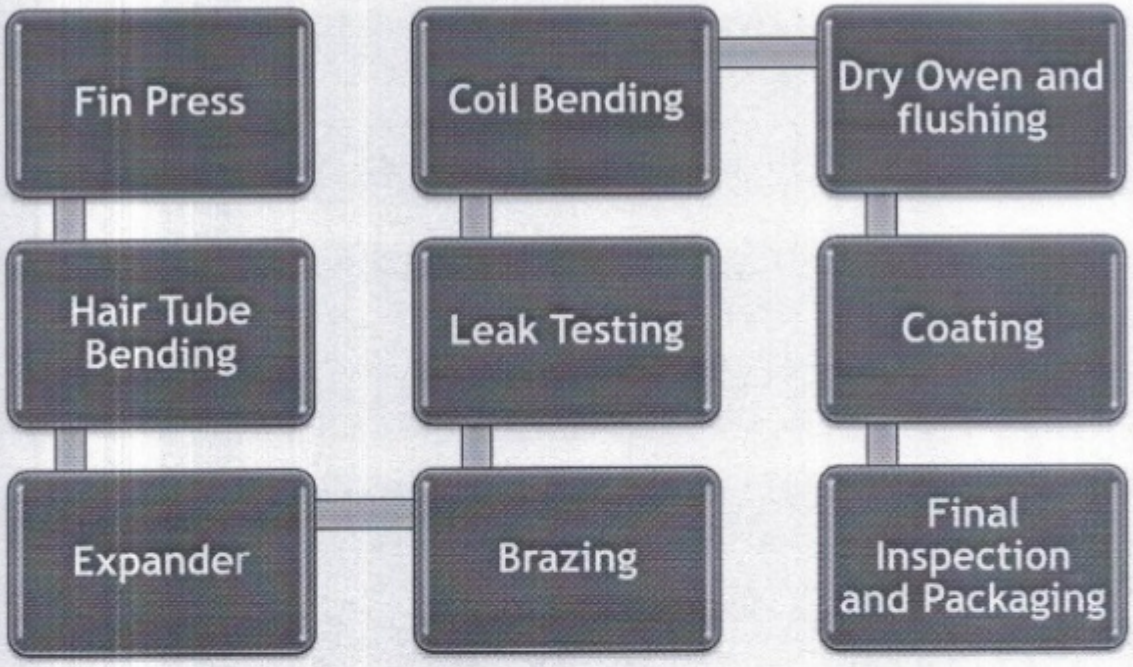
Manufacturing of HVAC Products involves various types of key steps along with skill operations performs. The aluminum and Copper Fin – Copper Tube condenser and evaporator coils which are the basic raw materials converted into HVAC Products in various lines of process. The total process involves of 09 steps. The step wise production process is explained below and a flow chart is provided for better understanding.

The manufacturing process of Heat Exchangers using the Fin press method involves several steps, starting from the initial progressive Fin dye and aluminum metal sheets to the Final fabrication of Fin sheets tailored to specific specifications. This process plays a critical role in the efficient transfer of Heat in various industrial applications.

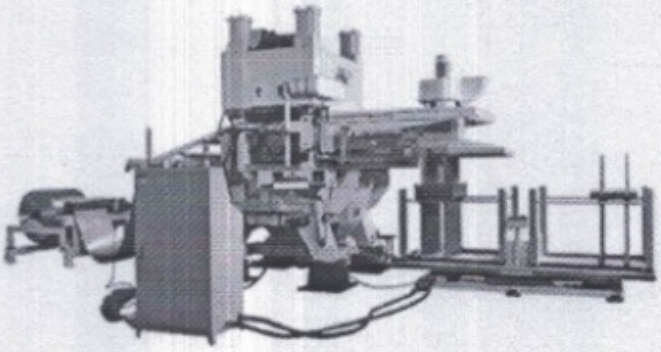
The HVAC Products manufacturing process consists of a series of steps that apply regardless of the design or customer specifications. The process of manufacturing HVAC Products can be broken down into the following steps.

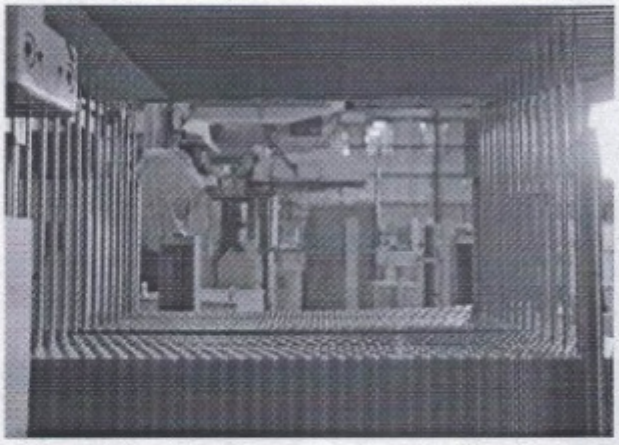
1.	Fin Press
2.	Hair Tube Bending
3.	Expander
4.	Brazing
5.	Leak Testing
6.	Coil Bending
7.	Dry Owen and flushing
8.	Coating
9.	Final Inspection and Packaging

Flowchart related to manufacturing process are mentioned below



1. **Fin Press**





The first step is to design and construct a progressive Fin dye, which is a specialized tool used to stamp and shape the Fins. The dye contains a series of progressively sized cavities or ridges that create the desired shape of the Fins on the aluminum sheets. These Fins can be straight, wavy, or other configurations based on the Heat Exchanger's requirements.

Next, the aluminum metal sheets are carefully selected for their thermal conductivity and durability. The sheets are then fed into the Fin press machine, which operates using hydraulic or mechanical force. The progressive Fin dye is placed on top of the metal sheet, and the machine applies pressure to stamp the Fins into the sheet. This process is repeated for multiple sheets, allowing for mass production of Fin sheets.

After the Fin pressing, the sheets are subjected to quality control measures to ensure the accurate dimensions and proper formation of the Fins. Any defective sheets are discarded to maintain high-quality standards.

Finally, the fabricated Fin sheets are assembled into the complete Heat Exchanger unit, which typically consists of alternating layers of Finned and unFinned sheets to maximize Heat transfer efficiency. The assembly process may include welding, brazing, or other methods to secure the components together.

2. Hair Tube Bending

In the second step of the process, the utilization of a CNC controlled automatic hairpin bender is employed to transform Copper Tubes into the desired size and shape of large hairpins. This

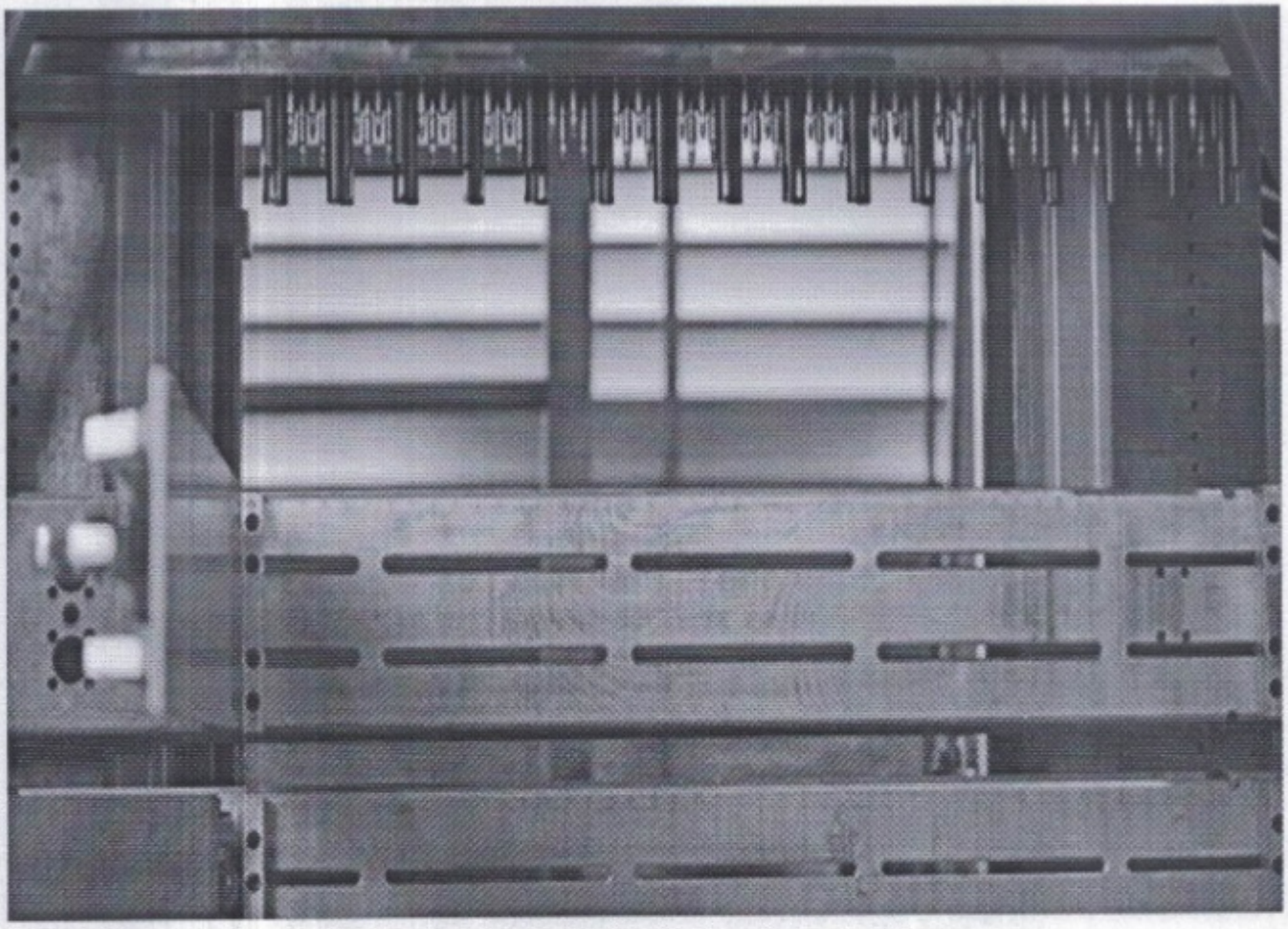
specialized device combines precision engineering with computer numerical control (CNC) technology to achieve accurate and consistent bending results.

The process begins with loading the Copper Tubes into the bender, where they are securely held in place to prevent any shifting during the bending procedure. The operator inputs the required specifications, such as hairpin length, angle, and curvature, into the computer system controlling the bender.

Once the setup is complete, the bender's computerized system takes charge, orchestrating the bending process with remarkable precision. The Copper Tubes are gradually fed into the machine, and the bending head smoothly maneuvers along predetermined paths based on the input data.

The NC controlled automatic hairpin bender skillfully manipulates the Copper Tubes, executing uniform and flawless bends, resulting in hairpins that perfectly match the desired size and shape. The automated nature of the machine ensures rapid production rates while upholding consistency and quality in each hairpin produced, making it an indispensable tool in the manufacturing of various Heat Exchangers, Refrigeration coils, and other applications that rely on hairpin-shaped Copper Tubes.

3. Expander



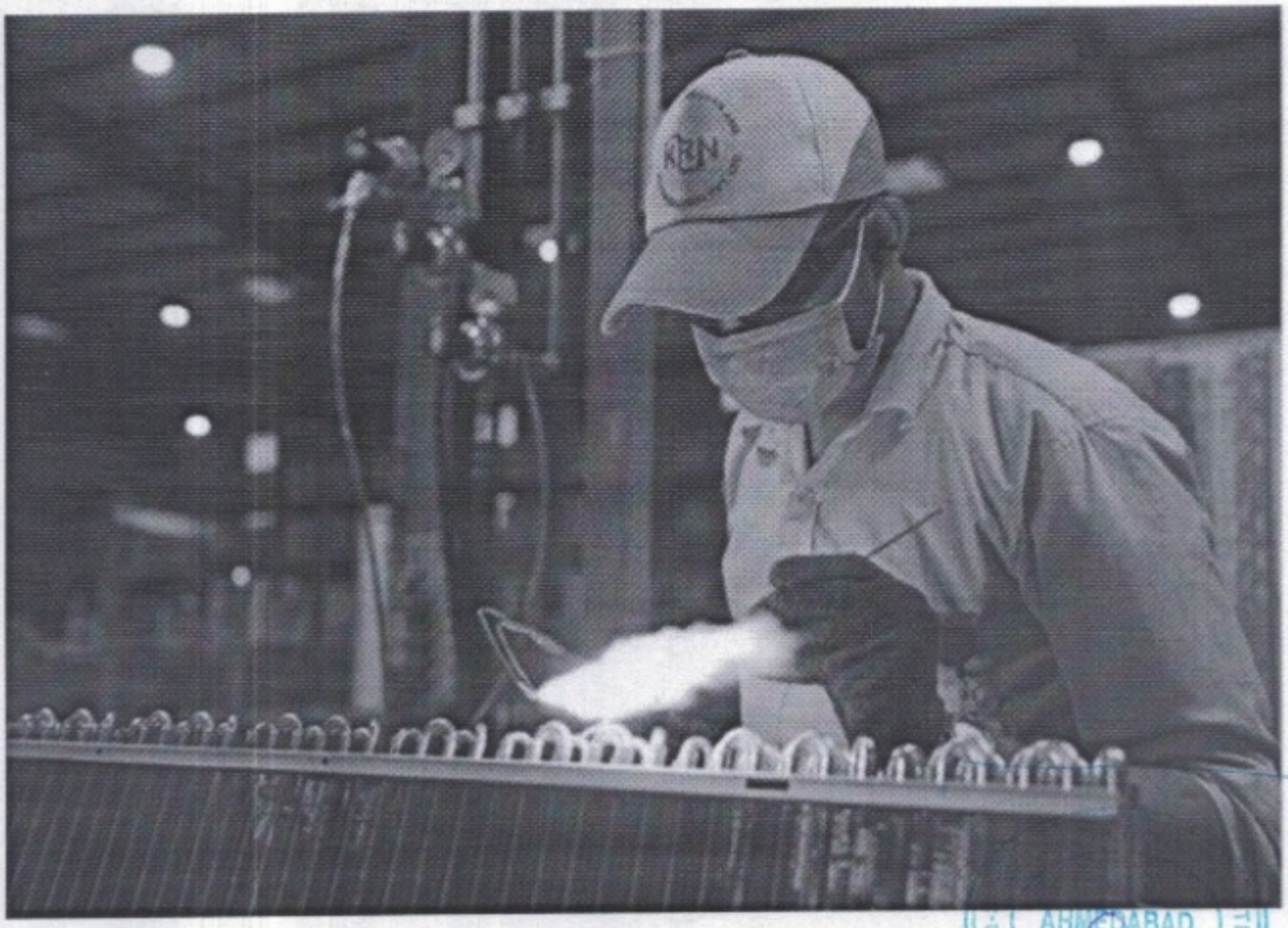
In the third phase of the process, the assembly of Fin sheets and Copper Tubes is achieved with the help of vertical and horizontal expanders. The Fin sheet, typically made of a durable and Heat-conductive material, contains a series of holes pre-drilled in specific patterns to accommodate the Copper Tubes. These Tubes, also known for their excellent thermal conductivity, play a crucial role in enhancing the overall efficiency of the system.

To begin the assembly, the Copper Tubes are inserted meticulously through the corresponding holes in the Fin sheet. The vertical expander is then employed to firmly secure the Copper Tubes in their designated positions. This expander exerts force in a vertical direction, tightly gripping the Tubes and preventing any unwanted movement or misalignment.

After the vertical expansion is complete, the assembly undergoes the horizontal expansion process. This involves applying lateral force to the assembly, further enhancing the bond between the Fin sheet and the Copper Tubes. The horizontal expander ensures a robust connection, creating a durable and thermally efficient unit.

By combining both Fin sheets and Copper Tubes with the aid of vertical and horizontal expanders, the Heat transfer capability of the system is significantly improved. This assembly process is vital in various applications like Heat Exchangers, air conditioning systems, and radiators, where efficient thermal management is crucial for optimal performance.

4. Brazing



In the design of a Heat Exchanger, the U-bend, Header, and Distributor play crucial roles in ensuring efficient refrigerant flow and Heat transfer. The Copper Tube, serving as the main conduit for the refrigerant, has openings at its ends where these components are mounted.

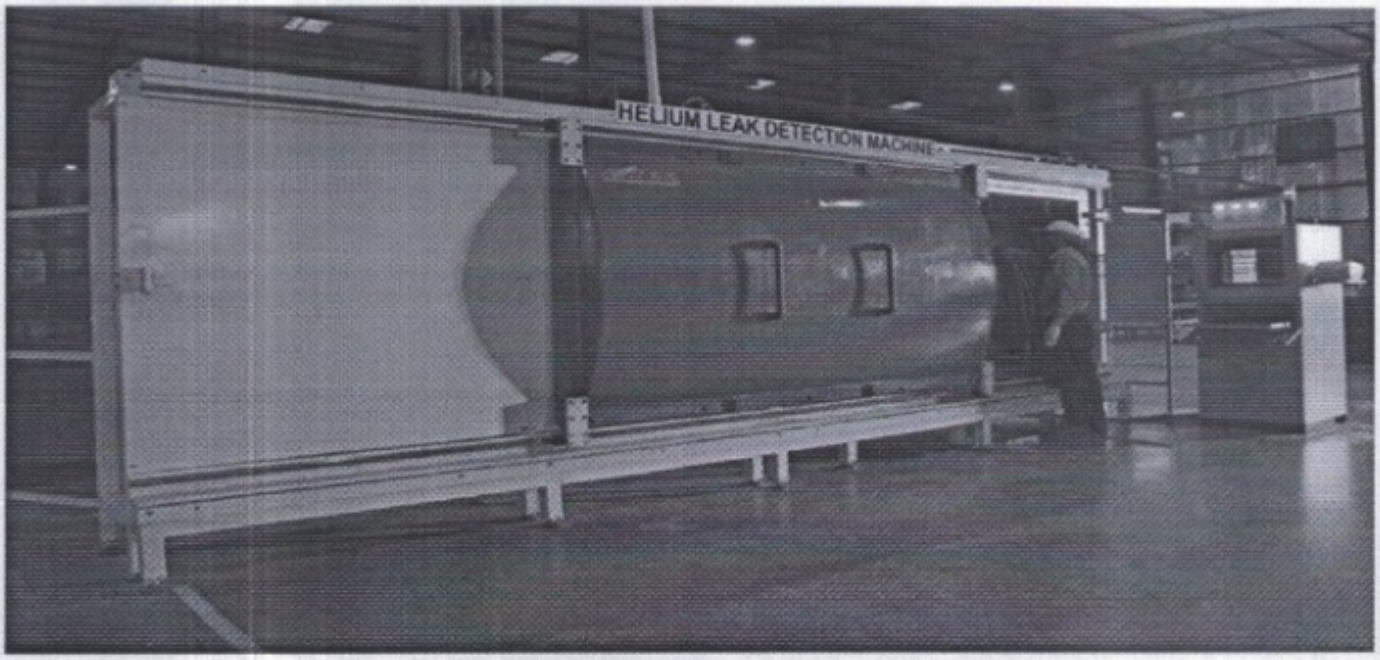
The U-bend serves as a significant turning point in the refrigerant's path, allowing it to reverse direction smoothly without any abrupt changes that could disrupt the flow. This ensures a continuous and uniform distribution of the refrigerant throughout the Heat Exchanger.

Connected to the U-bend, the Header acts as a manifold, collecting and distributing the refrigerant evenly to the various channels or Tubes within the Heat Exchanger. By maintaining equal flow distribution, it enables all parts of the Heat Exchanger to effectively participate in Heat exchange, maximizing its overall efficiency.

The Distributor further enhances this process by controlling the flow rate and directing the refrigerant to the appropriate channels or passages. It ensures that each part of the Heat Exchanger receives an adequate amount of refrigerant, preventing hotspots and ensuring optimal Heat transfer across the entire system.

In conclusion, the U-bend, Header, and Distributor are integral components that facilitate smooth and efficient refrigerant flow, optimizing the Heat Exchanger's performance and contributing to effective Heat transfer in various cooling and heating applications.

5. Leak Testing



The initial phase of ensuring the quality of Heat Exchangers involves two vital tests: the Helium Leak Test and the Water Leak Test. Firstly, the Helium Leak Test is conducted, where high-pressure helium gas is passed through the Heat Exchanger in a specialized chamber. This process allows the detection of any potential leaks in the Heat Exchanger, as the escaping helium gas can be traced and identified.

Next, the Water Leak Test is performed concurrently with the Helium Leak Test. Here, high-pressure dry air is pumped through the Heat Exchanger while it is submerged in water. Should any leaks be present in the Heat Exchanger, the air escaping through them causes bubbles to surface in the water, providing a visual indication of the leak's location and severity.

Both these tests are crucial for ensuring the integrity and efficiency of the Heat Exchanger. The Helium Leak Test is highly sensitive and precise in detecting even minute leaks, while the Water Leak Test complements it by offering a simple yet effective means of spotting leaks and verifying the results. By combining these two tests, manufacturers can identify and rectify any issues early in the production process, ensuring that only top-quality Heat Exchangers reach the market.

6. Coil Bending

Heat Exchangers are crucial components in various industries, designed to efficiently transfer Heat between two fluids. To optimize their functionality, engineers bend these Exchangers into specific shapes suited to their application. By customizing the form, Heat Exchangers can occupy minimal space while maximizing surface area, ensuring optimum Heat transfer.

The increased surface area results in improved Heat transfer rates, enhancing the overall performance of the product. This efficiency is particularly critical in applications where space is limited, and Heat exchange is a vital part of the process, such as in Refrigeration systems, HVAC units, and power plants.

Moreover, the bent shapes allow for a more compact design, making them easier to integrate into complex systems. Furthermore, by passing rigorous leak tests, these Heat Exchangers guarantee the safety and reliability of the entire system, preventing any potential mishaps that could arise from fluid leaks.

In conclusion, the strategic bending of Heat Exchangers serves as a pivotal technique to optimize space utilization, enhance surface area, and elevate the performance and safety of the Final product.

7. Dry Owen and flushing

In a Heat Exchanger, metal Tubes are utilized to facilitate the efficient transfer of Heat from one fluid to another. However, the presence of moisture, lubricating oils, and other contaminants in the Tubes can lead to corrosion and impose restrictions on the passage of refrigerant flowing through the capillary. To combat this, a crucial step in the manufacturing process involves passing the Heat Exchanger through a dry oven.

The dry oven serves as a decontamination chamber, where the Heat Exchanger is subjected to controlled temperatures to remove any moisture and contaminants present on the metal surfaces. This drying process ensures that the Tubes are free from any unwanted substances that could promote corrosion or hinder the smooth flow of refrigerant. By eliminating moisture and contaminants, the Heat Exchanger's lifespan is prolonged, and its performance is optimized, leading to enhanced overall system efficiency.

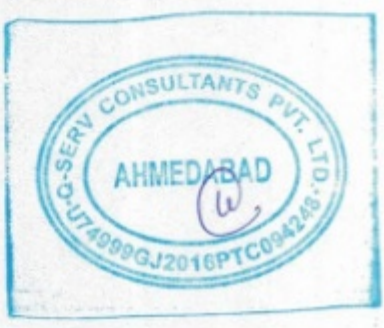
Overall, the dry oven treatment is a preventive measure that significantly contributes to the reliability and longevity of the Heat Exchanger, thereby ensuring the continued effectiveness of the Refrigeration system it is a part of.

8. Coating

To enhance the longevity and corrosion resistance of Heat Exchangers and their components, various types of coatings, such as nano-coatings and powder coatings, are applied to the surfaces of Copper Tubes, brazing joints, and Fin sheets.

Nano-coatings consist of nanoscale particles that form a thin protective layer on the metal surfaces. These coatings offer superior corrosion resistance due to their ability to fill in micro-level imperfections and create a barrier against moisture and contaminants. Additionally, their small particle size ensures even coverage and adherence to the surface, providing long-lasting protection.

Powder coatings, on the other hand, involve electrostatically applying dry powder to the metal surfaces and then curing them under Heat. This process results in a durable and uniform coating that shields the components from environmental factors, such as humidity, chemicals, and UV exposure, preventing corrosion and extending their lifespan.



By applying these advanced coatings to Heat Exchangers and their components, manufacturers ensure that the system operates efficiently over an extended period, reducing maintenance costs and enhancing overall performance. The protective barrier provided by these coatings ensures that the Heat Exchanger can withstand harsh conditions and maintain its optimal functionality throughout its service life.

9. Final Inspection and Packaging

After the thorough application of nano-coatings or powder coatings and ensuring the components' corrosion resistance, the Heat Exchangers undergo a critical step to maintain their internal dryness and verify leak-proof integrity. Positive pressure of nitrogen charge is infused into the Heat Exchangers.

By introducing a controlled flow of nitrogen, any remaining moisture or contaminants are purged from the interior of the Heat Exchanger, ensuring that it remains dry throughout its transportation and usage. This step is crucial as even small traces of moisture can lead to corrosion and compromise the performance of the Heat Exchanger.

Furthermore, pressurizing the Heat Exchangers with nitrogen allows for leak testing. If there are any undetected leaks in the brazing joints or other areas, the pressurized nitrogen will escape, alerting manufacturers to any potential defects. This process provides the ultimate assurance that the Heat Exchanger is free from leaks and fully functional.

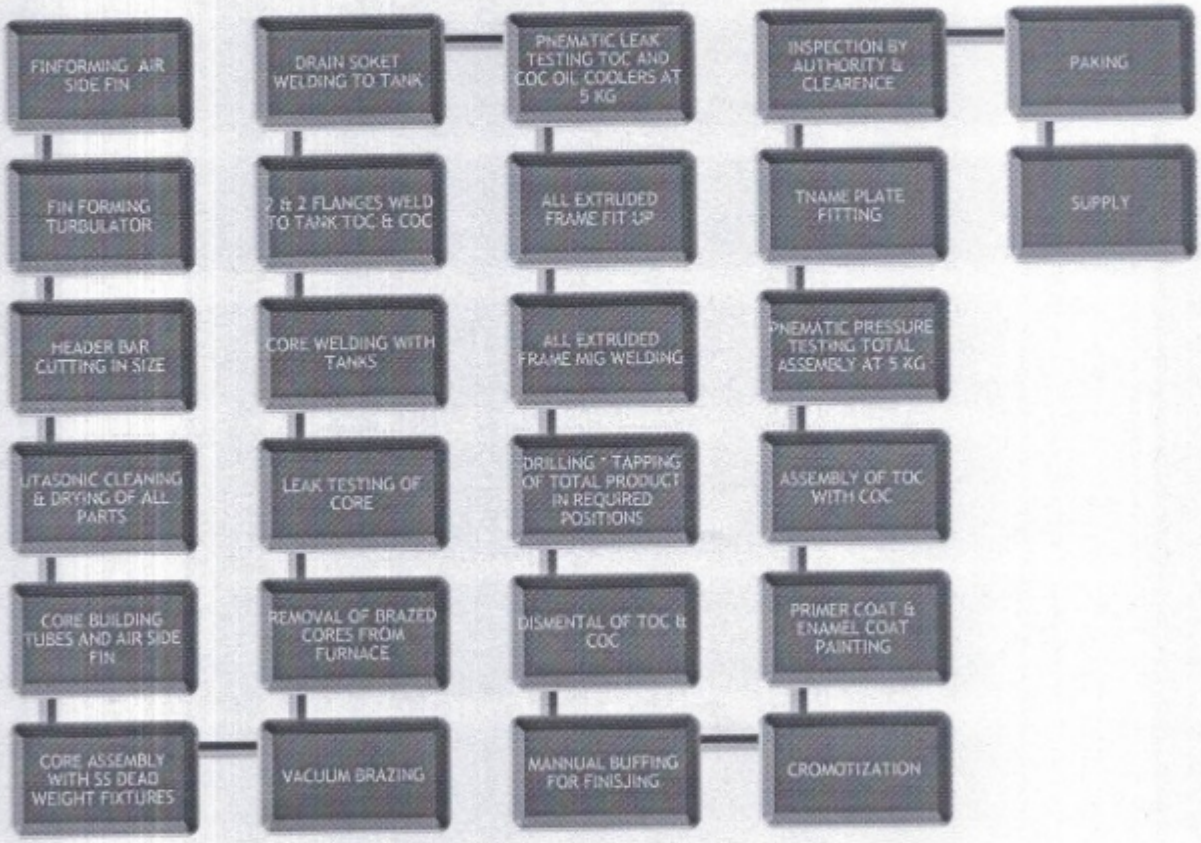
Finally, the Exchangers are carefully packed in shipping boxes to protect them from external damage during transportation. Once properly packaged, the Heat Exchangers are dispatched to consumers, ensuring that they arrive in excellent condition and ready to deliver efficient Heat transfer and optimal performance in their designated applications.

Comment:

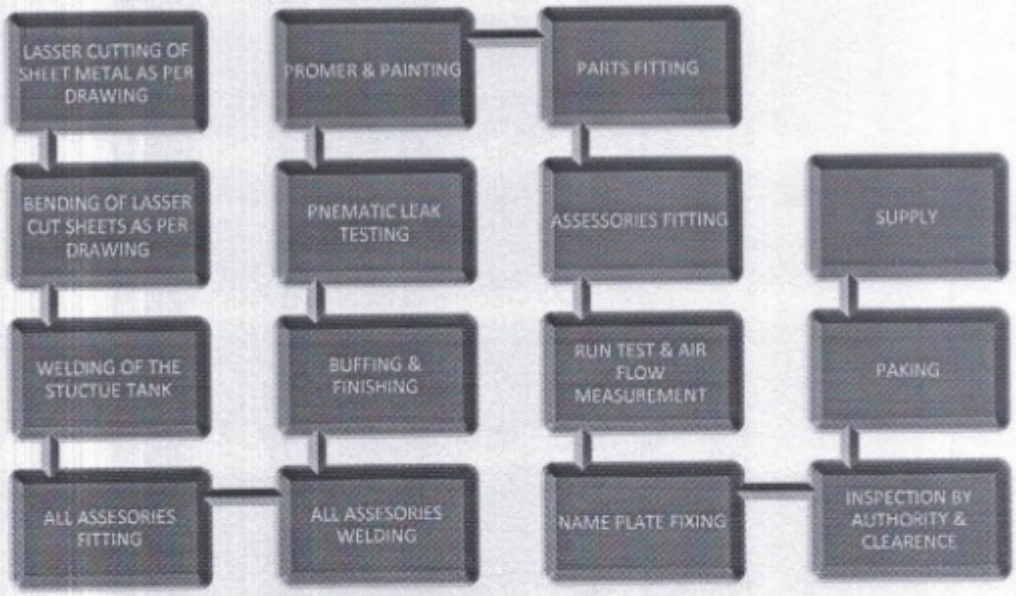
- ***Manufacturing Process Document, which has been provided by the company's official, has been reviewed and relied upon by Q-serv.***

(B) Proposed Product's Manufacturing Process:

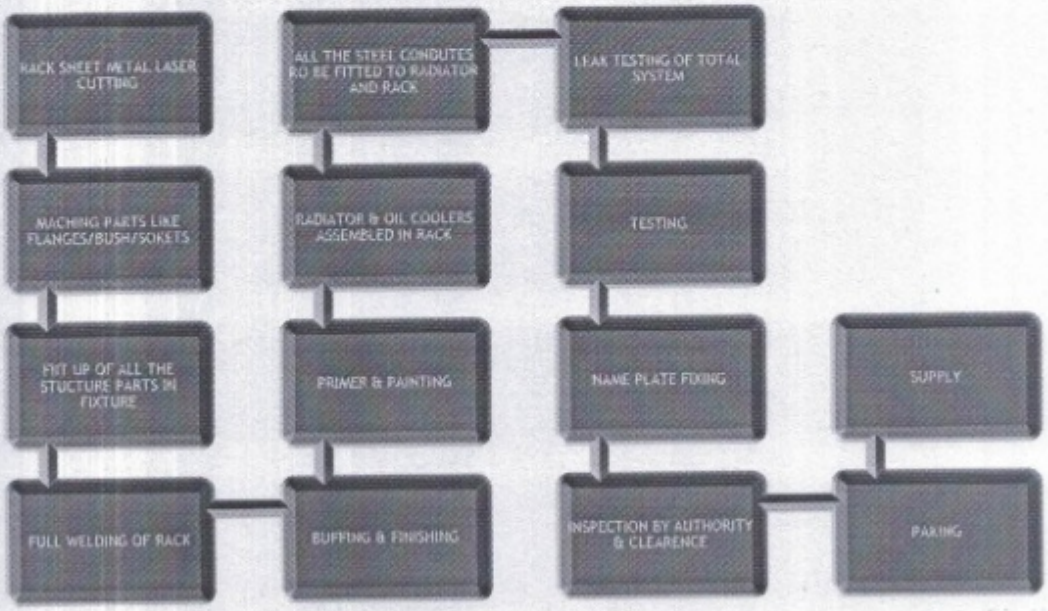
(1) Bar & Plate Oil Cooler



(2) Cooling Unit with Blower & Motor



(3) Rack with Radiator & Oil Cooler



(4) Roll Bond Evaporator

Comment:

- ***Manufacturing Process attached herewith is provided by the company's official to Q-serv and Q-serv has placed reliance onto the same after verification.***

3.7 Marketing Strategy

Marketing is an important function of any organization and this company is no exception to it. Group have deployed a team of efficient marketing professionals for the marketing and promotion of Group's products. Companies' success lies in the strength of their relationship with their clients who have been associated with the company since a long period of time.

Product will be sold directly to the OEMs like Air compressor manufacturers.

Looking into this aspect, Group's marketing strategy is framed in the following way:

- To authorized dealers for sale of Air compressors, Diesel Generators and Heavy Infrastructure equipment's by channel partners.
- To service center of authorized OEM's of Air compressor, Diesel Generator and Heavy equipment's manufacturers.
- To Loco Manufacturers of Indian Railways to Chittranjan Loco works, Banaras Loco works, Patiala Loco works and for spares to all the LOCO sheds. The product is used for Transformer and convertor of Loco oil cooling. Each loco requires two no's and there will be potential of 4500 locos Indian railways manufactures in year and as sparer for loco shed all over Inia. These are sold through the online Tender participation in IRPS system.
- Roll Bond Evaporator to OEM of refrigerators and freezers

Marketing is an important function of any organization, and the company is no exception to it. Group has earned reputation over the years by delivering the quality and safe products. Company's success lies in the strength of Group's relationship with Group's customers who have been associated with Group for a long period. Group's promoter Mr. Santosh Kumar Yadav, along with their team through his vast experience and good connections with the clients and owing to timely delivery of quality and safe products plays an instrumental role in creating and expanding the work platform for Group.

To retain customers, team regularly interacts with them and focuses on gaining an insight into the additional needs of such customers. Group has spread their presence to domestic markets with large sales potential, low infrastructure costs and the availability of professional expertise. Group has experienced and skill management team to motivate the sub-ordinates and staff to step towards their achievements and organizational goals. With their efficient management skills and co-ordination with sub-ordinate, they are always working as a catalyst to encourage the entire team for the development and nourishment of the organization.

Regular interaction is ensured not only to maintain the client base but also to gain insight into the design and specification needs of diverse clientele. With large sales potential, year-round production, high demand of Group's products, streamlined manufacturing process, raw material proximity, some extent of backward integration and availability of professional and technical expertise of promoters, company plan to grow geographically in the foreseeable period.

Looking into this aspect, Company's marketing strategy is framed in the following way:

- focusing on the customers
- making the effort to become a preferred supplier early in the process.
- interacting with customers at multiple levels.
- extending the product offering by adding services.
- Focusing on the development of "adjacent" products, markets, and applications.

3.8 Land Details

1. The **Proposed Project 1** unit is located on F-50, G-51, EPIP, RIICO Industrial Area, Neemrana on an area of 4036 Sqm of Non-Agricultural land.

Address	Area (Sqm)	Leasehold/ Owned	Purpose
F-50, G-51, EPIP, RIICO Industrial Area Neemrana,Rajasthan-301705	4036	Leasehold Land from Rajasthan State Industrial Development & Investment Corporation Limited	Manufacturing facility

2. The **Proposed Project 2** unit is located on SP1-24, Kolila Joga, Neemrana, Rajasthan an area of 71,924 Sqm of Non-Agricultural land.

Address	Area (Sqm)	Leasehold/ Owned	Purpose
SP1-24, Kolila Joga, Neemrana, Rajasthan*	71,924	Leasehold Land from Rajasthan State Industrial Development & Investment Corporation Limited	Manufacturing facility

*For This Land Standard Allotment Letter dated 20th September, 2023 Received by Q-Serv

For the proposed Project-1 Group has already acquired a land from their own contribution at Plot No. F-50, G-51, EPIP, RIICO Industrial Area, Neemrana, Rajasthan dated 24th August,2023 And For the proposed Project -2 at SP1-24, Kolila Joga, Neemrana, Rajasthan it has already secured the E-auction bid and received the offer for allotment letter from RIICO dated 23rd August, 2023, and later Standard Allotment letter dated 20th September, 2023 has been received. Out of total amount of land, 25% is paid on date of allotment and balance 75% (Rs. 2,999.23 Lakhs) of amount will be paid in 11 quarterly

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instalments, each consisting of an equal principal amount of ₹272.66 lakhs, along with an interest rate of 8.5%. Repayments for the same has been commenced from January 18, 2024.

3. The land area break-up is given in the table below:

Sr. No.	Plot No.	Land Area (Sqm)
1	F-50	2,361
2	G-51	1,675
3	SP 1-24	71,924
	Total	75,960

Land related document is attached as Annexure A.

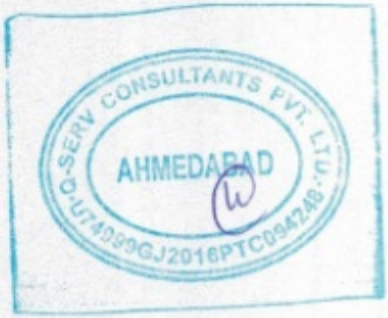
3.9 Technical Consultant

For the Proposed expansion Project -1 at Neemrana, The Company had allotted construction work to **Taj Builders** for construction of structure vis development of Building of Proposed Project. As per Current Scenario as on 15th July, 2024, the Construction of the Building has been completed and production has commenced.

For the Proposed expansion of Project-2, the company has identified **M/s. Rajiv Associates** as their Technical Consultant who is looking after Design, Drawing, Construction, Supervision and other ancillary activity, the company has submitted the quotation from various suppliers, details of the same are disclosed from page no. 59 to 102.

Comment:

- ***The company has signed written contract with the Consultant and Q-Serv has received the same***

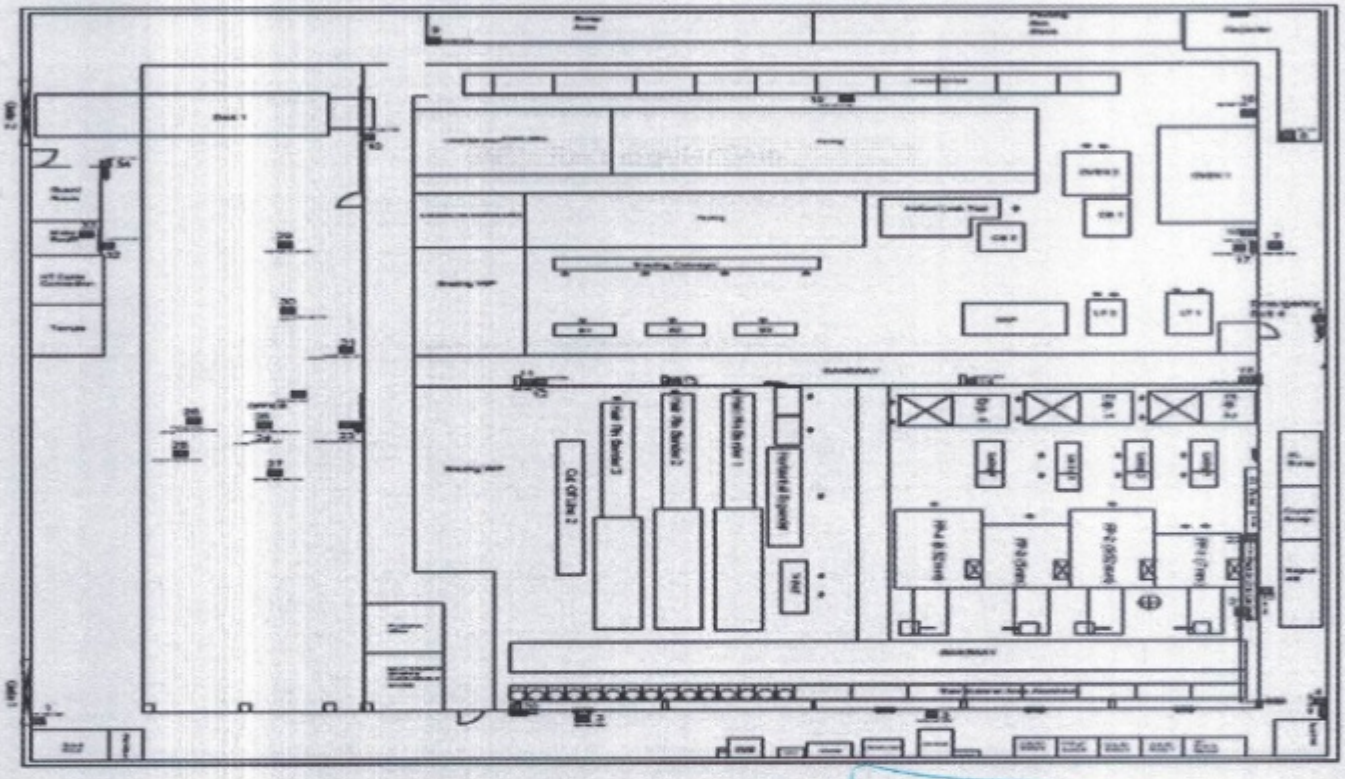


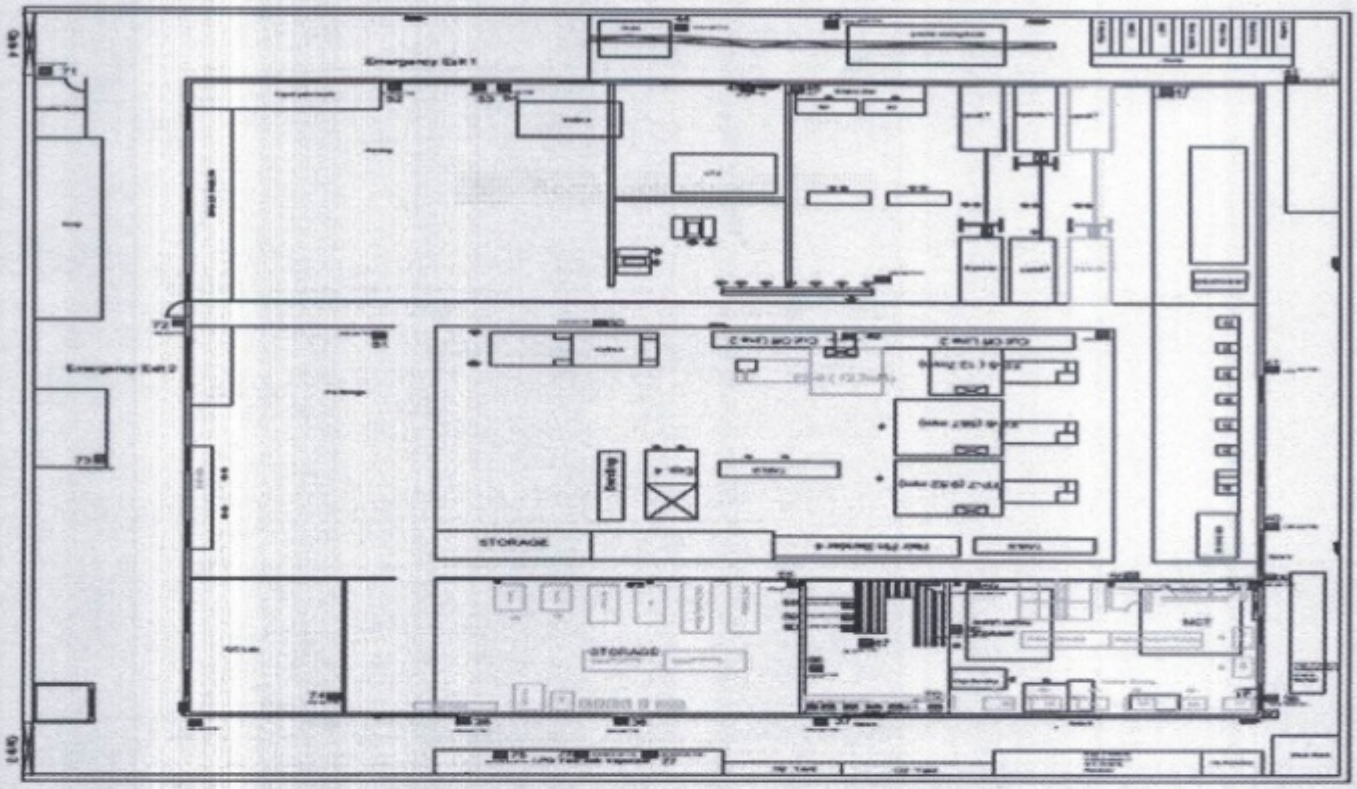
3.10 Building/Factory Plan

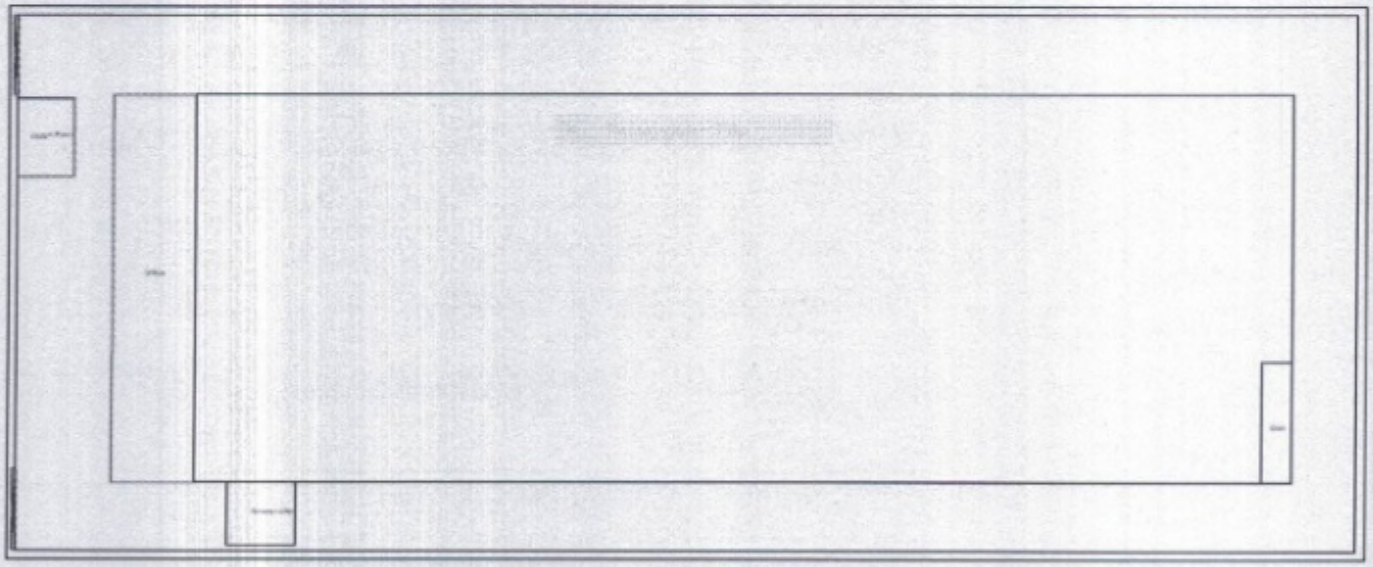
- **Existing Plan**
- **Neemrana (Existing Unit of Holding Company):**

The Layout of the plan is given below:

Layout Plan







*Comment:-

- This layout plan is provided by the company and Q-serv has placed reliance on it.

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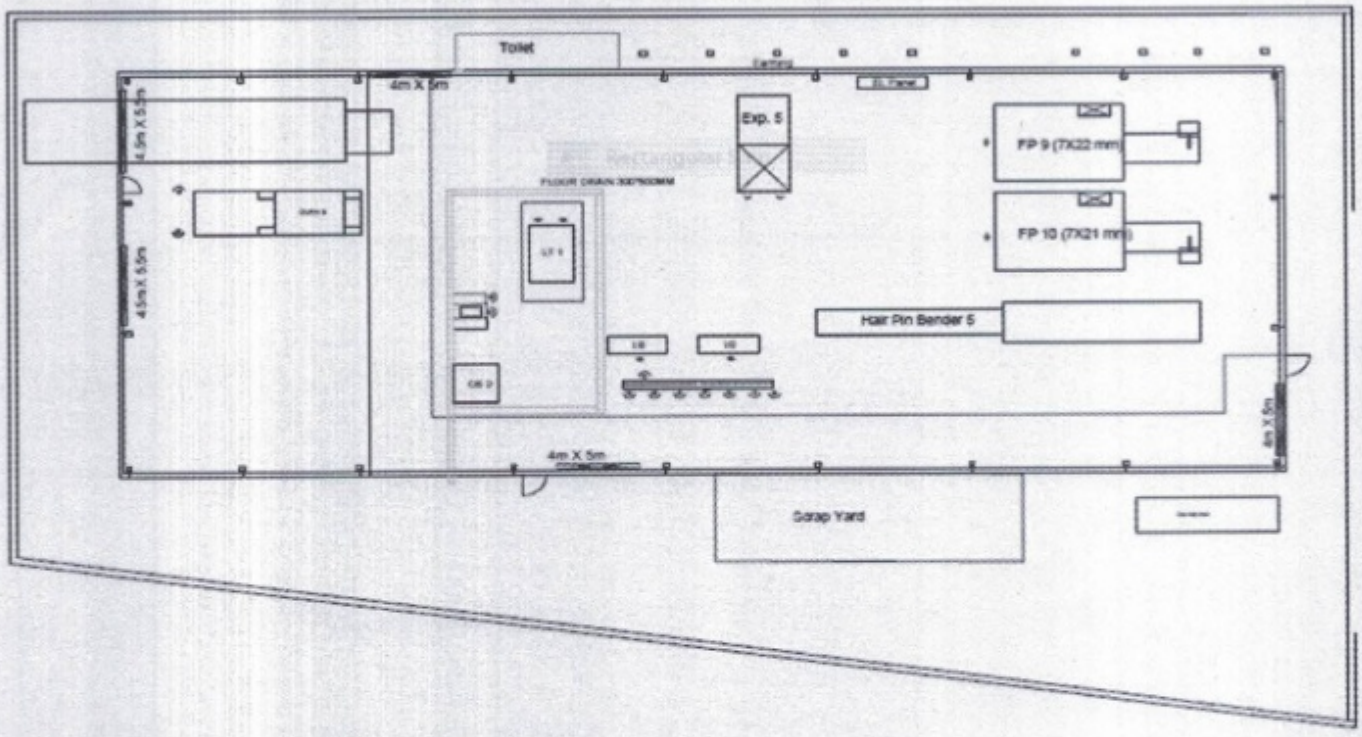
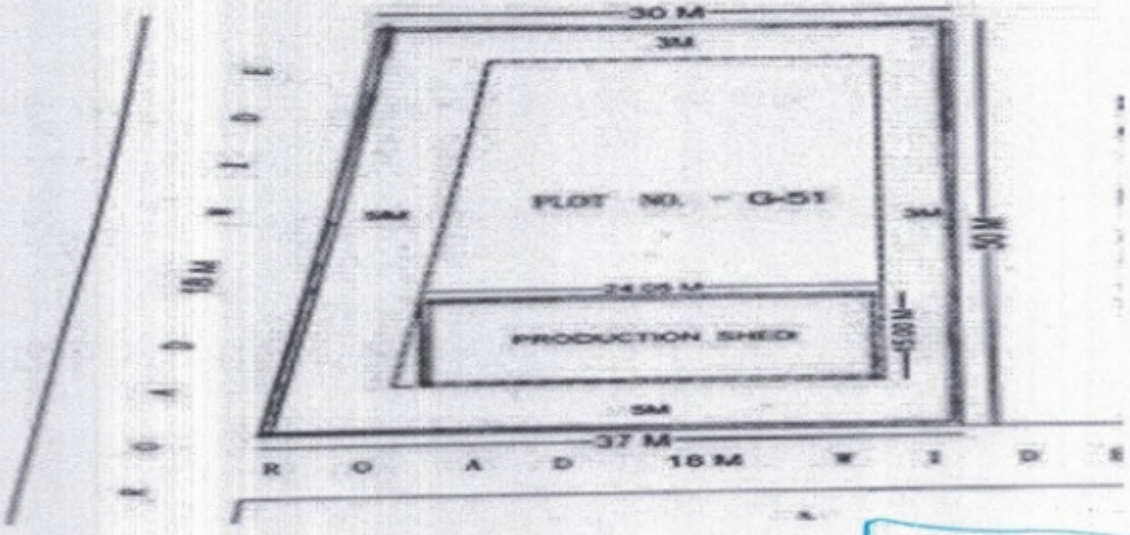
3.11 New Plant

- **Proposed Unit (Project – 1)**

Proposed unit at Neemrana is built on a land area of 4,036 Sqm the Model Layout of the plan is given below:

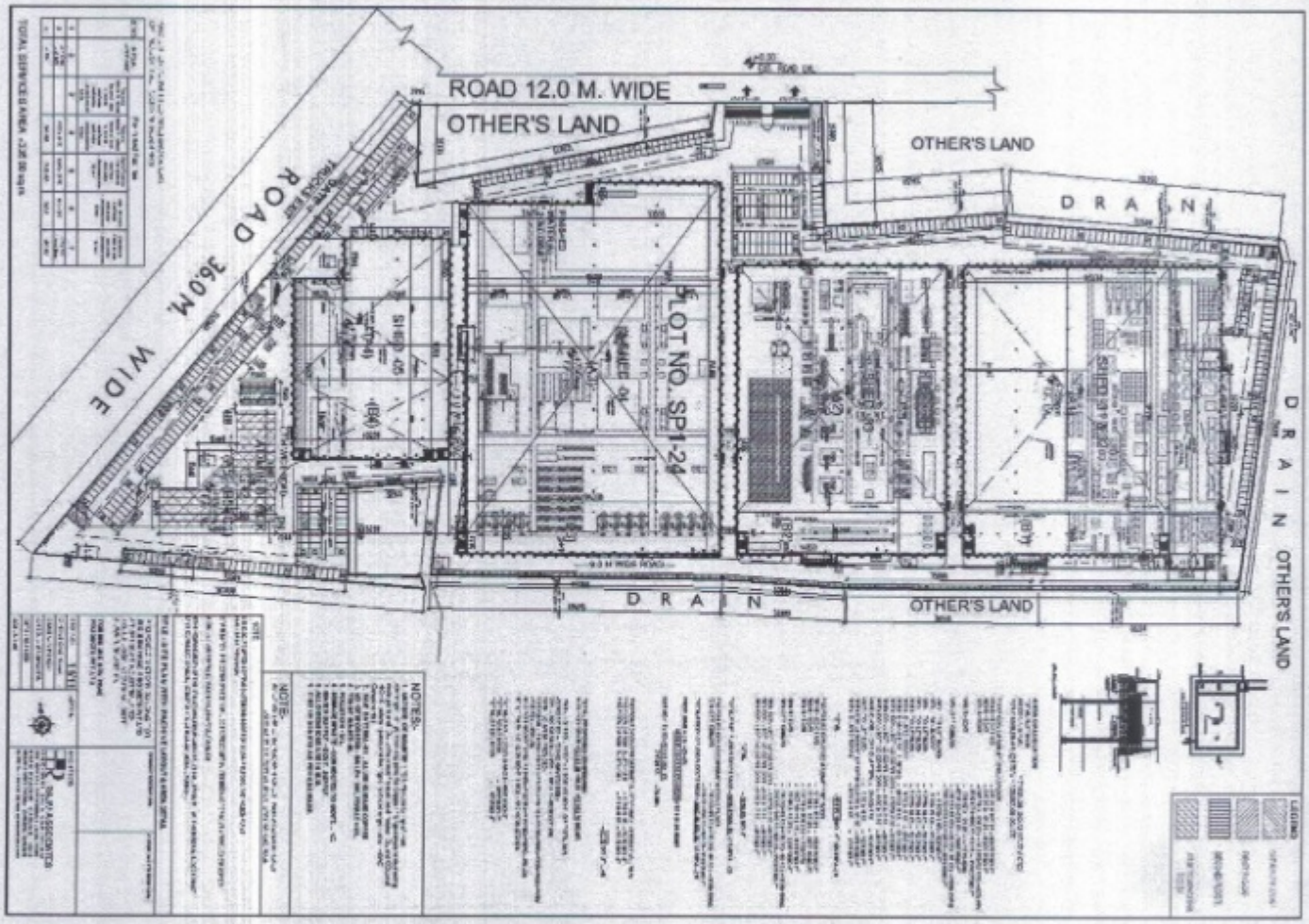




*Layout for Project - 1

- **Proposed Unit (Project – 2)**

Proposed unit at KOLILA JOGA, Neemrana, Rajasthan is built on a land area of 71,924 Sqm The Model Layout of the plan is given below:



***Layout for Project - 2**

Comment:

- ***Q-Serv has received the existing as well Proposed Plan Layout From Company and Drawing of the same is also provided by company as mentioned above.***

3.12 Construction Cost

The construction cost estimated by the consultant is given in the table below:

Phase - 1 **(Amount in Lakhs)**

Sr. No.	Item	Amount (INR)
1	Building Works	137.03
	Total	137.03
	GST @ 18%	24.66
	Total	161.69

Phase - 2 **(Amount in Lakhs)**

Sr. No.	Particulars	Amount (INR)
1	Building, Civil & Other Works*	9,702.50
2	Architect Fees (2.10%)	203.75
3	GST @ 18%	1,783.13
	Total	11,689.38

Brief Details of * above are as under:

1. CIVIL CONSTRUCTION COST OF RCC & PEB BUILDING

(Amount in Lakhs)

Item No.	Description	Unit	Quantity	Rate	Amount
1	EARTH WORK				
	Surface dressing of the ground i/c removing vegetation and in equalities not exceeding 15 cm deep and disposal of rubbish at all lead and lift for all kinds of soil.	sqm	72,000.00	7.00	5.04

Item No.	Description	Unit	Quantity	Rate	Amount
1.02	Earth work in excavation by manual or mechanical means in foundation trenches, rafts, basements, or drains in all sections and widths including open timbering over areas requiring strutting, shoring etc. complete where ever necessary and including required dewatering & dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil, as directed for all leads in all type of soil. (Excluding rock/boulder)	Cum	15,302.00	100.00	**15.30**
	(The rate is for all leads whether done manually, by animal transport or by mechanical transport and nothing extra shall be paid for disposal of surplus earth to any distance)				
	(The rate is also inclusive of dewatering of sub-soil or flooded water from the excavated area by manual or mechanical means, if required as per site conditions and nothing extra shall be paid for managing & pumping of water to any distance)				
1.03	Extra for every additional lift of 1.5 meter or part thereof beyond initial lift of 1.5 m in item no.-1.01 above for all type of soils.	Cum	1,895.00	33.00	**0.63**
1.04	Back Filling with available earth within site in layers not exceeding 20 cm in depth, breaking clods, watering, rolling each layer with 1/2 tonne roller, or wooden or steel rammers & rolling every third & top most layer with power roller of minimum 8 tonne & dressing up in embankments for roads, flood banks, marginal banks & guide banks etc to achieve minimum 95% Proctor density for all leads & lifts.	Cum	8,060.00	75.00	**6.05**

Item No.	Description	Unit	Quantity	Rate	Amount
1.05	Supplying & filling good earth from outside site including royalty, loading in vehicle, carriage for all leads, & unloading, including breaking of clots, compaction & consolidation of deposited layer, ramming, watering, rolling to achieve minimum 95% Proctor density by using road roller of adequate capacity, in layers not exceeding 200 mm depth, all complete as per instructions of the architect. (payment will be made for consolidated quantity of earth only, calculated on the basis of levels)	Cum	44,000.00	229.00	**100.76**
1.06	Providing & injecting chemical emulsion for preconstruction anti- termite treatment & creating a chemical barrier under & around the column pits, walls, trenches, top surface of plinth, filling junctions of wall & floor along the external perimeter of the building, expansion joints, surrounding of pipes conduits etc. complete. (Plinth area of the building at ground floor only shall be measured.)	Sqm	47,201.00	55.00	**25.96**
	Imidacloprid 30.5% SC of approved make.				
	Note- The anti-termite treatment shall be got carried through an approved & registered agency & strictly in accordance with IS 6313 Part-II -1981 (Contractor shall furnish 5 years guarantee against defects)				
1.07	Supplying & filling in plinth with Fine sand under floors including watering, ramming, consolidating & dressing complete.	Cum	200.00	1,500.00	**3.00**

Item No.	Description	Unit	Quantity	Rate	Amount
1.08	Construction of granular sub-base by providing close graded Material conforming to specifications, mixing in a mechanical mix plant at OMC, carriage of mixed material by tippers to work site, for all leads& lifts, spreading in uniform layers of specified thickness with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per specifications and directions of Engineer-in- Charge. With material conforming to Grade-I (size range 75 mm to 0.075 mm) having CBR Value-30	Cum	900.00	1,055.00	**13.99**
	TOTAL EARTH WORK CARRIED OVER TO SUMMARY				**170.73**
2.0	**CONCRETE WORK**				
2.01	Providing and laying cement concrete in foundation, footings and bases for columns, under floor including the cost of cantering and shuttering at all depths & Heights. Note:- Shuttering of PCC is included in Quoted rate				
	P/L cement concrete 1:4:8 (1 cement: 4 coarse sands: 8 graded stone aggregate 20 mm nominal size)	Cum	8,306.00	3,750.00	**311.48**
2.02	Providing and laying Damp proof course, 40mm thick with cement concrete 1:2:4 (1 cement: 2 coarse sands: 4 graded stone aggregate 12.5 nominal size) mixed with waterproofing compound as per manufacture recommendation and applying a coat of residual petroleum bitumen of penetration 80/100 of approved quality using 1.7 kg. per square meter on Damp Proof Course after cleaning the surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil including necessary centering/ shuttering complete.	Sqm	1,467.00	250.00	**3.67**

Item No.	Description	Unit	Quantity	Rate	Amount
2.03	Providing & laying plain cement concrete 1:2:4 (1 cement: 2 coarse sands: 4 graded stone aggregate 20mm nominal size) in window sill, coping, bed block, including the cost of centring & shuttering at all levels & heights.	cum	50.00	5,161.00	**2.58**
2.04	Providing and filling light weight blocks with cement mortar in sunken slabs including light ramming complete in all respect as directed by architect/ engineer incharge.	cum	20.00	5,007.00	**1.00**
2.05	Encasing soil/waste/rain water pipe with plain cement concrete 1:3:6 (1 cement: 3 coarse sands: 6 stone agg. 20 mm nominal size) including centring and shuttering complete.				
a	200mm dia pipe	Mtr	150.00	396.00	**0.59**
b	150mm dia pipe	Mtr	150.00	344.00	**0.52**
c	100mm dia pipe	Mtr	150.00	258.00	**0.39**
d	65 mm dia pipe	Mtr	150.00	196.00	**0.29**
	TOTAL OF CONCRETE WORK CARRIED OVER TO SUMMARY				**320.52**
3.0	**REINFORCED CEMENT CONCRETE**				
	Note: - The design mix shall be got approved from the designated testing agency to be decided by the architect.				

Item No.	Description	Unit	Quantity	Rate	Amount
3.01	Providing and laying in position ready mixed concrete for reinforced cement concrete work, without using fly ash and cement content as per approved design mix, and manufactured in fully automatic batching plant and transported to site of work in transit mixer for all leads, having continuous agitated mixer, manufactured as per mix design of specified grade for reinforced cement concrete work, including pumping of R.M.C from transit mixer to site of laying, excluding the cost of centering, shuttering, finishing and reinforcement, including cost of admixtures in recommended proportions as per IS : 9103 to accelerate / retard setting of concrete, improve workability without impairing strength and durability as per direction of the Engineer - in - charge.				
3.01.1	M-30 Grade (with minimum of 380 kg of cement per cu meter)	Cum	5,793.00	5600.00	**324.41**
3.01.2	M-25 Grade (with minimum of 340 kg of cement per cu meter)	Cum	35.00	5,500.00	**1.93**
3.02	Centering & shuttering including strutting, propping etc. & removal of form at all levels using PLY Formwork for all suspended slabs & beams i/c columns & Brackets for.				
	All Items of Centering & shuttering are to be quoted for using Ply shuttering for all heights as per items below.				
3.02.1	In foundations, footings slab & beam of raft, bases of columns, Plinth beams & mass concrete.	Sqm	17,382.00	438.00	**76.13**
3.02.2	In suspended floors, roofs, landings, shelves, chajjas, balconies, beam, lintel, staircase, etc. for	Sqm	4,838.00	486.00	**23.51**
3.02.3	In columns, pillars, piers brackets, abutments, posts & struts & walls of any thickness & any height etc.	sqm	3,823.00	462.00	**17.66**

Item No.	Description	Unit	Quantity	Rate	Amount
3.03	Reinforcement - Providing, Laying and fixing in position steel reinforcement in all reinforced concrete work, including straightening, cutting, removal of loose rust, shifting from yard to work place, bending, hoisting, laying in position to the shape and profile required at all levels and heights as per drawing and design and/ or as directed, binding with 20-gauge MS annealed wire etc. complete. (Quoted rate also to include providing & fixing the binding wire, pvc cover blocks etc.)				
	Cold twisted bars/ T M T bars. Fe 500	MT	1150.00	66,500.00	**764.75**
3.04	Providing & applying Nito bond epoxy resin concrete bonding agent on old concrete surfaces as per manufacture recommendations.	sqm	200.00	500.00	**1.00**
	TOTAL OF R.C.C. WORK CARRIED OVER TO SUMMARY				**1,209.39**
4.0	**MASONARY WORK**				
4.01	Providing and constructing 230mm thick brick masonry in super structure & Foundation at all heights, depths & leads for any shapes, fins, projections, in shafts using selected quality burnt clay FPS bricks of class designation 75 laid in cement mortar 1:6 (1 cement: 6 coarse sand) mix, joints finished, Hacking to concrete surface, raked to 10mm depth including scaffolding, curing & including provision of starter course as per drawing & specification. (Note: - Complete in all respect as per satisfaction of Engineer-in- Charge).	Cum	3,908.00	5,723.00	**223.64**

Item No.	Description	Unit	Quantity	Rate	Amount
4.02	Providing and constructing half brick masonry with FPS bricks of class designation 75, conforming IS :12894, in foundation plinth or in super structure above plinth in cement mortar 1:4 (1 cement: 4 coarse sand) and joints finished, raked to 10mm depth at all depth & in all floors & heights.	Sqm	2,586.00	800.00	**20.69**
4.03	Extra for providing & placing in position 2 Nos. 6mm dia M.S. Bars at every THIRD COURSE in half brick masonry in superstructure.	Sqm	2,586.00	136.00	**3.52**
4.04	Making tapered surface of brick masonry for steps with F.P.S. bricks of class designation 75 in foundation & plinth with cement mortar 1:6 (1 cement: 6 coarse sand) at all depth & in all floors & heights	Cum	50.00	6,500.00	**3.25**
	TOTAL OF MASONARY WORK CARRIED OVER TO SUMMARY				**251.10**
5.0	**STEEL & ALUMINIUM WORK**				
5.01	Providing, fabricating & fixing powder coated glazed / panelled aluminium doors frames & shutter of approved colour & quality, frame made of standard aluminium box sections of approved make,& shutter made of same gauge (style & rails as per drawing), with 5 mm thick plain / frosted glass & / or 12 mm both side prelaminated board fixed with stainless steel screws, metal beading including the necessary hardware fittings like locks, hinges, tower bolts, handles, buffer etc complete with EPDM rubber beading gaskets & linings etc to make the frames & shutter water tight & air tight complete in all respects as per Architects design & drawing.				
	14 swg section of approved quality	Sqm	1,000.00	4,111.00	**41.11**

Item No.	Description	Unit	Quantity	Rate	Amount
5.02	Providing and fixing double action hydraulic floor spring of approved brand and manufacture IS:6315 marked, Harwyn make (model 3000) or equivalent for doors including cost of cutting floors as required, embedding in floors and cover plates with brass pivot and single piece M.S. sheet outer box with slide plate etc. complete as per the direction of the architect.				
	With brass cover plate				
	Basic rate of Floor Spring with cover plate Rs. 1500.00.	Nos	100.00	1,956.00	**1.96**
5.03	Providing & Fixing IS:3564 marked aluminium extruded section body tubular type universal hydraulic door closer with double speed adjustment with necessary accessories & screws etc. complete as per the direction of the Architect.				
	(Basic rate of door closer Rs. 750/- for at site)	Nos	100.00	1,213.00	**1.21**
5.04	Providing and fixing powder coated (Minimum thickness of powder coating 50 micron) glazed / aluminium Window, having fixed frames of box section of 2.5"x1.5" of 16 gauge & Lam- Z section of size 1.5"x 1.75" for openable shutter of approved colour & quality with 5 mm thick plain/ frosted glass fixed with stainless steel screws, aluminium beading and, hardware fittings, , hinges/stray, Tower bolts, handles etc complete with EPDM rubber gaskets and linings etc to make the frames & shutter water tight and air tight by using Silicon complete in all respects as per Architects design and drawing.				
	Standard Lam-Z section for openable and box section for fixed windows of approved quality.				
a	In openable windows.	Sqm	1,000.00	3,926.00	**39.26**
b	in Fixed Windows.	Sqm	2,500.00	3,538.00	**88.45**

Item No.	Description	Unit	Quantity	Rate	Amount
5.05	Providing & fixing 1mm thick M.S. sheet door with frame of 40 x 40 x 6 mm angle iron and 3mm M.S. gusset plate at the junction and corners, all necessary fittings complete including a priming coat of approved steel primer using flats 30 x 6mm for diagonal braces & central cross piece.	Sqm	100.00	3,608.00	**3.61**
5.06	Providing & fixing Factory-made metal door of approved make & design as per manufacturer's specifications without internal filling of fire proof material incl. complete hardware's door handles, mortise lock, Floor spring, Door closer etc. as per instructions of the Architect.	Sqm	100.00	9,600.00	**9.60**
	(Basic Rate F.O.R at site of steel door & frame including installation but excluding GST is Rs 4500/- per Sqm.)				
5.07	Providing and fixing rolling shutters of approved make, made of 80 x 1.25 mm M.S. laths interlocked together through their entire length and jointed together at the end by end locks and mounted on specially designed pipe shaft with brackets, side guides and arrangement for inside and outside locking with push and pull operation complete including 27.5 cm long wire springs grade no. 2 and M.S. top cover 1.25 mm thick for rolling shutters complete with providing and fixing ball bearing and applying priming.	Sqm	1,000.00	3,014.00	**30.14**
5.08	Extra for providing Mechanical device chain and crank operation for operating rolling shutters.	Nos.	40.00	9,188.00	**3.67**
5.09	Extra for providing Motorised device for operating rolling shutter.	Nos.	40.00	32,570.00	**13.03**

Item No.	Description	Unit	Quantity	Rate	Amount
5.10	Providing & fixing factory made 2 Hour fire rated metal door of approved make & design as per manufacturers specifications with internal filling of fire proof material incl. complete hardware's panic bar, door handles, vision panel upto 0.2 sqm, Mortise sash lock etc. as per instructions of the Architect.	sqm	150.00	13,000.00	**19.50**
	(Basic Rate F.O.R at site of 2 hours Fire rated door including installation but excluding GST is Rs 8000/- per Sqm.)				
5.11	Providing & fixing Ventilation Aluminium louvers as per approved design sample & specified in drawing & specification with all joining fixtures as directed by Engineer-in-Charge	sqm	75.00	4,346.00	**3.26**
5.12	Providing & fixing structural glazing in RCC /Brickwork opening with 6 mm thick reflective coloured toughened glass having frame size 100X50mm of approved make suitably fixed & sealed with silicon or equivalent of approved make with powder coated (Minimum thickness of powder coating 50 micron) aluminium section of required size & colour (14 gauge) including making opening for louvers and openable panels as per Architectural drawings. including suitably fixing the glazing with building structure & including the cost of necessary hardware fittings, locks, hinges, tower bolts, handles beading, stainless steel screws etc. complete with first quality EPDM gasket & linings to make the frames & shutter water tight & air tight by using v silicon complete in all respects as per Architectural drawings & design.	sqm	1,200.00	4,158.00	**49.90**
	(Basic rate of reflective coloured glass is Rs. 60/- per Sq. Ft.)				

Item No.	Description	Unit	Quantity	Rate	Amount
5.13	Extra for using Structure Glazing with a U-Value less than 1.00 Btu/hr. ft2.0 F, Solar factor less than 0.29, VLT less than 42%	Sqm	1,200.00	430.00	**5.16**
5.14	Providing and fixing M.S work in grills, gate, staircase, balcony railing/ staircase steps/ trusses, using M.S. flat, square bars, insertion M.S. plate, Chequered plate etc. as per detailed drawings including cutting, drilling, welding, bending, grinding and applying a coat of steel primer and fixing to wall, columns, pillars, ceiling and floor etc. and making good all complete at all floors & heights.	Kg.	40,000.00	102.00	**40.80**
5.15	Extra for using M.S. tube (Medium) square and/or rectangular section in place of M.S. flats, square or circular bar in Item above.	Kg.	40,000.00	3.00	**1.20**
5.16	Providing and fixing stainless steel (Grade 304) railing made of Hollow tubes, channels, plates etc., including welding, grinding, buffing, polishing and making curvature (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing the railing with necessary accessories & stainless steel dash fasteners, stainless steel bolts etc., of required size, on the top of the floor or the side of waist slab with suitable arrangement as per approval of Engineer incharge. (Note: - Complete in all respect as per satisfaction of Engineer-in- Charge).	Kg	5,000.00	435.00	**21.75**

Item No.	Description	Unit	Quantity	Rate	Amount
5.17	Providing & fixing concertina coil fencing with required dia 610 mm (having 15 nos. round per 6 metre length) up to 3 m height of wall with angle iron 'Y' shaped placed 2.4 m or 3.00 m apart & with 9 horizontal R.B.T. stud tied with G.I. staples & G.I. clips to retain horizontal including necessary bolts or G.I. barbed wire tied to angle iron all complete incl. two or more coat of steel primer & synthetic enamel paint & grouting with CC block or fastener as per req. or direction of Engineer-in-charge with reinforced barbed tape (R.B.T.) / Spring core (2.5 mm thick) wire of high tensile strength of 165 kg / sq mm with tape (0.52 mm thick) & weight 43.478 gm / metre (Including cost of MS work painting & grouting with CC block or fastner as per requirement).	Rmt	1,300.00	820.00	**10.66**
	TOTAL OF WOOD, STEEL & ALUMINIUM WORK CARRIED OVER TO SUMMARY				**384.27**
6.0	**FLOORING**				
6.01	Providing and laying water bound macadam sub- base with stone aggregate 90mm to 40 mm size stone, screening of size 12.5mm and binding material including screening, sorting, spreading to template and consolidation with road roller complete.	Cum	13,938.00	1,555.00	**216.73**
6.02	Concrete flooring using M-25 Grade Without Flyash Concrete including laying cement slurry and rounding of edges etc where required.				
a	150 mm thick.	Sqm	69,940.00	641.00	**448.31**
b	100 mm thick.	Sqm	7,255.00	438.00	**31.78**

Item No.	Description	Unit	Quantity	Rate	Amount
6.03	Providing & laying / sprinkling non-metallic heavy duty floor hardener @ 3.5 kg per sqm over the wet concrete including finishing the same as per the direction of the manufacturer's specifications. Contractor has to submit the material for approval before each panel pour as per the prescribed consumption factor. Approved Make; Sika, STP, Fosroc.	kg	2,69,832.00	16.00	**43.17**
6.04	Extra for using Trimix process using Truss system ROT finish having panel width upto 6Mtrs in concrete flooring including power floating with a skim floater all as per standard specification, all complete as directed by architect.	Sqm	77,095.00	108.00	**83.26**
6.05	Cutting of joints of size 5 x 40 mm in Trimix flooring and filling with foam (upto 30 mm depth) & remaining 10 mm depth of the groove with Nito seal 280 including repairing of edges etc complete.	Mtr	6,500.00	101.00	**6.57**
6.06	Making 10 x 100 mm of the Isolation joint by using Armour board or equivalent between the Trimix flooring & Brick work / RCC Columns so as to have a uniform separation gap to separate / isolate the contact between the flooring with the Shed Structure. After the completion of the flooring work 10mm deep armour board shall be racked out & fillet with poly sulphide or Nito seal 280 including repairing of edges, if any all complete as per instructions of the Architect.	Mtr	2,600.00	168.00	**4.37**

Item No.	Description	Unit	Quantity	Rate	Amount
6.07	Providing & mixing polypaspolene fibre mesh/ Synthetic Polyester Triangular Fibre of length 12 mm & effective diameters of 10-40 microns having specific gravity 1.34 to 1.4 in Flooring screeding concrete @ 0.9 kg per cum fibre to control the shrinkage & thermal cracks as per manufacture specs & direction of the Architect	Kg	7,086.00	295.00	**20.90**
6.08	Providing & laying High strength steel fibres of approved make in concrete flooring as per prescribed dosage (15 kg per cu meter of concrete) including proper mixing so as to have homogeneous distribution with no junks / bowls etc. As per instructions of the Architect.				
	Basic rate of Steel Fibre for site = Rs 100 per Kg	Kg	1,18,103.00	89.00	**105.11**
6.09	Providing & applying Densification treatment for enhancing the hardness & abrasion resistance property of concrete to have a High Glossy top finish including cleaning & drying the base surface all complete as per manufacturers recommendations & as directed by the architect.				
	The contractor shall give a Performance guarantee for a period of atleast 10 years in support of the finishing / Shining & Hardness of floor treated under this item.	Sqm	52,490.00	185.00	**97.11**
6.10	Providing & Fixing 250-micron virgin black polythene sheet on sloppy surface of foundation instead of PCC (spreading in two layers) and bottom of Lift area wherever required as per site requirement.	Sqm	52,490.00	40.00	**21.00**

Item No.	Description	Unit	Quantity	Rate	Amount
6.11	18 mm thick cement plaster skirting (upto 30 cm height) with cement mortar 1:3 (1 cement: 3 coarse sand) finished with a floating coat of neat cement including rounding off junctions with floor as required.	Sqm	700.00	340.00	**2.38**
6.12	Providing & laying 18 -20 mm thick pre polished granite slab in required design & patterns of approved colour in flooring, staircase steps or kitchen counter over 20 mm thick base of cement mortar 1:4 (1 cement: 4 coarse sands) jointed with white cement slurry or in skirting over 12 to 15 mm thick back base of cement mortar 1:3 (1 cement :3 coarse sands) jointed with white cement slurry to match the shade of the granite slab including rubbing & polishing the exposed edges of stone complete.				
	Basic rate of granite stone is Rs. 1500/- per Sq. mt. F.O.R. At site	Sqm	1,200.00	2,800.00	**33.60**
6.13	Providing & laying 20 mm to 25 mm thick kota stone slabs of uniform colour & shade (Bluish) in flooring, laid over 20mm thick base of cement mortar 1:4 (1 cement: 4 coarse sand) or in skirting dado & pillars on 12 to 15 mm thick back base of cement mortar 1:3 (1 cement: 3 coarse sands) & jointed with gray cement slurry mixed with pigment to match the shade of the slab including machine cutting, rubbing & polishing complete.	Sqm	200.00	1,215.00	**2.43**
6.14	Extra for providing edge moulding (nosing) including polishing to edge to give high gloss finish etc. complete as per approved design.				
a	In granite	Meter	2,000.00	146.00	**2.92**
b	In Kota stone	Meter	100.00	165.00	**0.17**

Item No.	Description	Unit	Quantity	Rate	Amount
6.15	Providing & fixing 5 mm thick (minimum) glazed tiles in required design & patterns of approved colour, size and shade in skirting, risers of steps and dados over 12mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand) and jointing with grey cement slurry @ 3 kg per square mtr. Including pointing in white cement mixed with pigment of matching shade complete.	Sqm	1,448.00	938.00	**13.58**
	(Basic rate of tile F.O.R. site is Rs. 500/-per sqmt)				
6.16	Providing & laying Vitrified ceramic tile in required design & patterns of approved colour and size and fixing in approved pattern in flooring, laid over 20mm (average) thick base of cement mortar 1:4 (1 cement: 4 coarse sands) including grouting the joints with white cement and matching pigments etc. all complete.	Sqm	9,505.00	1,021.00	**97.05**
	(Basic rate of tile FOR site is Rs. 750/-per sqmt)				
6.17	Providing & laying 8 mm thick (minimum) non-skid coloured ceramic tile in flooring of required design & patterns, laid over 20mm (average) thick base of cement mortar 1:4 (1 cement: 4 coarse sands) jointed with white cement and matching pigments etc. complete the shade of the tile. Colour, size & fixing pattern of tile to be approved by the Architect.	Sqm	750.00	972.00	**7.29**
	(Basic rate of tile FOR site is Rs. 650/-per sq mt)				
6.18	Extra for providing opening of required size & shape for wash basin/sinks in kitchen platform, vanity counter & similar locations in Marble / granite/stone work, including necessary holes for pillar taps etc i/c moulding rubbing &polishing of cut edges etc complete.	Each	30.00	1877.00	**0.56**

Item No.	Description	Unit	Quantity	Rate	Amount
	TOTAL OF FLOORING CARRIED OVER TO SUMMARY				**1,238.29**
7.0	**ROOFING & WATERPROOFING WORK**				
	The water-proofing treatment shall be carried out through approved specialists in the field and under their direct supervision and strictly as per their approved specification.				
	Testing by ponding for required period as per specs is included within the quoted rates.				
7.01	Providing tape Crete treatment to sunken portions in horizontal and 300 mm vertical face of toilets, washing areas etc including surface preparation, applying 2 coats of tape Crete on RCC in traverse directions & final protection plaster 12 mm thick 1:4 (1 cement: 4 Coarse sands) finished with a floating coat of neat cement including Testing by ponding with water atleast for 2 days.	sqm	625.00	592.00	**3.70**
7.02	Extra for providing & filling Fibre mesh of approved size & make in item of tape Crete if required to be provided by the architect.	sqm	625.00	224.00	**1.40**
7.03	**TERRACE BRICK BAT COBA**				
	Providing & laying integral cement based waterproofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc. Consisting of following operations.				
	Applying & grouting a slurry coat of neat cement using 2.75 kg/sqm. of cement admixed with waterproofing compound conforming to IS: 2645 over the RCC slab including cleaning the surface before treatment.				

Item No.	Description	Unit	Quantity	Rate	Amount
	Laying brick bats with mortar using broken bricks / brick bats 25mm to 115mm size with 50% of cement mortar 1:5 (1 cement: 5 coarse sands) admixed with waterproofing compound conforming to IS: 2645 over 20mm thick layer of cement mortar of mix 1:5 (1 cement: 5 coarse sands) admixed with waterproofing compound conforming to IS: 2645 to required slope & treating similarly the adjoining walls upto 300mm height including rounding of junctions of walls / beams & slabs.				
	After two days of proper curing applying a second coat of cement slurry using 2.75 kg/sqm of cement admixed with waterproofing compound conforming to IS: 2645.				
	The whole surface so finished shall be flooded with water for a minimum period of two weeks for curing & for final test.				
	Finishing the surface of Brick Coba with 20mm thick jointless cement mortar of mix 1:4 (1 cement : 4 coarse sands) admixed with proprietary waterproofing compound conforming to IS: 2645 & finally finishing the surface with trowel with neat cement slurry & if required making of 300 x 300mm square 3mm deep.				
	With average thickness of 125mm & minimum thickness at khurra as 50mm.	sqm	1,300.00	725.00	**9.42**
7.04	Extra thickness of Brick Coba per centimetre thickness	sqm	1,300.00	58.00	**0.75**
7.05	Providing Gola 75 x 75mm in cement concrete 1:2:4 (1 cement: 2 coarse sands: 4 stone aggregate 10mm and down gauge) including finishing with cement mortar 1:3 (1 cement: 3 fine sands) as per standard design.	Mtr	320.00	243.00	**0.78**
	(In 75 x 75 mm deep chase).				

Item No.	Description	Unit	Quantity	Rate	Amount
7.06	Making khurras 45 x 45cm with average minimum thickness of 5cm cement concrete 1:2:4 (1 cement: 2 coarse sands: 4 graded stone aggregate of 20mm nominal size) over PVC sheet 1m x 1m x 400 microns, finished with 12mm cement plaster 1:3 (1 cement: 3 coarse sands) & a coat of neat cement, rounding the edges & making & finishing the outlet complete.	Nos.	35.00	360.00	**0.13**
7.07	Providing and fixing 5 mm thick and 150 mm dia cast iron grating in floor or wall including making good the walls and floors on rain water opening or wherever required.	Nos	35.00	530.00	**0.19**
7.08	Supply & Erection of Multiwall Polycarbonate sheet of 6mm thick including vertical / curved surface fixed with polymer coated J or L hooks, bolts and nuts 8mm diameter or with G.I. limpet washers, excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required.	Sqm	200.00	1,800.00	**3.60**
	TOTAL OF WATERPROOFING CARRIED OVER TO SUMMARY				**19.97**
8.0	**FINISHING WORK**				
8.01	Providing & applying 12 to 15 mm internal cement plaster of mix 1:5 (1 cement: 5 sands in the ratio of 1 part coarse sand & 2 parts fine sands) on brick wall complete as per drawing or as directed by Project Manager.	Sqm	15,577.00	297.00	**46.27**

Item No.	Description	Unit	Quantity	Rate	Amount
8.02	Providing and applying 15-18 mm thick External plaster (including additional thickness if required to achieve line and level) in two layers under layer 12 to 15 mm thick cement plaster 1:6 (1 cement : 6 coarse sands) finished with a top layer 6 mm thick cement plaster 1:4 (1 cement : 2 coarse sands & 2 fine sands) including hacking of surfaces, making grooves, jambs, drip course as per tender drawings etc. complete with scaffolding at all locations, height & leads & Including Mixing of approved Water Proofing Compound as per Make Specifications complete as per drawing or as directed by Project Manager.	Sqm	14,833.00	400.00	**59.33**
8.03	Providing and applying 6 to 10 mm thick plaster to Ceiling in cement mortar 1:4 (1 cement: 1 coarse sand & 4 fine sands) finished smooth including cleaning, hacking the surfaces, scaffolding, curing, making grooves, drip course at desired locations etc. complete as per drawings and at all locations, height & leads as directed by Project Manager.	Sqm	3,500.00	282.00	**9.87**
8.04	Extra for neat cement punning over cement plaster (with fine/coarse sand) by using cement @ 2.2 kg. per sqm.	Sqm	3,500.00	60.00	**2.10**
8.05	Providing & applying 15 mm thick cement plaster with 1:4 Cement mortar (1 Cement: 4 Coarse Sands) mixed with waterproofing compound CICO or as approved by the architect including floating coat of neat cement on Tank walls, Basement walls etc.	Sqm	1,812.00	350.00	**6.34**
8.06	Providing & fixing 24 SWG G.I. Chicken wire mesh of size 12 mm fixed with nails / neat cement plaster etc. as directed at the junction of brick & RCC works.	Sqm	1,812.00	80.00	**1.44**

Item No.	Description	Unit	Quantity	Rate	Amount
8.07	Providing and applying three or more coats of white wash on wall and ceiling to give an even shade including primer and preparation of surfaces, along with sand papering wherever required, scaffolding, mixing of indigo blue and DDL etc. along with sand papering wherever required, scaffolding etc. complete in all respect.	Sqm	350.00	80.00	**0.28**
8.08	Finishing wall surface of walls with Birla White putty (Water based) of approved make and finished smooth and even surface to receive painting including cost of scaffolding staging charges with cost of all materials taxes, labour T&P etc complete.				
	On Internal, External walls & Ceiling	Sqm	30,061.00	58.00	**17.44**
8.09	Providing and applying two or more coats with synthetic enamel paint of approved brand & manufacture to give an even shade on wood/steel or cement plastered surface over a primer coat / finish on wooden / steel / plastered surface & coat of ordinary paint of approved brand & manufacture, along with sand papering wherever required, scaffolding etc. complete in all respect.	Sqm	1,000.00	250.00	**2.50**
8.10	Providing & applying Distempering with oil bound washable distemper of approved brand & manufacturer (two or more coats) of required shade on new work over & including priming coat of suitable shade along with sand papering wherever required, scaffolding etc. complete in all respect.	Sqm	15,427.00	100.00	**15.43**

Item No.	Description	Unit	Quantity	Rate	Amount
8.11	Providing and applying "APEX" Weather proof paint (three or more coats) of cement based paint to plastered brick & RCC surfaces of approved brand, colour, manufacturer and shade over a coat of approved primer to give an even shade including the cost of sand papering wherever required, scaffolding etc. complete in all respect as directed by architect /Engineer incharge.	Sqm	14,633.00	180.00	**26.34**
8.12	Providing & applying Plastic emulsion paint of approved brand & manufacture (Two or more coats) of required shade on new work over & including priming coat & necessary putty base to give an even shade along with sand papering wherever required, scaffolding etc. complete in all respect as directed by architect/ Engineer incharge.	Sqm	500.00	225.00	**1.12**
8.13	Providing and applying textured paint (Roller finish or trowel finish) in required numbers of coats (comprising first coat sealer, second coat textured spray and third and fourth finish coat) or as per specifications of approved manufacturer Asian, Joutun, Spectrum, Unitile, Acrocem, as approved by Architect/ Owner on external surface of any position including scaffolding & preparatory work as required to complete. (Base rate including application = Rs.200/- per sqm)	Sqm	500.00	350.00	**1.75**
8.14	Providing & applying Plaster drip course / groove in plastered surface or moulding to R.C.C. projections as per instruction of the Architect.	Meter	1,000.00	120.00	**1.20**
	TOTAL OF FINISHING CARRIED OVER TO SUMMARY				**191.41**

Item No.	Description	Unit	Quantity	Rate	Amount
9.0	**MISCELLANEOUS CIVIL WORKS**				
9.01	Making plinth protection 50mm thick of cement concrete 1:3:6 (1 cement: 3 coarse sands: 6 graded stones aggregate 20mm nominal size) over 75mm bed of dry brick ballast 40mm nominal size well rammed and consolidated and grouted with fine sand including finishing the top smooth in about 1m length panels.	Sqm	1,500.00	500.00	**7.50**
9.02	Extra for providing and mixing waterproofing compound in cement concrete in proportion as specified by manufacturers.	Kg.	500.00	180.00	**0.90**
9.03	Providing & laying Brick edging 7cm wide 11.4cm deep to plinth protection/road with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement: 4 coarse sands) and necessary excavation.	Mtr	2,500.00	65.00	**1.63**
9.04	Demolishing cement concrete of 1:4:8 or leaner mix by manually or by mechanical means including disposal of material for all leads & lifts.	Cum	100.00	1,800.00	**1.80**
9.05	Demolishing RCC work of any mix manually or by mechanical means including cutting of steel bars stacking of same as directed & disposal of unserviceable material for all leads & lifts.	Cum	50.00	3,451.00	**1.72**
9.06	Demolishing brick/stone work or half brick work manually or by mechanical means in cement mortar including stacking of serviceable material & disposal of unserviceable material in all leads & lifts.	cum	600.00	700.00	**4.20**
9.07	Providing & fixing PVC sleeve 6 kg in tanks and fire sleeves in beams				
a	75 mm dia nominal bore of 450mm to 600mm length	Nos	10.00	462.00	**0.04**
b	100mm dia nominal bore of 450mm to 600mm length	Nos	10.00	940.00	**0.09**
c	150mm dia nominal bore of 450mm to 600mm length	Nos	10.00	1383.00	**0.14**

Item No.	Description	Unit	Quantity	Rate	Amount
9.08	Supplying and fixing PVC conduit along with accessories and draw boxes, bends, sockets etc. in slab casting including fixing to steel reinforcement with steel binding wire as required at site.				
a	25 mm dia (Medium duty)	Rmt	50.00	124.00	0.06
b	32 mm dia (Medium duty)	Rmt	50.00	178.00	0.09
9.09	Providing, fixing and grouting of rebars including drilling holes using suitable drill bits and drill machine (HILTI) brushing out the hole, blowing out the dust, providing mixing and filling the holes with HILTI RE 500, inserting the rebar in the hole and allowing the adhesive to cure for recommended time for all floor, height, floor, lead & lift, scaffolding complete for following sizes:				
a	8mm dia bar for 150mm deep	Nos	100.00	218.00	0.22
b	10mm dia bar for 200mm deep	Nos	100.00	380.00	0.38
c	12mm dia bar for 200mm deep	Nos	400.00	495.00	1.98
d	16mm dia bar for 200mm deep	Nos	500.00	755.00	3.78
e	20mm dia bar for 300mm deep	Nos	500.00	1650.00	8.25
f	25mm dia bar for 300mm deep	Nos	250.00	2490.00	6.23
9.10	Providing and fixing 750mm long epoxy coated MS puddle flanges for water tanks as per standard details fabricated from heavy duty pipe Class C and 6mm thick square M.S. Plate of size pipe OD +150 mm as per design. The price include scaffolding, all lead and lifts complete to the satisfaction of the Project Manager.				
a	80mm dia	Nos	20.00	2,475.00	0.49
b	100mm dia	Nos	20.00	4,802.00	0.96
c	150mm dia	Nos	20.00	6,435.00	1.29
d	200mm dia	Nos	20.00	8,415.00	1.68

Item No.	Description	Unit	Quantity	Rate	Amount
9.11	Providing, laying and fixing Water Bar 250mm wide of approved Make in retaining walls at construction joint before casting of concrete as directed by project engineer / architect				
	250 mm wide	Rmt	500.00	346.00	1.73
9.12	Providing & fixing PVC Coted Rungs of size 180X270X25mm @ 150mm c/c in UG Tank complete in all respect as directed by project engineer / architect				
	180X270X25mm	Nos	200.00	340.00	0.68
9.13	Fixing of foundation bolts, made of electro galvanized (silver) high strength bolts Gr. 8.8 steel conforming to I:S 3757 of required size & shape including properly aligning with respect to the the configuration of bolts in other columns including required welding all complete as per requirement & satisfaction of the P.E.B. agency & the instructions of the Architect.				
	The bolts & Template will be supplied by the P E B agency free of cost at site of work. Upto 32mm dia & 1200 long.	Each	2,500.00	210.00	5.25
9.14	Providing & filling GP-2 In foundation bolts as per the instructions of the Architect. (The item to be executed only after having specific written approval of the architect)	Cum	13.00	53,460.00	6.72
9.15	Providing Stone soling 90-45mm grade under foundation of columns & Raft in 150mm thickness including shuttering, +filling of voids with crushed sand / grit ramming, watering completes in all respect as directed by engineer incharge.	Cum	100.00	1,536.00	1.54
9.16	Providing & fixing PUF panel of Avg. density 40 kg/cum for walls & partition having thickness of 50mm of three layers- two side skin (.5mm external & .5mm internal) with Pre-Paint complete in all respect as directed by engineer incharge.	Sqm	1,193.00	1,896.00	22.61

Item No.	Description	Unit	Quantity	Rate	Amount
	TOTAL OF MISCELLANEOUS CIVIL WORKS CARRIED OVER TO SUMMARY				**81.96**
10.0	**ROAD AND PAVEMENT WORK**				
10.01	Preparation and consolidation of subgrade with power road roller of 8 to 12 tonne capacity after excavating earth to an average of 22.5 cm depth, dressing to camber and consolidating with road roller including making good the undulations etc and rerolling the subgrade and disposal of surplus earth.	Sqm	27,208.00	7.00	**1.90**
10.02	Providing and laying water bound macadam sub-base with stone aggregate, screening of size 12.5mm and binding material including screening, sorting, spreading to template and consolidation with road roller complete.				
a	90 mm to 40 mm size stone	Cum	4,281.00	1,555.00	**66.57**
b	63 mm to 22.5 mm size stone	Cum	4,281.00	1,555.00	**66.57**
10.03	Providing & laying M - 20 grade pre-cast concrete kerb stones of size 300x300x150 mm thick including setting in cement mortar 1:4 (1 cement: 4 coarse sands) and pointing of joints with same mortar etc. complete.	Meter	2,600.00	425.00	**11.05**
10.04	Providing & fixing precast factory made M-20 grade saucer drain of Size 300x125x450mm. (Unit Length 300mm.) along pathways over a bed of 20 mm thick cement mortar 1:4 (1 cement: 4 coarse sands) including filling of joints with cement slurry.	Rmt	2,600.00	506.00	**13.16**
10.05	Providing and fixing 18 to 20 mm thick designer tiles in pathways over a bed of 20 mm thick cement mortar 1:4 (1 cement:4 coarse sand) including filling of joints with cement slurry mixed with pigment of matching shade (Basic rate of tiles F.O.R at site Rs. 35/- per Sq. Ft.)	Sqm	100.00	746.00	**0.75**

Item No.	Description	Unit	Quantity	Rate	Amount
10.06	Providing & Fixing 80 mm thick factory made Cement Concrete inter-locking paver block (heavy duty) of strength M-35 of approved design/shape laid in required colour and pattern over & including 50 mm thick compacted bed of coarse sand, filling the joints with coarse sand etc. all complete as per the direction of the architect.	Sqm	2,603.00	690.00	**17.96**
10.07	Extra for laying inter-locking blocks on a bed of 20 mm thick cement mortar 1:4 (1 cement: 4 coarse sands) in place of laying on sand base as stated in item above and joining with gray cement slurry mixed with pigment to match the shade of the block complete.	Sqm	2,603.00	80.00	**2.08**
	TOTAL OF ROAD AND PAVEMENT WORK CARRIED OVER TO SUMMARY				**180.04**
11.0	**SANITARY, WATER SUPPLY & DRAINAGE WORK**				
11.01	Providing and fixing of appropriate colour & make vitreous china pedestal type water closet (European type) with plastic seat and lid with C.P. brass hinges and rubber buffers, flushing cistern/ flush valve, 15 mm dia C.P. brass angle valve with wall flange and necessary C.P. copper connection pipe single syphan including CP angle valvel with nuts complete including cutting and making good the wall and floors wherever required.				
	Wall mounted / Floor mounted				
	Basic cost of all chinaware, CP brass items, connection pipe, syphan and flushing cistern etc. is Rs. 9000/- FOR at site.	Nos	30.00	9,998.00	**3.00**

Item No.	Description	Unit	Quantity	Rate	Amount
11.02	Providing and fixing white vitreous china pedestal type water closet Orissa pattern of size 580 x 440 mm with 100mm sand cast iron P or S trap, 10 litres low level white PVC flushing cistern with internal fittings and brackets, 40mm C.P. brass flush bend, 20mm overflow pipe with specials of standard make and mosquito proof coupling of approved municipal design, 15 mm dia C.P. brass angle valve with wall flange and necessary C.P. copper connection pipe with nuts complete painting wherever required, including cutting and making good the wall and floors wherever required. (Basic cost of all chinaware. flushing cistern, trap, flush pipe etc Rs 5000 at site)	Nos	30.00	6,402.00	**1.92**
11.03	Providing & fixing of approved colour & make vitreous china wash basin of size 550 X 440 mm with R.S. or C.I. Brackets painted white, with following accessories including cutting & making good the walls & floors where required:				
	Accessories :				
	32mm dia C.P. brass waste with C.P. brass chain in & rubber plug				
	32mm dia C.P. brass bottle trap with tail piece & wall flange.				
	A pair of 15mm dia C.P. brass pillar cocks.				
	A pair of 15mm dia C.P. brass angle valves with wall flange & necessary C.P. copper connection pipes, nuts etc.				
	(Basic cost of wash basin, all CP fittings stated above, connection pipe, Brackets etc Rs 7000/- at site)	Nos	30.00	7,413.00	**2.22**

Item No.	Description	Unit	Quantity	Rate	Amount
11.04	Providing & fixing stainless steel kitchen sink with drain board 510 x1040mm bowl depth 200 mm as per i.s. 13983 with c.i. brackets and stainless-steel plug 40 mm, waste pipe. including painting of fittings and brackets, cutting and making good the walls wherever required				
	Basic rate of stainless sink with board and accessories at site to be F.O.R. site is Rs.5000/--	Nos	15.00	6,133.00	**0.92**
11.05	Providing & fixing stainless steel kitchen sink without drain board 510 x1040mm bowl depth 200 mm as per i.s. 13983 with c.i. brackets and stainless-steel plug 40 mm, waste pipe. including painting of fittings and brackets, cutting and making good the walls wherever required				
	Basic rate of stainless sink without drain board and accessories at site to be F.O.R. site is Rs.4000/--	Nos	15.00	5,216.00	**0.78**
11.06	Providing & fixing white vitreous china flat back type lipped front urinal basin of 610 X 390 X 380 mm size of Hindware make Named SENSO Model no. 60007 including an in built automatic sensor arrangement for automized flushing with C.I./ M.S. brackets standard concealed flush arrangement & C.P. Brass spreaders with brass union & GI clamps complete, including necessary fittings & associated electrical works i.e wiring, flow switches etc, including cutting & making good the walls & floors wherever required.				
	One urinal basin as per nomenclature				
	Basic rate of Urinal including sensor & necessary c.p fittings as specified F.O.R. site is Rs.10000/--	Nos	30.00	10,867.00	**3.26**

Item No.	Description	Unit	Quantity	Rate	Amount
11.07	Providing & fixing white vitreous China flat back or wall corner type lipped front urinal basin of 430x260x350mm & 340 x 410 x 265 mm sizes respectively with C.I./ M.S. brackets & C.P. Brass spreaders connected to the angle valve with c.p pipe, brass union, bottle trap & GI clamps complete, including fittings, cutting & making good the walls & floors wherever required.				
	One urinal basin as mentioned above.				
	Basic cost of one Urinal basin, angle valve, bottle trap, & all associated accessories is Rs. 8000/- F.O.R at site.	Nos	30.00	8,761.00	**2.63**
11.08	Providing and fixing 600 x 450 mm bevelled edge mirror of superior glass complete with 6mm thick asbestos sheet or hard board around fixed to wooden cleats with C.P. brass screws and washers with rawl plugs.	Nos	30.00	1651.00	**0.50**
11.09	Providing and fixing of 600 x 20 mm C.P. brass towel rail of approved quality complete with brackets fixed with C.P. brass screws and washers with rawl plugs.	Nos	30.00	1,921.00	**0.58**
11.10	Providing and fixing of C.P. brass towel ring of approved quality complete with brackets fixed with C.P. brass screws and washers with rawl plugs.	Nos	20.00	1685.00	**0.34**
11.11	Providing and fixing of approved make 15 mm dia C.P. brass short body bib cock with wall flange.				
	Basic Rate F.O.R at site Rs 800/-, each.	Nos	30.00	956.00	**0.29**
11.12	Providing & Fixing of approved make 15mm dia C.P. brass long body bib cock with wall flange.	Nos	30.00	1,180.00	**0.35**
	Basic Rate F.O.R at site Rs 1000/-, each.				
11.13	Providing and fixing of the approved make 15 mm dia C.P. brass concealed stop cock with wall flange.	Nos	30.00	1719.00	**0.52**
11.14	Providing and fixing of the approved make 100mm dia C.P. brass shower with wall flange having swivel ball joint and arm.	Nos	10.00	1,651.00	**0.17**

Item No.	Description	Unit	Quantity	Rate	Amount
11.15	Providing & Fixing 15 mm dia C.P. Brass angle valve with wall flange & necessary nut Etc.	Nos	10.00	593.00	0.06
	Basic Rate F.O.R at site Rs 400/-, each.				
11.16	Providing & Fixing 15 mm dia Chrome. Plated. Brass sensor based auto timer tap with aerator having dual operation (electrical + battery) with all necessary fittings etc.	Nos	10.00	13,800.00	1.38
	Basic Rate F.O.R at site Rs 12000/-, each.				
11.17	Providing and fixing 6Kg PVC SOIL, WASTE AND VENT pipes of approved make including fittings and specials, conforming to relevant Indian Standards including bends, foot rest bends, tees, junctions (with and without doors) cowls, offsets, clamps, stays etc. jointing with solvent cements, chase cutting and making good the walls, floors etc. excavation and backfilling in all kinds of soil, embedding the pipes laid under floor/ground/building in 1:3:6 cement concrete (1 cement : 3 coarse sands : 6 graded stones aggregate 20mm nominal size) 50mm all around, including cost of scaffolding, complete in all respects.				
a	200 mm dia	Mtr	500.00	2,191.00	10.96
b	165 mm dia	Mtr	1,000.00	1146.00	11.46
d	110 mm dia	Mtr	500.00	708.00	3.54
f	65 mm dia	Mtr	500.00	299.00	1.50
11.18	Providing and fixing of PVC FLOOR TRAPS, self-cleaning type having 50mm deep water seal and conforming to IS with 150mm dia and not less than 16 SWG thick stainless-steel grating, with or without vent arm, including boxing the floor trap with 1:2:4 (1 cement: 2 coarse sands: 4 graded stone aggregate 20mm nominal size)				
	110mm inlet and 90mm outlet.	Nos	50.00	472.00	0.24

Item No.	Description	Unit	Quantity	Rate	Amount
11.19	Providing and fixing PVC FLOOR TRAP EXTENSION PIECE made out of 100mm dia PVC pipe of required length with one or multiple side inlets suitable for 32, 40 and 50mm side connections including the cost of jointing the PVC pipe with floor trap by `M-seal'.	Nos	50.00	809.00	**0.40**
11.20	Providing and fixing in position stainless steel jali of 16 SWG thickness and of size as required at site.	Nos	50.00	809.00	**0.40**
11.21	Providing and fixing in position the medium class G.I. Pipes with all fittings, specials and clamps effecting proper connections, hole & chase cutting in walls and floors and making good, including painting with two coats of anticorrosive paint on buried and concealed pipe work and with two coats of enamel paint of approved shade and quality over a coat of primer on exposed pipe work. (Internal work) complete.				
a	50 mm dia	Mtr	100.00	590.00	**0.59**
b	65 mm dia	Mtr	100.00	704.00	**0.70**
c	80mm dia	Mtr	100.00	884.00	**0.88**
d	110 mm dia	Mtr	100.00	1276.00	**1.28**
e	165mm dia	Mtr	300.00	1,991.00	**5.97**
f	200 mm dia	Mtr	200.00	2,545.00	**5.09**
11.22	Providing and fixing in position the medium class C-PVC Pipes with all fittings, specials and clamps effecting proper connections, hole & chase cutting in walls and floors and making good all complete.				
a	PN-16 Pipe, 16mm OD	Mtr	500.00	112.00	**0.56**
b	PN-16 Pipe, 20mm OD	Mtr	800.00	144.00	**1.15**
c	PN-16 Pipe, 25mm OD	Mtr	1,000.00	187.00	**1.87**
d	PN-16 Pipe, 32mm OD	Mtr	2,000.00	306.00	**6.12**
e	PN-16 Pipe, 40mm OD	Mtr	500.00	418.00	**2.09**
f	PN-16 Pipe, 50mm OD	Mtr	500.00	686.00	**3.43**
11.23	Providing and fixing gunmetal gate valve with C.I. Wheel, Class I conforming to IS:778:1984				

Item No.	Description	Unit	Quantity	Rate	Amount
a	15 mm dia	Nos	40.00	873.00	**0.35**
b	20 mm dia	Nos	40.00	1310.00	**0.52**
c	25 mm dia	Nos	40.00	1872.00	**0.75**
d	32 mm dia	Nos	40.00	2620.00	**1.05**
e	40 mm dia	Nos	40.00	3731.00	**1.49**
f	50 mm dia	Nos	40.00	3525.00	**1.41**
g	65 mm dia	Nos	40.00	5085.00	**2.03**
h	80 mm dia	Nos	40.00	13726.00	**5.49**
j	110 mm dia	Nos	40.00	24020.00	**9.61**
k	150 mm dia	Nos	40.00	83913.00	**33.57**
11.24	Providing and fixing C-PVC gate valve with Heavy duty plastic handle, Class I				
a	15 mm dia	Nos	50.00	437.00	**0.22**
b	20 mm dia	Nos	50.00	779.00	**0.39**
c	25 mm dia	Nos	50.00	1123.00	**0.56**
d	32 mm dia	Nos	50.00	1341.00	**0.68**
e	40 mm dia	Nos	50.00	1,622.00	**0.81**
f	50 mm dia	Nos	50.00	2302.00	**1.15**
g	65 mm dia	Nos	50.00	2496.00	**1.25**
11.25	Providing and placing on terrace (at all floor level) Triple layer polyethylene water storage tank of approved brand and manufacturer with cover and suitable locking arrangement & making necessary holes for pipes but without fittings & the base support for tank.	Ltr	1,50,000.00	9.00	**13.50**

Item No.	Description	Unit	Quantity	Rate	Amount
11.26	Providing, laying, jointing and testing of DWC HDPE class SN8 structured wall polyethylene piping systems (Pipe with online / Offline coupler and elastomeric, sealing ring) with non-smooth external annular corrugated and smooth internal surfaces (Double wall) for non-Pressure underground sewerage & drainage application as per EN:13476-3/15 16098 (Part 2) : 2013 including providing and laying 150mm thick cement concrete 1:5:10 mix (1 cement : 5 coarse sand : 10 graded stone aggregate 40mm nominal size) under and around covering with necessary excavation with all lifts and in/or under water and mud, bailing out and/or pumping out water, refilling trench in 150mm layer consolidated and disposal of all surplus soil to all leads , all fittings like coupler (oiling / offline) attached with one end of pipes sliding over the elastomeric selling rubber ring placed on the specified valley of the corrugation at the spigot etc. as per direction of engineer-in-charge.				
a	150 mm dia	Mtr	500.00	564.00	**2.82**
b	200 mm dia	Mtr	500.00	809.00	**4.05**
c	250 mm dia	Mtr	1,000.00	1500.00	**15.00**
11.27	Providing, laying and jointing RCC pipe NP2 class with collars jointed with stiff mixture of cement mortar 1:2 (1 cement : 2 fine sand) including testing of joints etc., including providing and laying 150mm thick cement concrete 1:5:10 mix (1 cement : 5 coarse sand : 10 graded stone aggregate 40mm nominal size)under and around the collars including necessary excavation with all lifts and in/or under water and mud, bailing out and/or pumping out water, refilling trench in 150mm layer consolidated and disposal of all surplus soil to all leads as directed for :				

Item No.	Description	Unit	Quantity	Rate	Amount
a	150 mm dia	Mtr	300.00	552.00	**1.66**
b	200 mm dia	Mtr	1,000.00	633.00	**6.33**
c	250 mm dia	Mtr	1,000.00	723.00	**7.23**
c	300 mm dia	Mtr	300.00	905.00	**2.72**
d	450 mm dia	Mtr	200.00	1310.00	**2.62**
e	600 mm dia	Mtr	200.00	1841.00	**3.68**
11.28	Constructing brick masonry chamber with 75 class designation bricks in cement mortar 1:4 (1 cement : 4 coarse sand) for storm water drain , foundation concrete 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40mm nominal size) inside plastering 12mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement and making channels in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) neatly finished including providing precast / cast in situ, 80 mm thick perforated Medium duty pre-cast SFRC frame & cover fixed in 150 mm thick R.C.C. slab as per standard design complete including all material and labour involved.				
a	Inside size 455x610 mm and 45 cm deep for single pipe line	Nos	50.00	4044.00	**2.02**
b	Inside size 500x700 mm and 45 cm deep for pipe line with one or two inlets	Nos	200.00	5728.00	**11.46**
c	Inside size 600x850 mm and 45 cm deep for pipe line with three or more inlets	Nos	50.00	7750.00	**3.87**
11.29	Extra for depth of brick masonry chamber beyond initial depth of 45 centimetres				
a	For 455x610 mm size	meter	50.00	3,120.00	**1.56**
b	For 500x700 mm size	meter	200.00	7778.00	**15.59**
c	For 600x850 mm size	meter	50.00	10481.00	**5.24**

Item No.	Description	Unit	Quantity	Rate	Amount
11.30	Constructing brick masonry manhole with 75 class designation bricks in cement mortar 1:4 (1 cement : 4 coarse sand) R.C.C. top slab(150 mm thick) with 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size), 20 mm thick foundation concrete 1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate 40mm nominal size) inside plastering 12mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement and making channels in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) neatly finished including excavation and M.S. Foot rest complete as per standard design :				
a	Inside size 90 x 80cm and 45cm deep including 80mm thick SFRC cover and frame medium duty (Steel Fibre Reinforced Concrete) conforming to ISI load test.	Nos	50.00	10,219.00	**5.11**
b	Same as (above but with heavy duty SFRC cover and frame.)	Nos	50.00	11,468.00	**5.73**
11.31	Extra for depth of manhole i/c cost of foot rest.				
	Size 90 x 80cm with F.P.S. bricks.	Mtr	50.00	9,265.00	**4.63**
11.32	Boring & Drilling 250 mm dia bore well for Rainwater Harvesting System up to a depth of 50 meters and providing and lowering of 160 mm dia P V C pipe. including slotted portion as per requirement and providing and filling pea gravel around P V C pipe in the annular space as per directions of the architect.	Nos	6.00	88,575.00	**5.31**
11.33	Supplying & laying of required size and grading Boulders & Gravels in Rain Harvesting Well as per direction of the architect.	cum	100.00	2,022.00	**2.02**

Item No.	Description	Unit	Quantity	Rate	Amount
11.34	Providing, laying & fixing 80 mm thick M-35 precast SFRC cover complete including reinforcement, centring shuttering etc.	sqm	100.00	2,124.00	**2.12**
11.35	Providing and fixing unplasticized PVC rain water pipe of 4kg./sqcm working pressure conforming to IS:13592 including fittings and specials conforming to IS:5382 jointing with solvent cement, fixing complete pipe with PVC/M.S. holder bat clamps, including testing of complete installation (weight of PVC pipe and fitting shall conform to IS standard)				
a	110 mm dia	Mtr	500.00	717.00	**3.58**
b	165 mm dia	Mtr	500.00	1216.00	**6.08**
11.36	Providing and fixing 7.5 HP domestic water pump motor of approved make like Crompton, havells, etc. complete in all respect as directed by architect / Engineer				
	(Basic rate of Each Domestic Water Pump is Rs. 45000/- FOR site)	Each	5.00	51,770.00	**2.59**
11.37	Providing and fixing Automatic water level controller of approved make complete in all respect as directed by architect / Engineer	Each	10.00	4600.00	**0.46**
	(Basic rate of Each water controller is Rs. 4000/- FOR site)				
	TOTAL OF SANITARY, WATER SUPPLY & DRAINAGE WORK CARRIED OVER TO SUMMARY				**275.46**
	TOTAL AMOUNT CIVIL CONSTRUCTION COST OF RCC & PEB BUILDING				**4,323.14**

For the civil construction cost of RCC & PEB building, the company has identified M/s ECR Buildtech Private Limited for their construction work, who has also submitted building estimate on dated 20.12.2023 of Rs. 4,323.14 lakhs excluding GST and other taxes for construction of structure vis development of building of manufacturing of unit.

2. STEEL FABRICATION COST OF PEB BUILDING

(Amount in Lakhs)

S. No.	Description	UNIT	QTY	SUPPLY	ERECTION
1	Shed 1 and 2 with skylight & galvalume louvers (size 119.79 (l) x 105.23 (w) x 9.3 (clear height) mtrs for total covered area of 12,605.50 sq. Mtrs o/o + Mezzanine floor area of size 17.34 (l) x 105.23 (w) x 5.8 (floor top ht) mtrs and passage area mezzanien floor between dhed-2 & shed 3 of size 8.7 (l) x 7 (w) x 5.8 (floor top ht) mtrs for total covered area of 1824.68 sq. Mtrs o/o (i.e. Total covered area including Mezzanine floor will be:- 12,605.50 + 1824.68 = 14,430.18 sq. Mtr)	Sq. Mtrs	14,430.18	668.53	**61.03**
2	B (shed 3) with skylight & galvalume louvers (size 119.79 (l) x 85.23 (w) x 9.3 (clear height) mtrs for total covered area of 10,209.70 sq. Mtrs o/o + Mezzanine floor area of size 8.7 (l) x 85.23 (w) x 5.8 (floor top ht) mtrs for total Covered area of 1,477.88 sq. Mtrs o/o (i.e. Total covered area including mezzanine floor will be:- 10,209.70 + 1,477.88 = 11,687.58 sq. Mtr)	Sq. Mtrs	11,687.58	513.12	**46.84**
3	C (shed 4) with skylight & galvalume louvers (size 145.56 (l) x 104.23 (w) x 9.3 (clear height) mtrs + 8.884 (l) x 52.55 (w) + 8.77 (l) x 3.55 (w) for total covered area of 15,669.79 sq. Mtrs o/o + mezzanine floor area of size 17.34 (l) x 104.23 (w) x 5.8 (floor top ht) mtrs + 8.77 (l) x 3.55 (w) for total covered area of 1838.47 sq. Mtrs o/o (i.e. Total covered area including mezzanine floor will be:- 15,669.79 + 1,838.47 = 17,508.26 sq. Mtr)	Sq. Mtrs	17,508.26	799.83	**73.01**

S. No.	Description	UNIT	QTY	SUPPLY	ERECTION
4	Shed 5 with skylight & galvalume louvers (size of 74.62 (l) x 63.23 (w) x 9.3 (h) mtrs + 17.08 (l) x 42.66 (w) x 9.3 (h) mtrs + mezzanine floor area of size 33.48 (l) x 63.23 (w) x 5.8 (floor top ht) mtrs for total covered area of 7,563.79 sq. Mtrs)	Sq. Mtrs	7,563.79	293.40	**26.78**
	Total amount			**2,274.89**	**207.66**
	Total amount (supply +erection)				**2,482.55**

For the steel fabrication cost of PEB building, the company has identified M/s Cold Steel Corporation for their steel fabrication work who has also submitted estimate of Rs. 2,482.55 lakhs excluding GST and other taxes on dated 20.12.2023.

3. UTILITY AND OTHER SERVICES

(Amount in Lakhs)

Item No.	Description	Unit	Quantity	Rate	Amount
1	**FIRE FIGHTING WORKS** i/c providing & laying ring line, Hydrant, Sprinklers a & pumps as per requirement of the NBC to cater for the requirements of Fire safety.	Sqm	45,560.00	809.00	**368.58**
	a) Diesel engine driven Fire pumps				
	b) Jockey pumps				
	c) Sprinklers				
	d) Fire hydrant lines				
	e) Extinguishers				
	f) Fire Hose cabinate with hose reels				
	g) Fire detection and alarm system				
	h) Valves and fittings				

Item No.	Description	Unit	Quantity	Rate	Amount
2	**Other Works**				
2.01	Lift & Elevators				
	PASSENGER LIFT (8-10 Passenger) - 3 stops (Car cabin, Pulley mechanism with motor, emergency rescue devise, Automated doors, panels, emergency response system, emergency alrm, call out, Display system, operating panels, buffer stopper) (Make : Kone, Otis, Schinder, Johnson)	Nos	1.00	13,25,199.00	**13.25**
2.02	Cranes (EOT) - 5 ton - 5 nos. Span - 21m D C Mills duty motors / A C motors, controllers, brakes, resistance boxes, limit switches, safety switches, contactors, lighting, earthing, current collector system, power distribution system and control panels. (Make : Dmag, Nexol, Sparkline, Konecranes, Times crane)	Nos	5.00	43,00,000.00	**215.00**
2.03	Dock levellers (Make : Gandhi, Godrej)	Each	4.00	2,50,000.00	**10.00**
2.04	INTERIOR including partitions, electrical, A.C, loose furniture etc	Sqm	2,000.00	15,000.00	**300.00**
	a) Gypsum board ceiling b) Glass partition c) Gyp board/ Aluminium partitions d) Office Furntiture including work tables, chairs, work stations, Work counters, cupboards, e) Wall paneling				
2.05	Utilities like ETP, STP, Process piping etc. Details are under given below				
A	STP - Capacity 40 kLD consists of Screen and grit chambers, equalisation tanks, Sewage pumps, UASB reactor, Clairifier, Sludge pumps, sludge drier, sand filters, activated carbon filter , chlorinator, pH balancing tanks, Ph monitor	Nos	1.00	45,00,000.00	**45.00**
b	Process piping LPG, Oxigen, Nitrogen Gas Bank yard, Receiver and allied work etc.	LS	1.00	1,70,00,000.00	**170.00**

Item No.	Description	Unit	Quantity	Rate	Amount
2.06	Canteen Equipments & furniture	LS	1.00	1,12,00,000.00	**112.00**
	a) SS equipments like Bain Marie, Chapati collection, Working tables, 4 Door refrigerators, dugh kneeding, chapati Puffer plate, Gas Burner stoves, Fume exhaust systems chimney, b) Furniture including Dining tables with chairs				
2.07	Hot Water Generators - 300000K Calories in shed -2		1.00	15,00,000.00	**15.00**
2.08	HVAC works - Production areas – Mechanical Ventilation)	Sqm	5,000.00	2,000.00	**100.00**
	Total cost				**1,348.83**

For the utility and other works, the company has identified M/s Deep Electricals, who has also submitted estimate on dated 02.07.2024 of Rs. 1,348.83 lakhs excluding GST and other taxes.

4. Electrical works

(Amount in Lakhs)

Item No.	Description	Unit	Quantity	Rate	Supply	Installation
1	SUB- STATION 33KV H.T. VCB PANEL INDOOR TYPE, 2500KVA, 33KV/ 415V OIL TYPE DISTRIBUTION TRANSFORMER WITH OLTC & RTCC 500KVA, DG SET WITH CANOPY and 500 KVA UPS	-	-	-	240.64	**4.46**
2	L. T. PANELS MAIN D.G POWER PANEL (MDGPP), MAIN LT PANEL (MLTP), CAPACITOR CONTROL PANEL (CCP) 750 KVAR	-	-	-	145.03	**145.03**
3	L. T. CABLES and termination, ALUMINIUM CABLES (ARMOURED) 41340 m 4 core XLPE, COPPER CABLES 4 core XLPE	-	-	-	432.18	**36.50**

Item No.	Description	Unit	Quantity	Rate	Supply	Installation
4	DB'S AND INTERNAL WIRING WORK					
i	PLANT OFFICE AREAS & SUBSTATION, 4Way TPNDB, 6 Way TPNDB, 8 Way TPNDB, 12 Way TPNDB, 2+6 Way SPNDB, 2+4 Way SPNDB, 12 Way VTPNDB	-	-	-	21.25	**5.44**
ii	PLANT AREA, 3pin 20 A SP metal clad Ind Socket, Power Socket for air circulator, 5 pin 20 A TP metal clad ind socket, 6 A 4 pole MCB, 20 A 4 Pole MCB, 5 Pin 32 A TP metal clad ind socket, 32 A 4 pole MCB	-	-	-	30.47	**7.06**
5	CONDUITS AND WIRING FOR DATA, TELEPHONES, TV SYSTEM , PVC condut 40 mm, 32 mm, 25 mm, 20 mm, MS Steel condut 40 mm, 32mm, 25mm, 20 mm, powder coated trunking 40X300/200X40 mm	-	-	-	5.52	**1.48**
6	LUMINAIRES & FIXTURES , Batten light 18W, 40 W, 20 W, 10 W, 12 W COB LED Light, Dust and Zet pfoof light fixture, Decorative recessed 1X4 25 W LED light Fixture	-	-	-	93.25	**10.17**
7	EARTHING & MISCELLANEOUS ITEMS, copper plate earthing 600 X 600 mm 6 m 8 Nos, Pipe earthing 18 Nos, chemical earthing 10 Nos, GI Plate earthing, 8 Nos, MS Fabricated Cable rack 70 Ton, Cable tray 150X1000X150 mm ladder type 225 m, 100X750X100mmm ladder type 45m, 100X600X100mm ladder type 160 m, perforated cable tray	-	-	-	137.52	**33.22**
8	OUTDOOR LIGHTING Street light pole 8mX 160 nos, bracket arm 40mmx1000mm, 20 Nos, outdoor luminairies 92 W X 9200 lumen 180 Nos, wiring for luminaires, cable termination with DB	-	-	-	76.62	**21.04**

Item No.	Description	Unit	Quantity	Rate	Supply	Installation
9	LIGHTNING PROTECTION SYSTEM, 8mm al solid conductor 8000 m , down conductor holder 5400 nos, 8 mm cu bonded solid conductor 1570 m, earthing and LED screen counter				48.42	9.50
10	BUSDUCT ,4000A TPN AL BUS DUCT (50kA) 2 Nos, 3200A TPN AL BUS DUCT (50kA) 2 Nos				41.28	1.93
	Total cost				**1,272.17**	**275.81**
	Grand Total					**1,547.98**

For the Electrical works, the company has identified M/s Shree Hariram Enterprises, who has also submitted estimate on dated 02.07.2024 of Rs. 1,547.98 lakhs excluding GST and other taxes.

Summary of Building, Civil & other works with PMC Fees:

(Amount in Lakhs)

S. No.	Particulars	Amount (INR)
1	CIVIL CONSTRUCTION COST OF RCC & PEB BUILDING	4,323.14
2	STEEL FABRICATION COST OF PEB BUILDING	2,482.55
3	UTILITY AND OTHER SERVICES	1,348.83
4	ELECTRICAL WORKS	1,547.98
	TOTAL *	9,702.50

** Total Cost mentioned in above table is excluding GST and other taxes*

Comment:

- ***For the Proposed expansion of Project-2, the Company has identified M/s. Rajiv Associates as their Technical Consultant who is looking after Design, Drawing, Construction, Supervision and other ancillary activity, the company has submitted the quotation from various suppliers, details of the same are as disclosed above***

3.13 Plant & Machinery

The proposed Machinery are given below:

Phase - 1

Sr. No.	Date of Quotation/ Purchase Order	Machine Name	Vendor	Purchase From	Quotation (INR in Lakhs)
1.	02 June 2023	Fin Press 60 Ton H 8462421200	JDM JIngDa Machine Co. LTD	China	161.38
2.	24 May 2023	7*28R*2P(19.05*22mm) fin die with spare parts	YHM Forgein Trade Co. LTD		64.04
3.	24 May 2023	7*42R*2P(12.7*21mm) fin die with spare parts			103.01
4.	02 June 2023	Hairpin Bender 8462299000 UXZ3150	JDM JIngDa Machine Co. LTD		58.63
5.	02 June 2023	Vertical Expander Hydraulic YZL2500 8463900090			111.62
6.	17 August 2023	MNTR machine	Associated Tech Pvt Ltd	India	4.52
7.	18 July 2023	Copper pipe saw machine	Shree Ganga Engineers		1.00
8.	23 June 2023	Dock Leveller	Industrial Equipment Co.		5.90
9.	20 July 2023	Industrial RO 2000 LPH	Shante		3.58
10.	20 July 2023	DM Plant 1500 LPH	Engineers		3.92
11.	12 July 2023	DG 500 Kva	Sudhir Power Limited		41.34
12.	11 August 2023	High Pressure Compressor	Shakti Pneumatics		3.11

Sr. No.	Date of Quotation/ Purchase Order	Machine Name	Vendor	Purchase From	Quotation (INR in Lakhs)
13.	10 August 2023	Vertical air receiver tank 500 ltr	Sonitech India Pvt Ltd	India	1.45
14.	10 August 2023	High pressure heatless air dryer			2.00
15.	20 July 2023	Tube removing tool (O.M.T.R.)	OMTR S.R.L.		15.69
16.	25 August 2023	Utility pipe line, LPG, O2, N2, High Pressure	Global Engineers & Contractor		11.71
17.	18 August 2023	Utility Low pressure Air Line	Indo Equipment Corporation		2.22
18.	28 June 2023	Power distribution Panel	MY Choice Service & Solution		3.20
19.	11 August 2023	3.5C X 400 sqm Aluminium armoured cable 156 meter	Yash Engineering Solution		2.12
20.	09 September 2023	Earthing for equipment and DG	MY Choice Service & Solution		2.40
21.	26 August 2023	Highbay LIGHT 150 W-Havells, STREET LIGHT 60W-Havells	Rajasthan Hardware & Tools		1.61

Sr. No.	Date of Quotation/ Purchase Order	Machine Name	Vendor	Purchase From	Quotation (INR in Lakhs)
22.	22 July 2023	Water Leak Test SS TANK 5650*3000*300 MM	Global Engineers & Contractor	India	1.72
23.	17 August 2023	Fire hydrant system	Brhma Fire Service		11.45
24.	09 September 2023	Electric work cable tray and cable laying	MY Choice Service & Solution		2.88
25.	15 September 2023	cable for equipment power connection	Yash Engineering Solution		4.44
26.	15 September 2023	MCB and socket for equipment power connection	Jsr Enterprises		2.18
		Sub-Total (1)			627.12
		GST (18%)			112.88
		Total Cost of Plant & Machinery			740.01

Note: -Respective Foreign Exchange rate for conversion of cost of plant and machinery is taken on 15th July, 2024.

Phase - 2

Sr. No.	Date of Quotation/ Purchase Order	Machine Name	Vendor	Purchase From	Quotation (INR In Lakhs)
1.	05 July 2024	Fin Press 60 Ton	JDM JingDa Machine (Ningbo) Co., Ltd	China	514.77
2.	05 July 2024	Hairpin Bender 3000 mm			210.59
3.	05 July 2024	Hairpin Bender 3000 mm 5 mm			50.14
4.	05 July 2024	Hairpin Bender 3000 mm 12.7 mm			57.66
5.	05 July 2024	Expander Vertical 2.5 m			417.83
6.	05 July 2024	Expander Vertical 2.5 m 5 mm			112.81
7.	21 March 2024	Fin Press Cabin	Envirotech System Ltd	India	137.90
8.	22 March 2024	Fin Die 12.7 mm	YHM(Wuxi) Foreign Trade Co. Ltd.	China	40.95
9.	22 March 2024	Fin Die 6.35 mm X 25.4			79.89
10.	22 March 2024	Fin Die 6.35 mm X 19.05			83.40
11.	22 March 2024	Fin Die 5 mm			96.52
12.	22 March 2024	Fin Die 7.94 mm			80.64
13.	22 March 2024	Fin Die 9.52 mm X 25.4			53.73
14.	22 March 2024	Fin Die 9.52 mm X 25			53.73
15.	22 March 2024	Fin Die 15.88 mm			65.93
16.	22 March 2024	HORIZONTAL EXPANDER MOCA-TS-7000 #	C.M.S S.P.A.	Italy	295.73
17.	20 March 2024	Ball Expanding machine SS 5/8"			68.24
18.	22 March 2024	Coil Bending CBV #			172.89

Sr. No.	Date of Quotation/ Purchase Order	Machine Name	Vendor	Purchase From	Quotation (INR In Lakhs)
19.	22 March 2024	Coil Bending O #	C.M.S S.P.A.	Italy	150.14
20.	22 March 2024	Cut Off Line chipless 1	Zhongshan OMS Trading Co., Ltd	China	22.98
21.	22 March 2024	Cut Off Line chipless 2			14.79
22.	22 March 2024	Cut Off Line saw type			18.55
23.	22 March 2024	Coil Bending L			18.05
24.	22 March 2024	U Bend machine 9.52 mm			17.47
25.	22 March 2024	U Bend machine 5 mm			16.38
26.	22 March 2024	U Bend machine 7 mm			17.47
27.	22 March 2024	U Bend machine 12.7 mm			20.56
28.	22 March 2024	U Bend machine 6.35 mm			17.47
29.	22 March 2024	Size & Ringing machine 9.52 mm			29.42
30.	22 March 2024	Size & Ringing machine 5 mm			21.39
31.	22 March 2024	Size & Ringing machine 7 mm			25.40
32.	22 March 2024	Size & Ringing machine 12.7 mm			22.65
33.	22 March 2024	Size & Ringing machine 6.35 mm			25.40
34.	22 March 2024	U Bend Cleaning machine			47.63
35.	22 March 2024	Straightening and cutting machine with inserting insulation tube			25.91

Sr. No.	Date of Quotation/ Purchase Order	Machine Name	Vendor	Purchase From	Quotation (INR In Lakhs)
36.	22 March 2024	Flaring machine	Zhongshan OMS Trading Co., Ltd	China	7.52
37.	22 March 2024	pancake machine			4.18
38.	22 March 2024	capillary tube cutting and beading machine (Saw cutting type)			18.38
39.	22 March 2024	T Drill machine for pipe drilling			30.84
40.	22 March 2024	End forming machine			12.00
41.	22 March 2024	End forming machine Horizontal			38.21
42.	22 March 2024	End forming machine spinning			16.43
43.	22 March 2024	End closing machine			15.42
44.	22 March 2024	CNC Tube Bender big			88.50
45.	22 March 2024	CNC Tube Bender medium			18.88
46.	22 March 2024	CNC Tube Bender small			13.38
47.	19 April 2024	Ultrasonic cleaning	Super Sonics	India	22.69
48.	18 June 2024	T Drill BIG	Neutec Engineering & Technology	Finland	92.51
49.	18 June 2024	T Drill MEDIUM			20.14
50.	22 March 2024	He Leak Testing Chamber 1	Nxtek Yantra Private Limited	India	108.30
51.	22 March 2024	He Leak Testing Chamber 2			137.75
52.	22 March 2024	He Leak Testing Chamber Sniffer			39.90
53.	22 March 2024	Vacuum Leak Testing			36.04

Sr. No.	Date of Quotation/ Purchase Order	Machine Name	Vendor	Purchase From	Quotation (INR In Lakhs)
54.	22 March 2024	Drying Oven Big size (with conveyor)	RDR Taichi Pvt Ltd	India	60.63
55.	22 March 2024	Drying Oven Big size (Vertical)			50.86
56.	22 March 2024	Drying Oven Small size (Header)			20.41
57.	22 March 2024	Tube Removing Tool	OMTR S.R.L.	Italy	29.12
58.	21 March 2024	Brazing Seazor Lifter	Shree Ganga Engineers	India	21.50
59.	05 July 2024	Leak Test Tank Big	Global Engineers & Contractors		4.24
60.	05 July 2024	Leak Test Tank Medium			4.20
61.	05 July 2024	Leak Test Tank Small			1.82
62.	03 April 2024	Assy Conveyor line (CCU IDU)	Shree Ganga Engineers		20.37
63.	23 March 2024	Jib Crain	Industrial Equipment Company	India	36.81
64.	22 March 2024	Spray Paint booth	Shree Sai Associates	India	15.50
65.	05 July 2024	Rack	Industrial Equipment Company	India	44.25
66.	23 March 2024	Fork Lift 3.0 Ton			13.20
67.	23 March 2024	Fork Lift 2.0 Ton			12.80
68.	23 March 2024	Articulated Forklift			36.76
69.	23 March 2024	Hand Pallet 2.5 Ton			2.15
70.	23 March 2024	Battery operated lifter			1.90

Sr. No.	Date of Quotation/ Purchase Order	Machine Name	Vendor	Purchase From	Quotation (INR In Lakhs)
71.	23 March 2024	Dock Leveler	Industrial Equipment Company	India	18.30
72.	05 July 2024	Hand Pallet 3.0 Ton 3 meter	Brightway Engineers	India	2.85
73.	05 July 2024	Hand Pallet 5.0 Ton			2.30
74.	21 March 2024	Carpenter Saw Cutter	RTech	India	0.58
75.	05 July 2024	NCT	Amada (India) Pvt Ltd	India	190.00
76.	05 April 2024	Laser Cutting	Qingdao Dadong Automation Technology Co., Ltd	China	63.51
77.	17 June 2024	Compressor for laser cutting	Industrial Equipment Company	India	8.02
78.	05 July 2024	Press Brake small size	Hindustan Hydraulics Pvt Ltd	India	30.50
79.	05 July 2024	Press Brake big size			96.00
80.	22 March 2024	Edge Bending	Zhongshan OMS Trading Co., Ltd	China	27.99
81.	21 March 2024	CLADE SHEET CUTTING Machine #	Hertz Controls (India) Pvt. Ltd.	India	13.25

Sr. No.	Date of Quotation/ Purchase Order	Machine Name	Vendor	Purchase From	Quotation (INR In Lakhs)
82.	20 March 2024	Cooling Tower	Composite Aqua Systems & Equipments Pvt. Ltd.	India	1.64
83.	21 March 2024	Fin Forming machine #	YHM(Wuxi)Foreign Trade Co.,Ltd.	China	89.42
84.	20 March 2024	Leak Detactor	A-S Marketing	India	1.92
85.	21 March 2024	Vacuum Furnace #	HHV Thermal Technologies Pvt. Ltd.	India	380.00
86.	22 March 2024	SS Brazing Fixture #	Wuxi Yongheng Aluminium Industry Co., Ltd.	China	6.86
87.	21 March 2024	Ultrasonic Cleaning #	Life - Care Equipments Pvt. Ltd.	India	21.85
88.	23 March 2024	SCROLL CHILLER - 50 TONS	Nu-Vu Conair Private Limited	India	41.82
89.	20 March 2024	3 Tig welding –Al	Rahul Enterprise	India	10.50
90.	20 March 2024	2 Mig welding- AL			3.68
91.	23 March 2024	Radial drilling machine	Associated Technocrats Pvt Ltd	India	4.30
92.	23 March 2024	Lathe			9.50
93.	23 March 2024	Milling			4.83
94.	05 July 2024	Band saw	ITL Industries Limited		1.32

Sr. No.	Date of Quotation/ Purchase Order	Machine Name	Vendor	Purchase From	Quotation (INR In Lakhs)
95.	17 June 2024	Low Air Compressor Fix Speed	Industrial Equipment Company	India	18.52
96.	17 June 2024	Low Air Compressor VFD			21.20
97.	21 March 2024	High Air Compressor	Shakti Pneumatics		12.88
98.	21 March 2024	Heatless air dryer	Sonitech India Private Limited		8.80
99.	21 March 2024	Air receiver 500 ltr			6.40
100.	23 March 2024	RO Plant	Shante Engineers		14.63
101.	23 March 2024	DM Plant			8.66
102.	05 July 2024	Coil Straightning & Sliting	Global Engineers & Contractors		40.00
103.	05 July 2024	BR Machine			25.00
104.	21 March 2024	Oven	RDR Taichi Pvt Ltd		40.00
105.	05 July 2024	Hi Mill	Wuxi DLS Rolling Mill Manufacture Co. ,Ltd	China	653.94
106.	05 July 2024	Hi CRM			348.85
107.	05 July 2024	In Machine	Global Engineers & Contractors	India	45.00
108.	21 March 2024	Powder Coating	RDR Taichi Pvt Ltd	India	300.00

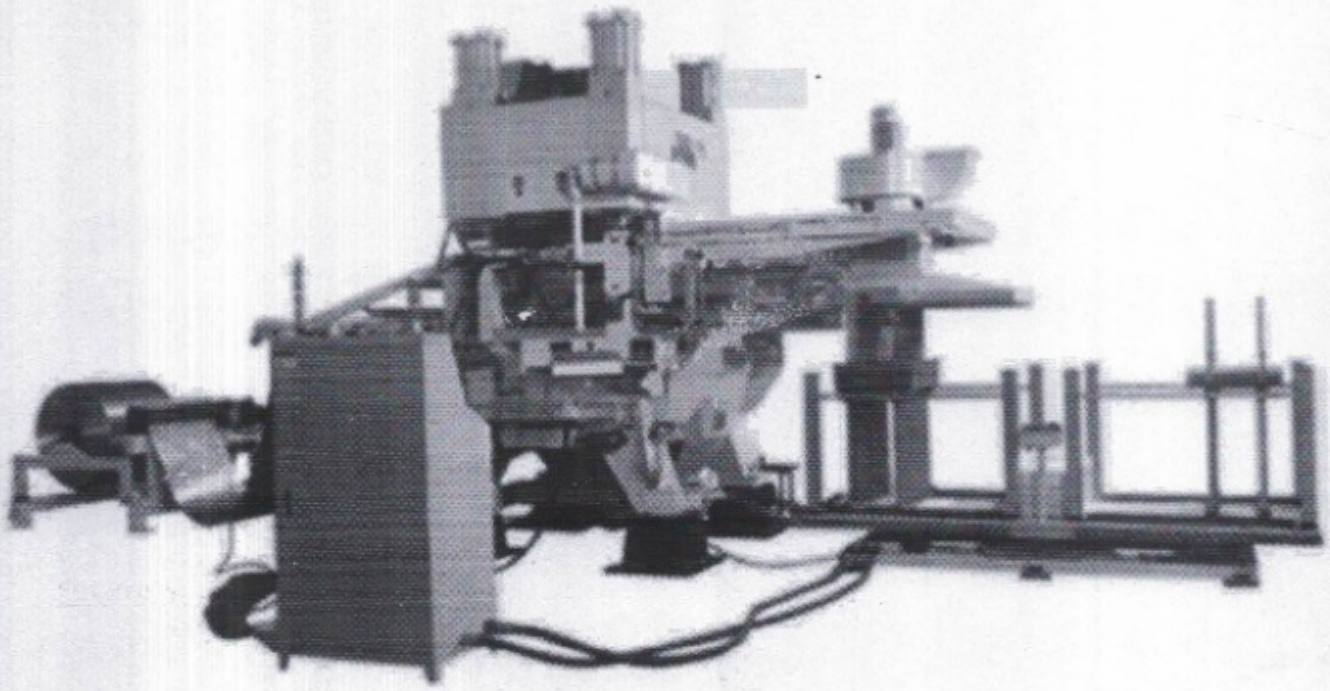
Sr. No.	Date of Quotation/ Purchase Order	Machine Name	Vendor	Purchase From	Quotation (INR In Lakhs)
109.	24 March 2024	Design, Supply, Installation, testing and Commissioning of 8 MWp Solar On-grid System with Mono Cut Cells PV Modules - Rofftop Mounted as per BOM	Smart Roof Solar Solutions Pvt Ltd *	India	2,640.00
		Sub-Total (1-108)			9,417.42
		TAX (18%)			1,219.94
		TAX (13.80%)* (On Sr No 109)			364.32
		Total Cost Of Plant & Machinery			11,001.68

Note: -

1. For all imported equipment or machinery, Foreign Exchange rate for conversion of cost of plant and machinery is taken on 15th July, 2024. For, USD 1 = Rs. 83.5658 and EURO 1 = Rs 90.9931.
2. Tax Rate include – GST, Import Duty, Custom Duty though it may be possible at the time of actual purchase of machinery tax rate may be changed depending upon the respective enactment of law. In this DPR we have assumed 18% tax rate.
3. # The quotation have been revalidated. Original quotation validity have expired.

Following are the glance details of some of the machineries:

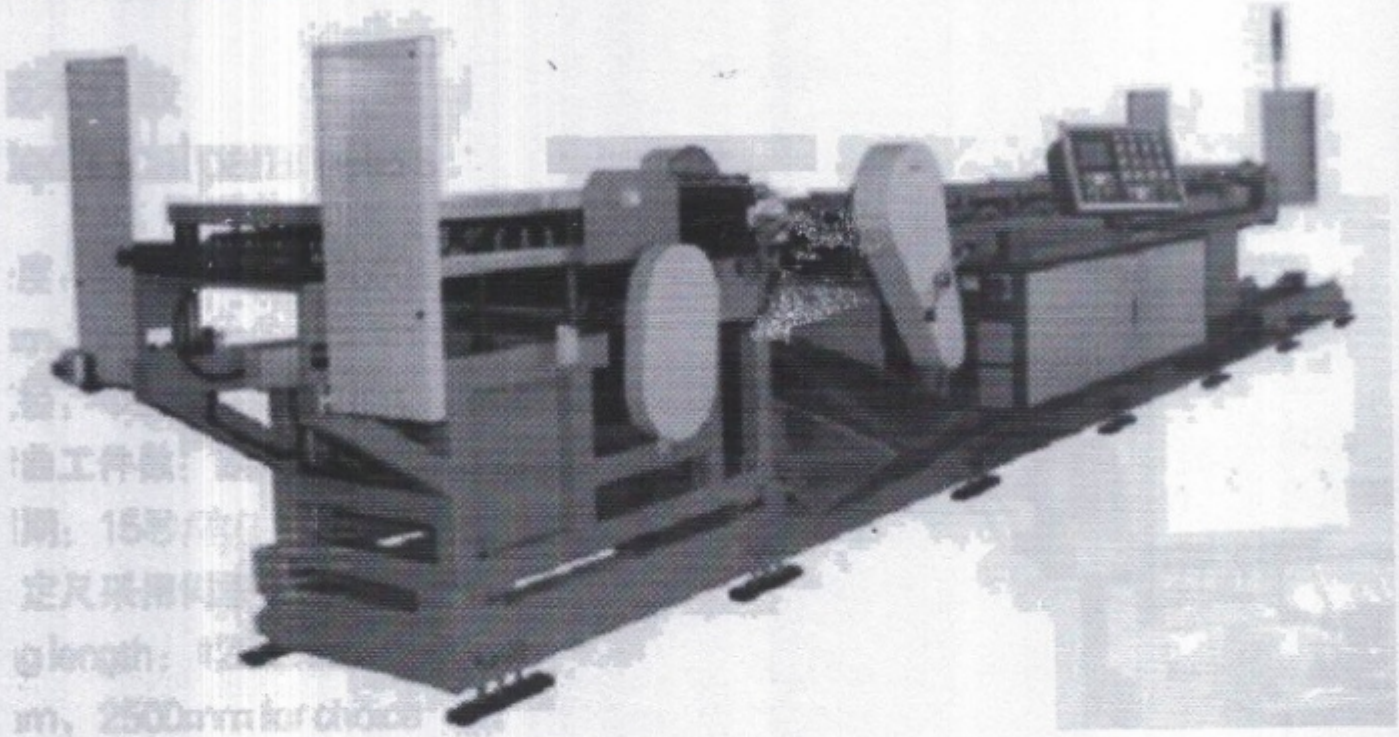
1. **Fin Press:**



- One of the most important processes in any **Heat Exchanger manufacturing** operation is the production of Fin. For many of these Heat Exchangers, the Fin to be produced will be manufactured on a Reciprocating Fin Stamping Press also known as a Fin Press. Fin press is a machine specially used to manufacture Fins applied to air conditioner. Condense and evaporator, water Heater, etc. It works with fully automatic mode.

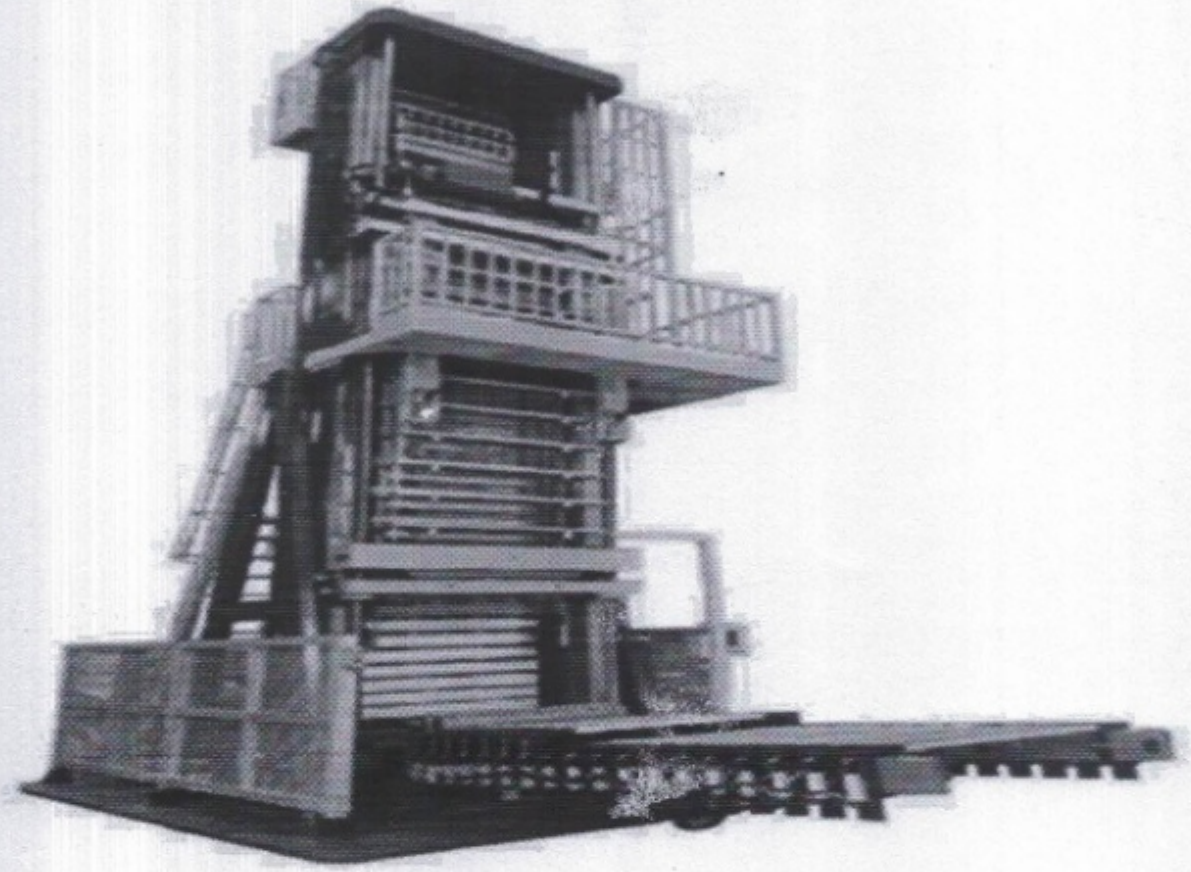
- Capacity: **60 Ton**
- Type: **C Type**

2. **Hairpin Bender:**



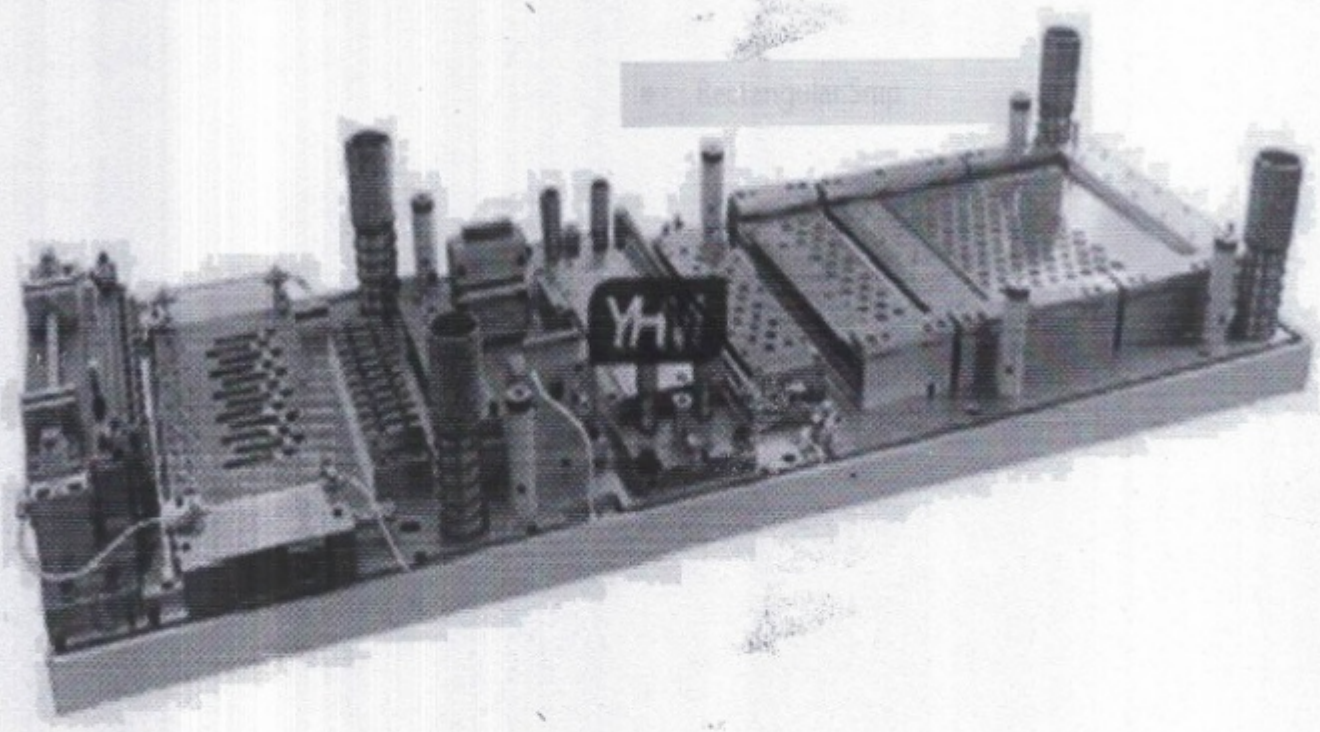
- The hairpin bender is a fast, reliable, and cost effective hairpin bend production device for HVAC Tube processing. It is designed with a concise structure with reduced footprint, easy to operate interface, and fast-changing molds.
- Capacity Row: **8 Nos**
- Capacity Length: **3000 mm**

3. **Vertical Expander:**



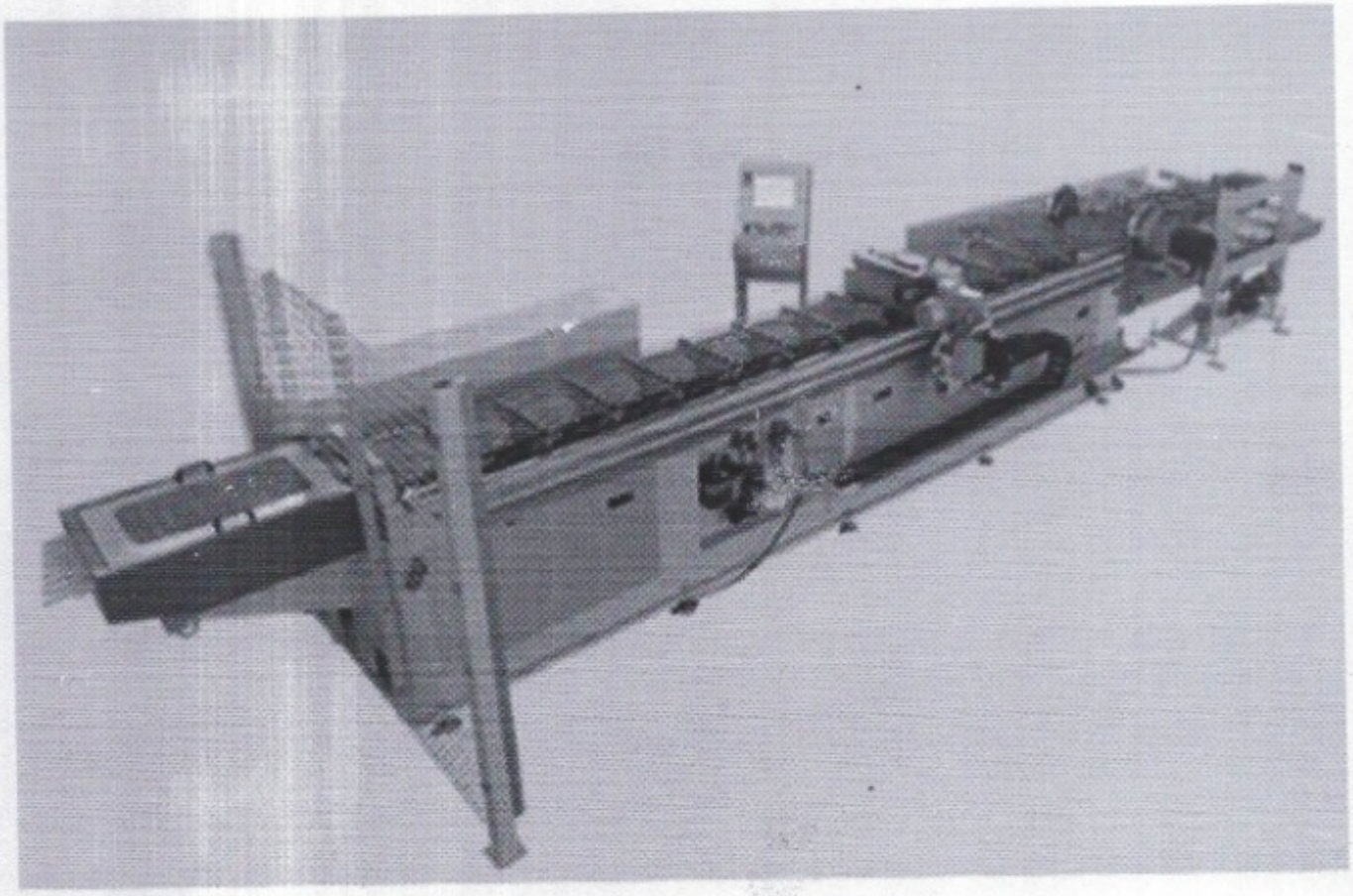
- The vertical expander is a professional HVAC equipment dedicated to expand Heat Exchanger coils. The machine to complete expanding, flaring and edge folding in a short cycle time.
- Capacity Length: **2500 mm**
- Type: **Mechanical expansion**

4. **Fin Die:**



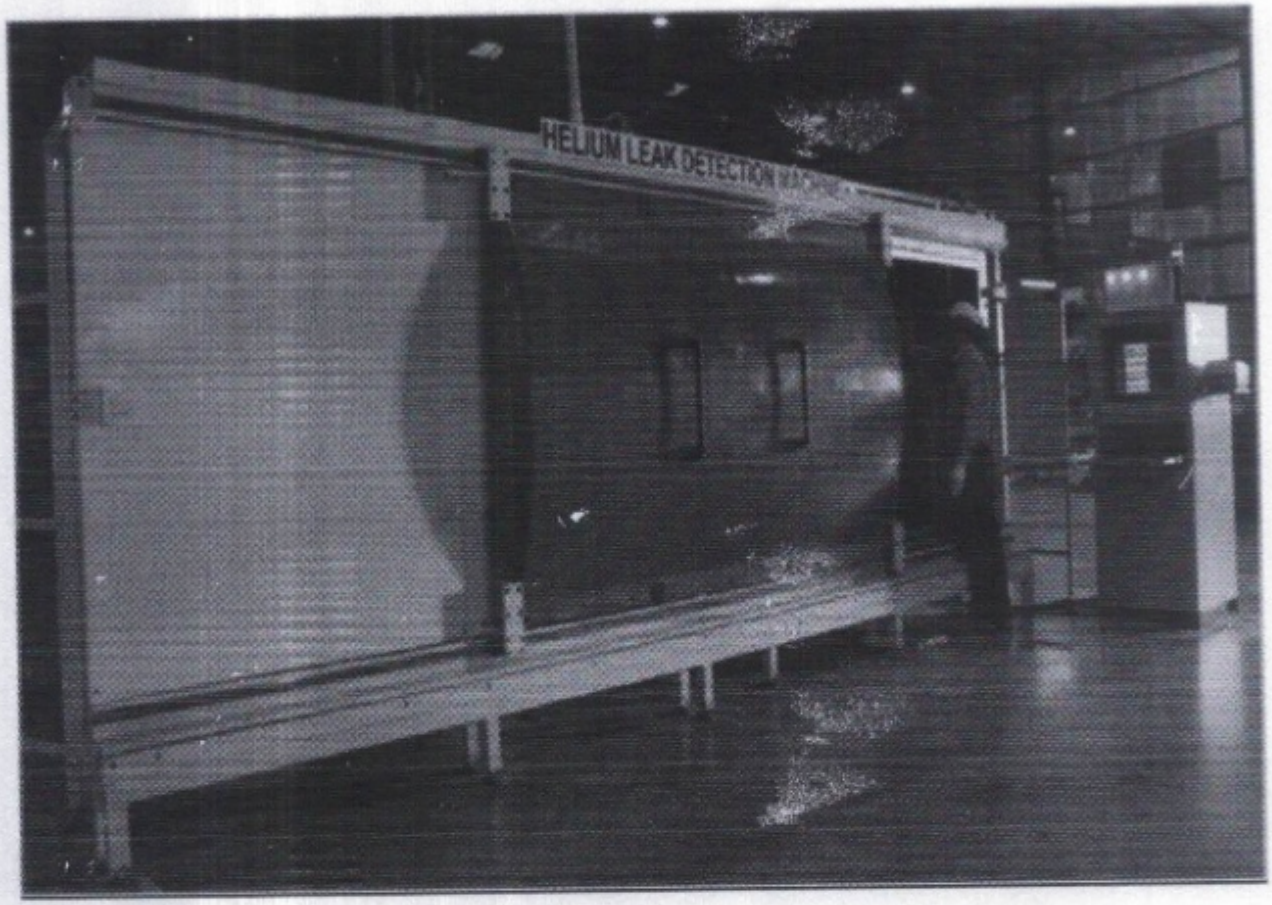
- Combination type Fin punching die for making Heat Exchanger Fin. The dies can be equipped with rapid die change options to provide more flexible and accurate production capabilities.

5. Cut Off Line SS 5/8":



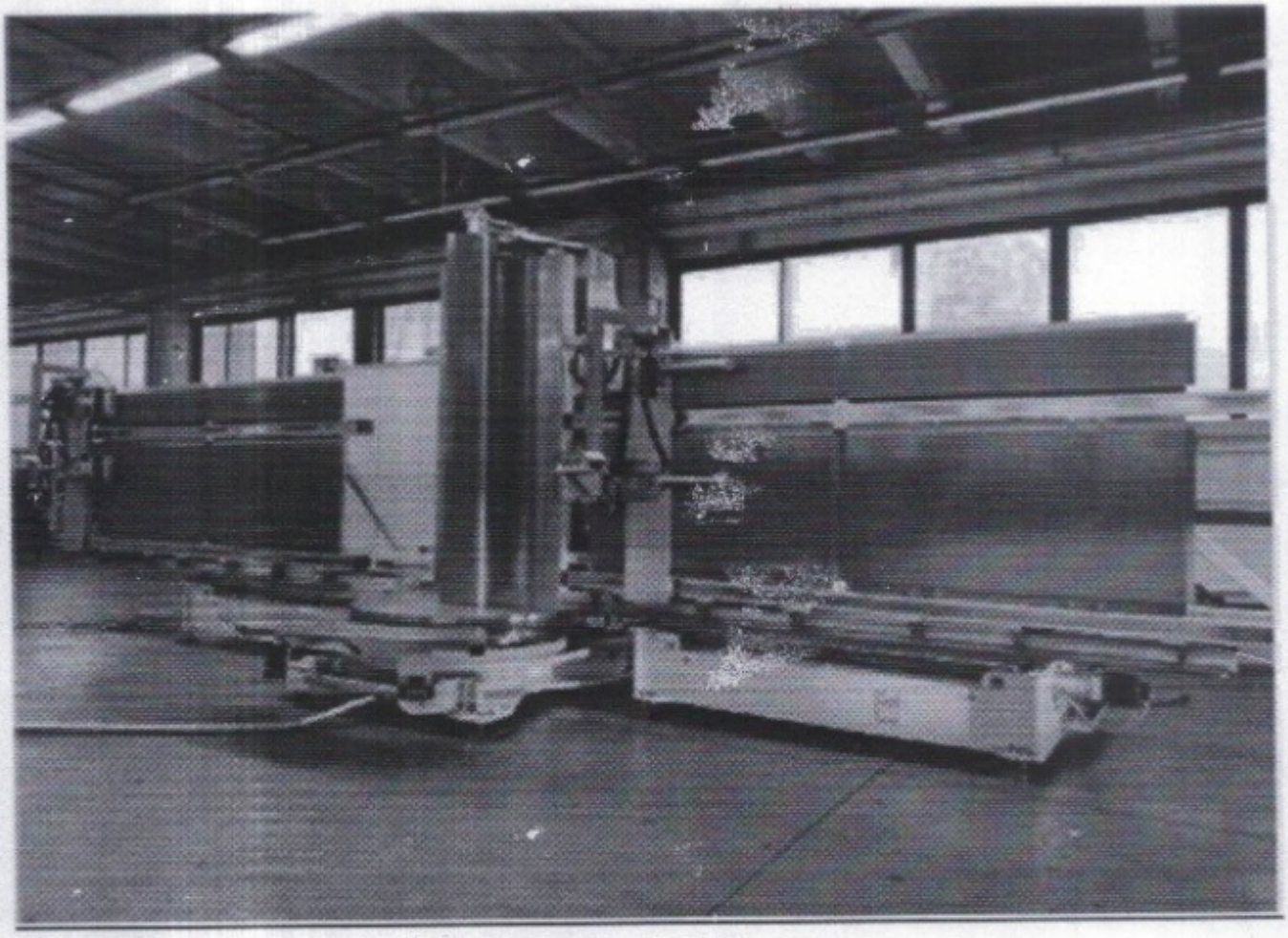
- Cut off line used to make SS pipe straight and to cut a specified length.
- Tube / Cycle: **1 Nos**
- De coiler: **Double coil rotary type**

6. He Leak Testing:



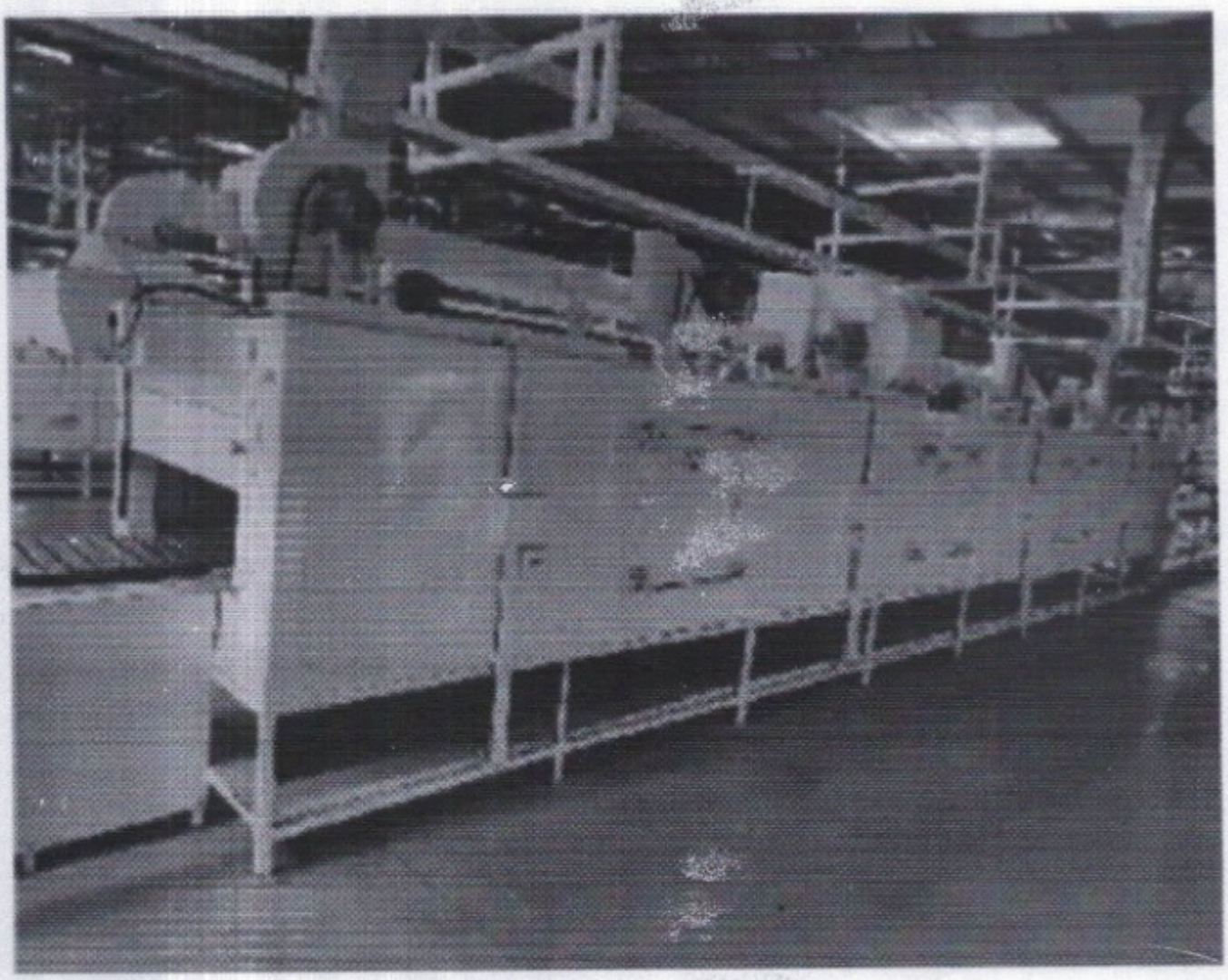
- The He leak testing machine to confirm brazing joint leakage and it is very precise and detection level is 2 gm/annum.
- Type: **Chamber type with additional external station**

7. Coil Bending:



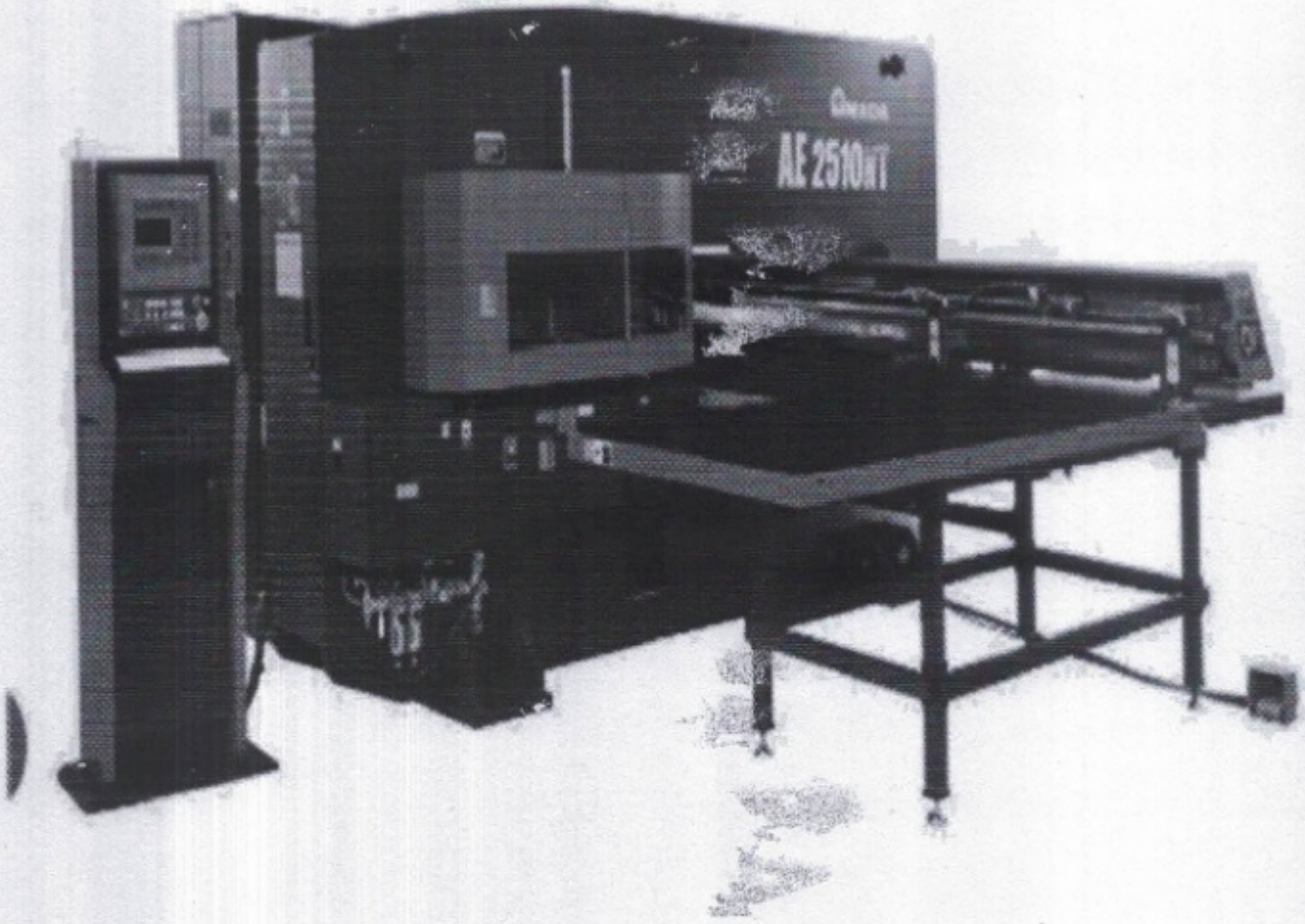
- Coil bending machine used to make coil in different bend shape. A bend is manufactured by using a bending tool during a linear or rotating move.
- Type: **L, G, C, O shape**

8. **Dry Oven:**



- Dry Oven utilize to dry the Heat Exchanger from outside and inside and remove the lubrication oil and water.
- Type: **Portable, conveyor type, vertical stand alone**

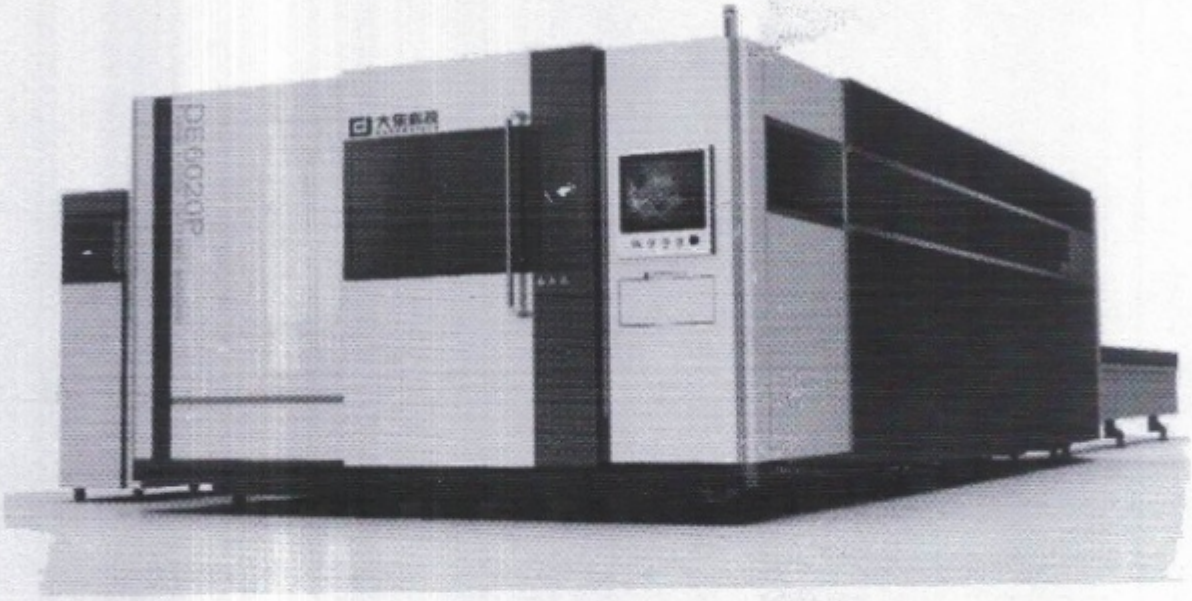
9. **NCT Machine:**



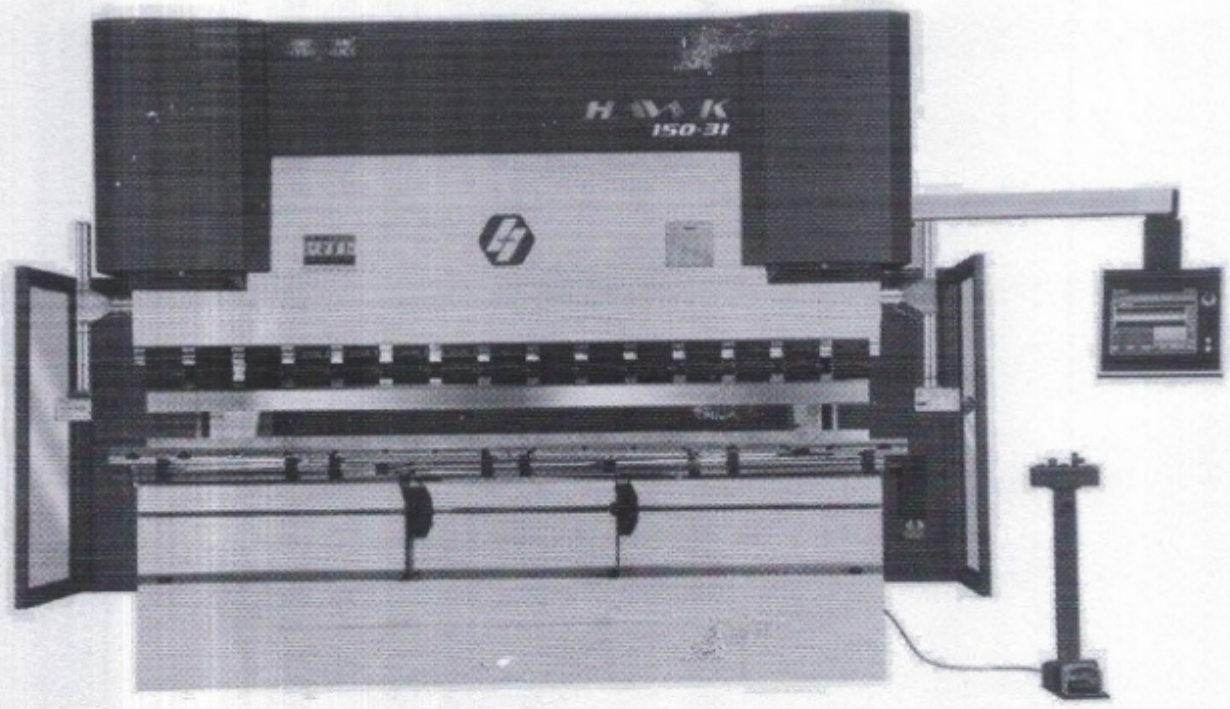
- NCT machine is utilize to punch sheet in a designed shape coke Heat Exchanger Tube plate and casing.
- Capacity : **20 Ton**

10. Laser Cutting

- Laser cutting machine utilize to cut profile in sheet (SS, AL, GI) to make Heat Exchanger and air conditioner casing part.
- Capacity : **3 Kw with pallet changer**

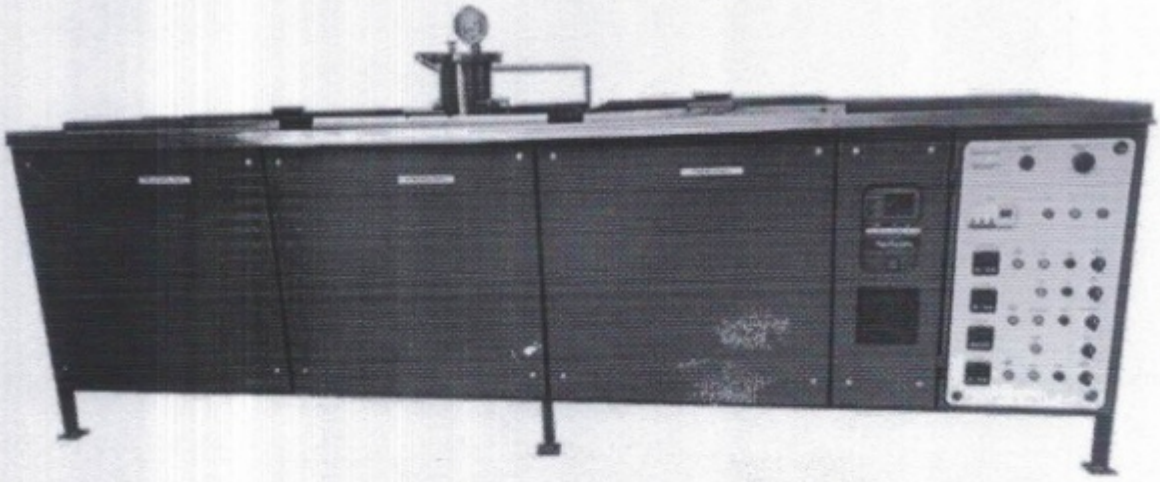


11. Press Brake



- Press brake utilize to bend sheet metal parts in a designed shape to make Heat Exchanger Tube plate and Air conditioner casing.
- Capacity: **220 Ton, 4 meter and 50 Ton 2 meter**

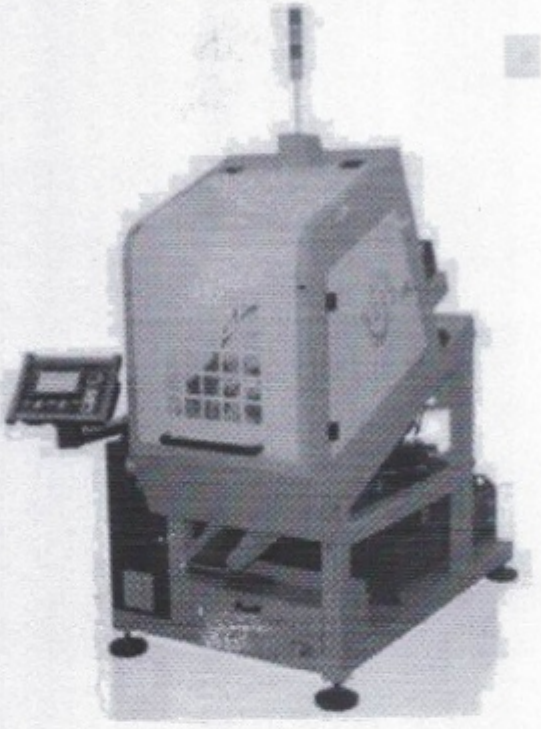
12. Ultrasonic vacuum cleaning



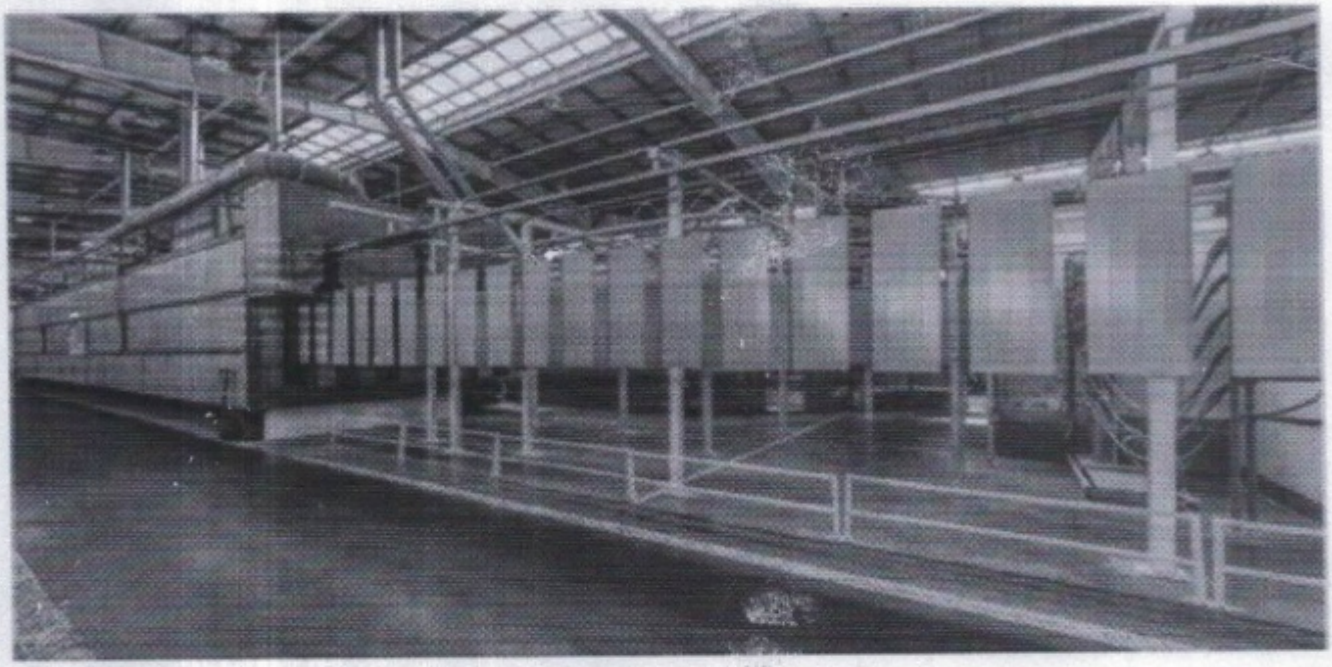
- Cleaning machine utilize to remove lubrication oil and dirt content from piping parts.
- Multi stage cleaning **(Inside bucket)**

13. T Drill

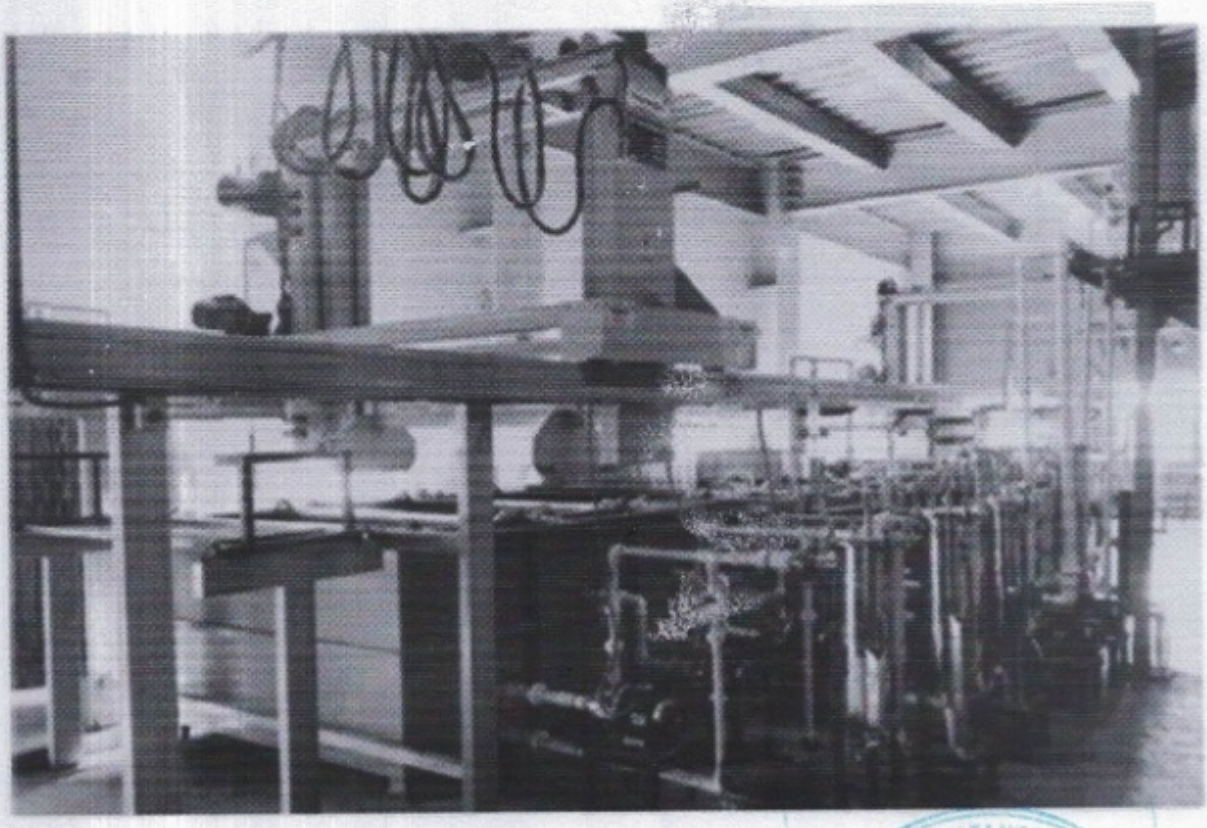
14. U Bend making machine



15. Powder coating

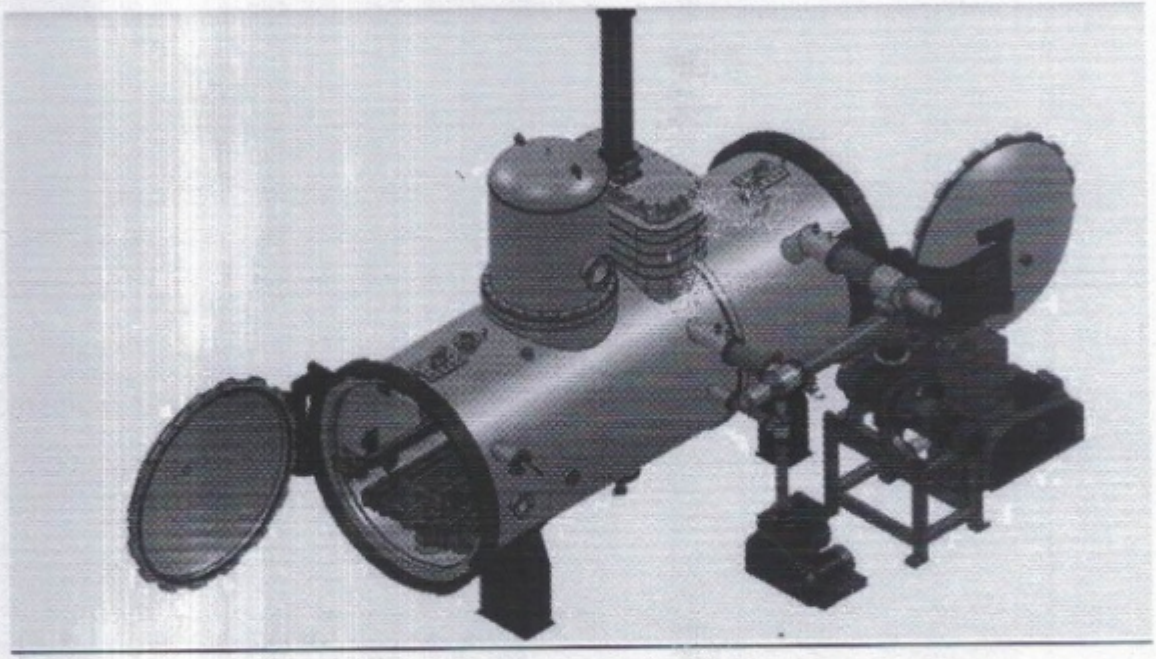


16. CED Line:



- Cathodic Electro Deposition (CED) is a process of coating an object having a conductive surface connected to a circuit as the cathode, by positively charged paint particles suspended in aqueous medium, under direct current1,2.
- CED coating is most use to increase part life and prevent from corrosion.

17. Vacuum Furnace Brazing Machine



Vacuum hardening furnaces are industrial furnaces used for heating and brazing the components. They operate at reduced atmospheric pressures, providing a controlled environment for the brazing process.

18. Hi Mill

4 **Hi mill machine** using for rolling the material to make reducing the thickness

19. Fin Forming Machine

Fin Forming machine used for making corrugated fins for transformer

Comment:

- ***Q-Serv has received the quotations for the Plant & Machinery of proposed expansion. In case of an increase in amount, the company needs to source the same through their own fund.***
- ***Q-Serv has not vetted majority of the machines and is of the opinion that there is a scope of negotiation and a handful of dealers in the market***
- ***Pictures of Machineries mentioned above are not the actual picture installed at proposed site and the same has been attached herewith from the respective details available with the company from the brochure or Internet, and it is possible that after installation, actual picture of machineries may differ.***
- ***Plant & Machinery Quotations to the extent available are attached as Annexure B.***

3.15 Miscellaneous Deposits

In proposed expansion of Project-II, some Miscellaneous Deposits are included. Summary of the same are as below: (Please refer Cost of Project)

(Amount in Lakhs)

Particulars	Amount
Security deposit to Land Authority (RIICO)	39.99
Security deposit to Electricity Department	20.97
Security deposit to other Govt. Regulatory Authority	47.68
Total	**108.64**

3.16 Utility

To run the plant efficiently, the Neemrana (Phase - 1) will require the following utility services:

- **Water**
  - Water supply line available around factory boundary plot and it can be easily accessible after water connection update.
  - Water requirement for this plant would be around 600 liters per day and the same shall be fulfilled from RIICO water supply. Water collected will be stored in underground tanks and will be used for water requirement of manpower, plantation and process.
- **Power**
  - 11KV power supply line available around factory plot boundary and it can be easily accessible after electricity connection update.

- The company proposes to acquire power via 11 KV HT from Jaipur Vidyut Vitran Nigam Limited. The proposed connected load for the Project would be around 10 KVA and, for the critical power back up company plans to install 500 KVA diesel Generator.

- **Raw Materials**
  - The basic raw materials to manufacture HVAC Products are Aluminum Foil, Copper Foil, Copper Tube, Galvanise Sheet, Brass Sheet, Copper Sheet, Aluminum Sheet, Stainless Steel etc. These materials are easily available indigenously in abundance and there is no scarcity of the materials. The materials can however be imported and there are no restrictions whatsoever on these. As per the extant Import-Export Policy of India 2019-2024, these materials are not under negative list i.e. these can be imported freely.

Comment:

- ***Q-serv has relied on the details provided by the company w.r.t arrangements of Utilities.***

To run the plant efficiently at Plot No., SP 1-24, Kolila Joga, Neemrana, Rajasthan (Phase - 2) will require the following utility services:

- **Water**
  - Water supply line available around factory boundary plot and it can be easily accessible after water connection update.
  - Water requirement for this plant would be around 16000 liters per day and the same shall be fulfilled from RIICO water supply. Water collected will be stored in underground tanks and will be used for water requirement of manpower, plantation and process.
- **Power**
  - 11KV power supply line available around factory plot boundary and it can be easily accessible after electricity connection update.
  - The company proposes to acquire power via 11 KV HT from Jaipur Vidyut Vitran Nigam Limited. The proposed connected load for the Project would be around 2000 KVA and the operating load would be 2000 KVA, For the critical power back up company plans to install

1000 KVA diesel Generator (CPCB IV).

- **Raw Materials**
  - The basic raw materials to manufacture HVAC Products are Aluminum Foil, Copper Foil,n Copper Tube, Galvanise Sheet, Brass Sheet, Copper Sheet, Aluminum Sheet, Stainless Steel etc. These materials are easily available indigenously in abundance and there is no scarcity of the materials. The materials can however be imported and there are no restrictions whatsoever on these. As per the extant Import-Export Policy of India 2019-2024, these materials are not under negative list i.e. these can be imported freely.

Comment:

- ***Q-serv has relied on the details provided by the company w.r.t arrangements of Utilities.***

3.17 Regulatory Approvals

Following are the status of Statutory and Regulatory Approvals in the Proposed Plant:

Sr. No.	Document	Description	Status
1.	PAN	AAKCK1357R	Received
2.	TAN	JPRK07758C	Received
3.	GST	08AAKCK1357R1ZT	Received
4.	Labour Identification Certificate	Certificate No.: 1-3157-0234-9, Dated:10/04/2023	Received
5.	Udyam	Reg.No.UDYAM-RJ-02-0058312, Dated: 31/05/2023	Received
6.	Importer-Exporter Code	IEC No. AAKCK1357R, Dated: 30/05/2023	Received
7.	SAN	Reg. No. 0718800000000042, Dated: 01/03/2024	Received
8.	EPFO	EPFO Certificate no.: RJRAJ2894493000, Dated: 10/04/2023	Received
9.	ESIC	ESIC Certificate no.:15000951350000999, Dated: 10/04/2023	Received
10.	RCMC	Reg. No. RCMC/EEPCINDIA/02115/2023-24, Dated: 03/06/2024	Received
11.	Approval of Building Plan	Letter No : 3287, Dated: 04.01.2024	Received
12.	Sanction of electrical load (Primary connection)	Letter No : L2117130000673, Dated: 05.01.2024	Received
13.	Consent To Establish (Phase -1)	Order No : 2023-2024/Alwar/12565, Dated: 08.01.2024	Received
14.	Consent to Operate (Phase-1)	Order No : 2023-2024/Alwar/12739, Dated: 19.03.2024	Received
15.	Consent To Establish (Phase-2)	Order No : 2023-2024/Alwar/12458, Dated: 18.04.2024	Received
16.	Factory License (Phase-1)	Reg. No. RJ/35788, Dated: 04.01.2024	Received
17.	Factory License(Phase-2)	Reg. No. RJ/35989, Dated: 24.04.2024	Received
18.	Contract Labour License	Reg. No. CLPE/2024/2/132645, Dated: 11.06.2024	Received
19.	Fire NOC	Reg. No. LSG/NEEMRANA/FIRENOC/2023-24/24609, Dated: 29.12.2023	Received
20.	Permission to Abstract Ground Water for Industrial Use (Phase-2)	Reg. No.: CGWA/NOC/IND/ORIG/2024/20649, Dated: 07.08.2024. The NOC is Received.	Received
21.	Lease Deed	Registered Lease Deed of Factory Land (SP 1-24) under the Proposed Project	Executed as on 24th March, 2024

Comment:

- ***The Company is in the process of obtaining Lease Deed & Other Certificate related to Operating Factory which is necessary to obtain.***
- ***Regulatory approvals are attached as Annexure C.***

3.18 Project Implementation Schedule:

The Project implementation schedule of the proposed Project –1 expansion is given below:

Particulars	Commencement	Completion
Acquisition of Land		Already acquired
Building		
• Factory	Mar, 2023	Dec, 2023
• Ancillary	Mar, 2023	Dec, 2023
Plant & Machinery		
- Placement of orders	June, 2023	Nov, 2023
- Arrival of machinery	Nov, 2023	Nov, 2023
- Erection and installation	Nov, 2023	Nov, 2023
Power connection	Oct, 2023	Nov, 2023
Water connection	Oct, 2023	Oct, 2023
Trial Production	Jan, 2024	Jan, 2024
Commencement of commercial Production	Feb, 2024	Feb, 2024

Comment:

- ***The Project Implementation Schedule is completely based on the funding arrangement from The Holding/Parent Company.***

The Project implementation schedule of the proposed Project –2 expansion is given below:

Particulars	Commencement	Completion
Acquisition of Land	August, 2023	Allotted in September 2023 & Lease deed executed in March 2024
Building		
• Factory	January, 2024	March 2025
• Office and store room	January, 2024	March 2025
• Ancillary	January, 2024	March 2025
Plant & Machinery		
• Placement of orders	May, 2023	November, 2024
• Arrival of machinery	July, 2024	December, 2024
• Erection and installation	September, 2024	January, 2025
Miscellaneous Fixed Assets		
• Placement of orders	April, 2024	November, 2024
• Arrival of machinery	July, 2024	December, 2024
• Installation	September, 2024	January, 2025
Power connection	November, 2024	January, 2025
Water connection (Tubewell)	February, 2024	March 2024
Trial Production	February, 2025	April,2025
Commencement of commercial production	April,2025	April,2025

Comment:

- *The Project Implementation Schedule is completely based on the funding arrangement from The Holding/Parent Company*

Roll bond evaporator

The Project implementation schedule of the proposed expansion is given below:

Particulars	Commencement	Completion
Acquisition of Land	August, 2023	Alloted in September 2023 & Lease deed executed in March 2024
Building		
• Factory	January, 2024	March 2025
• Office and store room	January, 2024	March 2025
• Ancillary	January, 2024	March 2025
Plant & Machinery		
• Placement of orders	May, 2023	November, 2024
• Arrival of machinery	July, 2024	December, 2024
• Erection and installation	September, 2024	January, 2025
Miscellaneous Fixed Assets		
• Placement of orders	April, 2024	November, 2024
• Arrival of machinery	July, 2024	December, 2024
• Installation	September, 2024	January, 2025
Power connection	November, 2024	January, 2025
Water connection (Tubewell)	February, 2024	June, 2024
Trial Production	February, 2025	April,2025
Commencement of commercial production	April,2025	April,2025

Comment:

- ***The Project Implementation Schedule is completely based on the funding arrangement from The Holding/Parent Company***

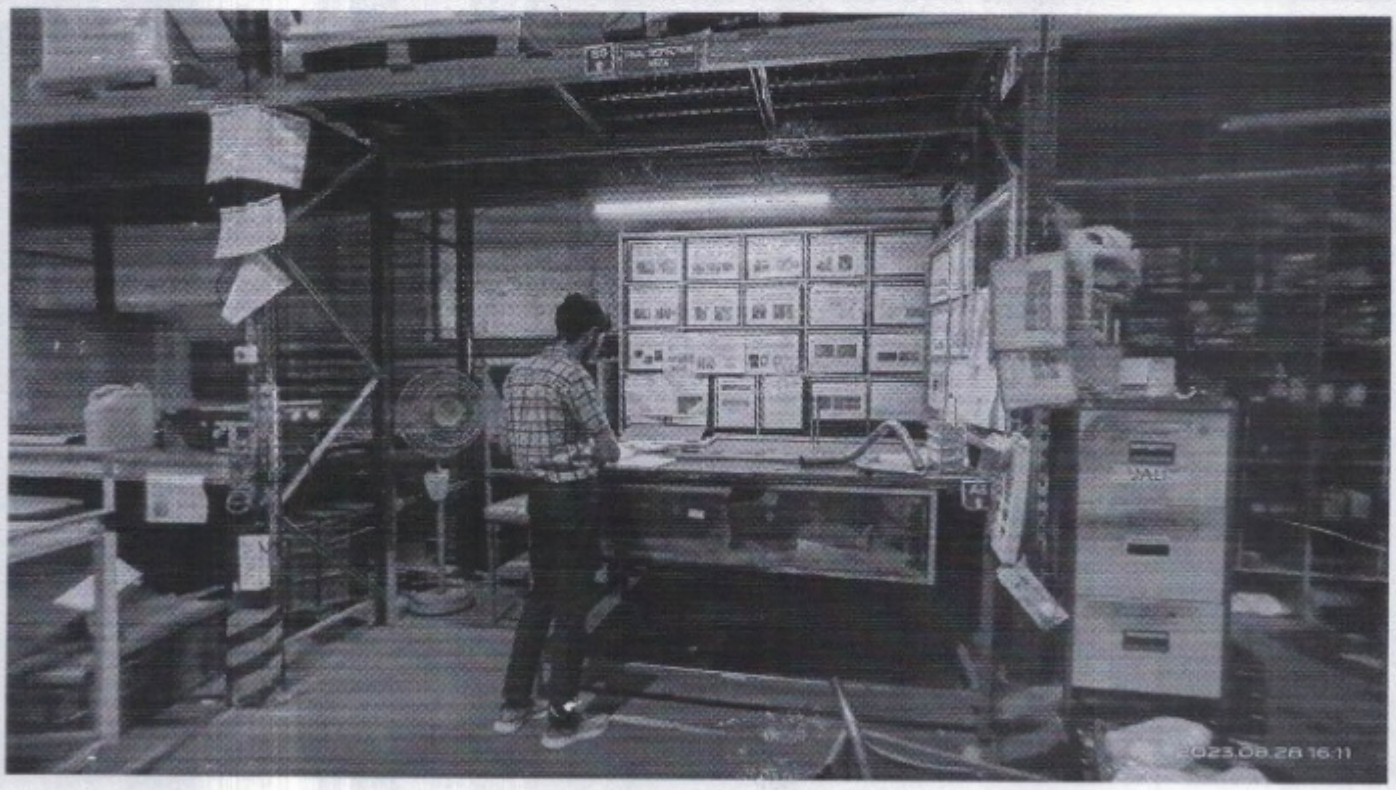
3.19 Site Visit

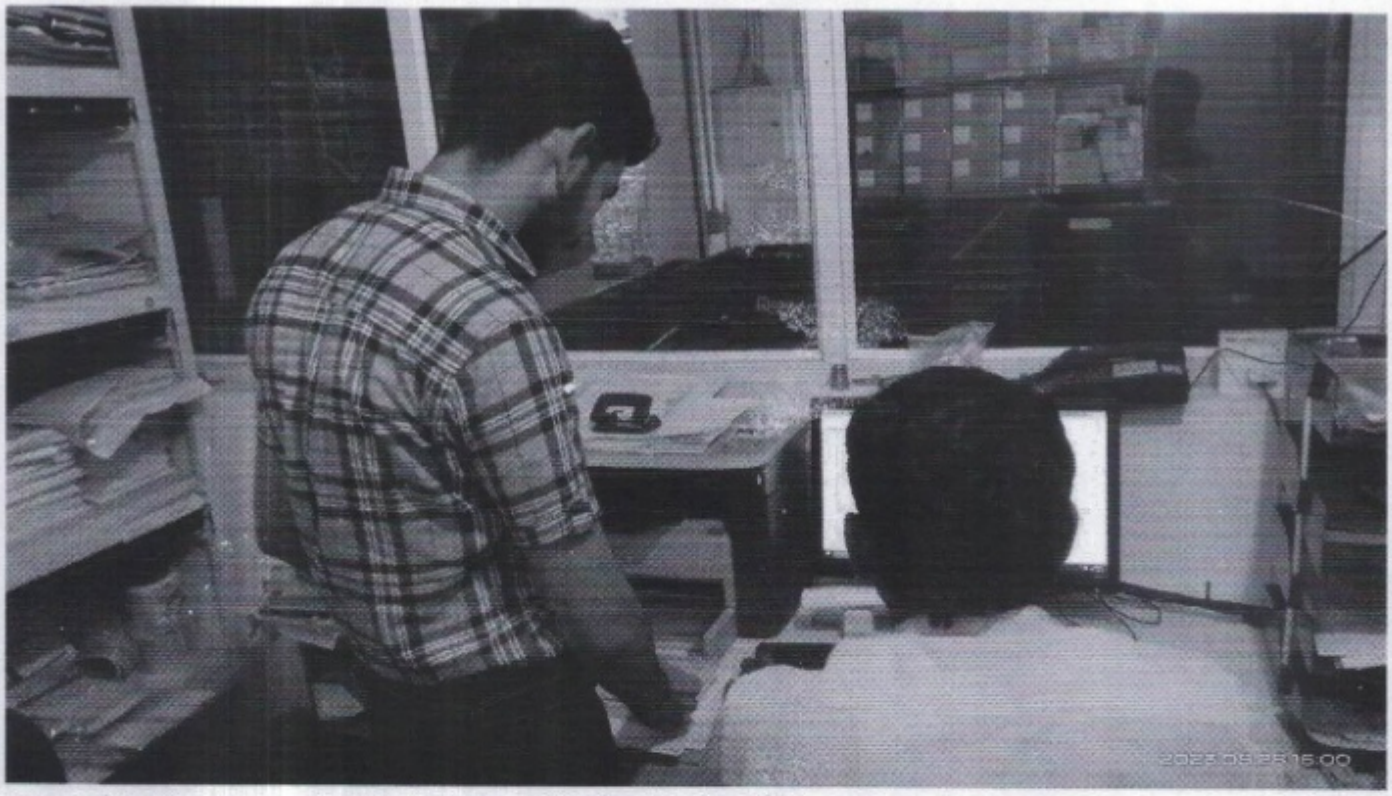
We have visited both the existing as well as proposed plant of the Group on 28/08/2023 and undertaken physical verification of all significant Machineries used in the process of production and for other assets we have placed reliance on the details / information's provided to us by the management of the company of ongoing activities carried out / being carried out, and the same has been incorporated as hereunder.

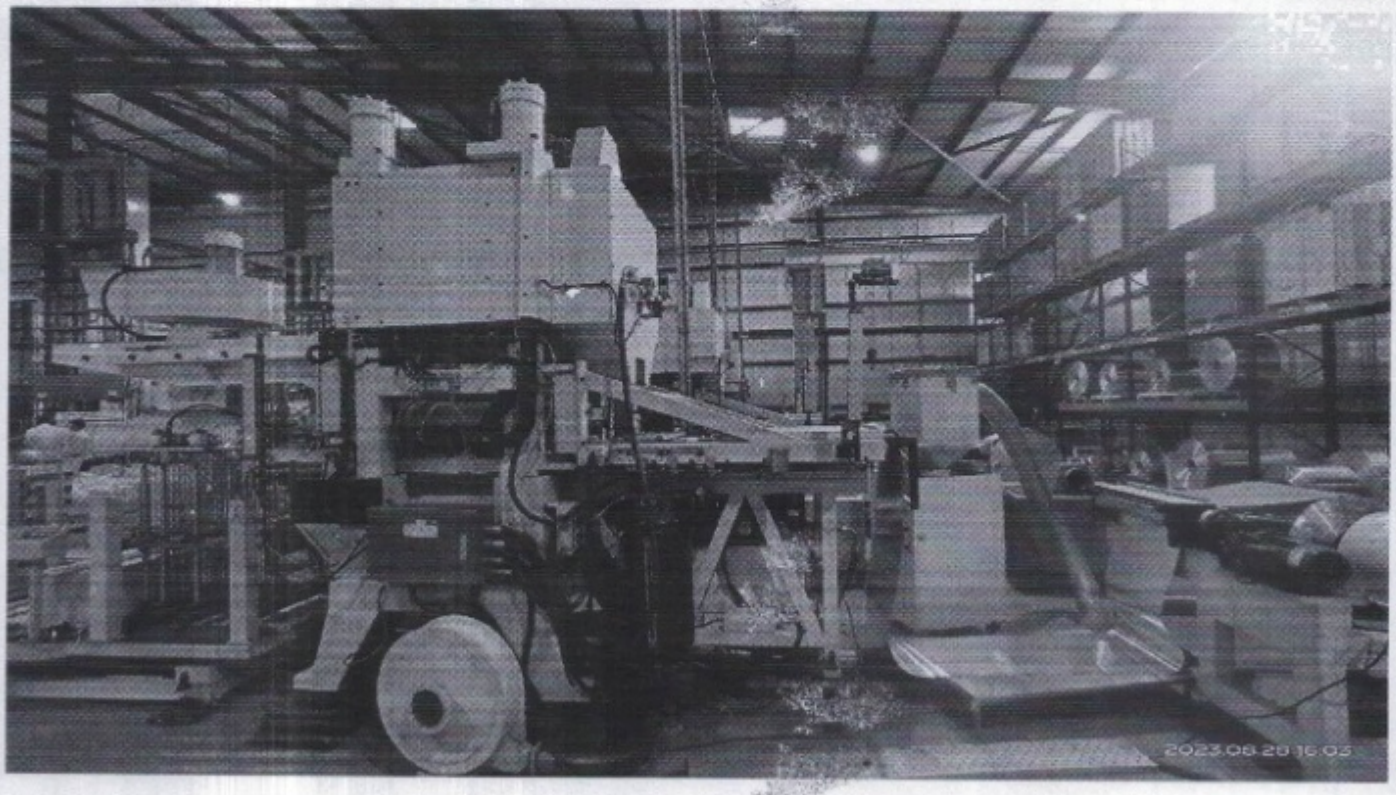
Plot No. F-50, G-51, EPIP, RIICO Industrial Area, Neemrana, Rajasthan (Proposed Project-1)

Plot No. SP 1-24, Kolila Joga, Neemrana, Rajasthan
(Proposssed Project-2)

Plot No. F-46,47,48,49,EPIP, RIICO Industrial Area, Neemrana, Rajasthan
(Existing Unit)







3.20 Manpower:

In order to operate and maintain the plant facilities, including its technical, general administration needs, the estimated manpower requirement are mentioned below

The details of cost of manpower required for the proposed Project (Project -1) have been estimated as under:

(Amounts in Lakhs)

Particulars	Number of Persons	Cost (Per Year)	Total Salary
A. WAGES:			
Supervisor- Prodn.	2.00	6.00	12.00
Plant Operators (All Prodn.)	5.00	10.00	50.00
Quality Supervisor	2.00	6.00	12.00
Quality Inspector	2.00	4.00	8.00
Security Supervisor	1.00	3.60	3.60
Security Guard	2.00	3.00	6.00
Asst. Manager - HR/Admin	1.00	6.00	6.00
Stores Exe.	1.00	3.00	3.00
Loading Labour	2.00	3.00	6.00
Peons	2.00	1.20	2.40
Sweeper/ Cleaner	4.00	3.00	12.00
Electrician	1.00	3.00	3.00
Maintenance Eng.	2.00	3.60	7.20
Manager- PE & Maint	1.00	7.00	7.00
Manager- Prodn.	1.00	7.00	7.00
Manager- Quality	1.00	7.00	7.00
Manager- HR/Admin	1.00	7.00	7.00
Dy Manager -Accounts	1.00	7.00	7.00
Sr.Engineer - Purchase	1.00	6.00	6.00
Driver	2.00	3.00	6.00
Gardner	1.00	3.00	3.00
Canteen Staff	4.00	3.00	12.00
Total			193.20

Comment:

- *The Management has provided the details of manpower, based on their experience of existing plant run at its holding company (KRN Heat Exchanger and Refrigeration Limited) and their corresponding workforce, the proposed manpower seems to be sufficient to handle the plant.*

The details of cost of manpower required for the proposed Project (Project -2) have been estimated as under:

(Amounts in Lakhs)

Particulars	Number of Persons	Cost (Per Year)	Total Salary
A. WAGES:			
Manager-Prodn.	10.00	12.00	120.00
Manager-Quality	10.00	12.00	120.00
Manger PE / Maint	10.00	12.00	120.00
Manager- Stores	10.00	7.50	75.00
Manager- Purchase	10.00	8.00	80.00
Manager- SCM	10.00	8.00	80.00
Manager D/D	10.00	10.50	105.00
Manager Accounts	5.00	9.60	48.00
Manager- HR/Admin/IR	5.00	10.00	50.00
Manager- EHS	5.00	10.00	50.00
Officer Safety & Welfare	10.00	6.00	60.00
Sr. Executive /Exe- EHS & Safety	4.00	6.80	27.20
Sr. Engineer/ Eng. - Prodn.	20.00	38.00	760.00
Sr. Engineer/Engineer - Quality	10.00	20.00	200.00
Sr. Engineer/ Engineer - PE/Maint.	10.00	15.00	150.00
Sr. Executive/Executive - Stores	3.00	7.20	21.60
Sr. Executive/ Exe. - Purchase	2.00	8.40	16.80
Sr. Executive/Exe. - SCM	2.00	8.40	16.80
Sr. Engineer /Eng- D/D	4.00	7.50	30.00
Sr. Executive /Exe. Accounts	2.00	10.40	20.80
Sr. Executive/ Exe.- HR/Admin	4.00	12.00	48.00
Security officer	2.00	4.56	9.12
Security Superevisor	4.00	3.60	14.40
Security Guard	6.00	3.00	18.00
Prodn. Operators	20.00	15.00	300.00
Quality Inspector	5.00	12.00	60.00

Maint. ITI , Fitter, Electrician, Tool & Helper / ETP & STP Operator	20.00	12.00	240.00
Loading Labour	6.00	3.00	18.00
Peons / Canteen Staff	6.00	3.00	18.00
Sweeper / Cleaner	15.00	8.00	120.00
Hotriculture Gardner	6.00	3.00	18.00
Driver	10.00	4.50	45.00
Rly Bus./RMPU/Cab A/c., Bus A/c & Truck A/c.			
Workman	5.00	10.00	50.00
Supervisor	11.00	6.00	66.00
Manager- Prodn.	5.00	8.00	40.00
Manager- QC & QA	10.00	10.00	100.00
Manager- Maint	8.00	10.00	80.00
Manager- MKT	3.00	5.00	15.00
Sr. Engineer/Engineer -D&D	3.00	5.30	15.90
Sr. Engineer/Engineer -QC & QA	2.00	5.50	11.00
Service Engineer	4.00	10.00	40.00
Executive/ Engineer - Sales	25.00	20.00	500.00
Manager- Testing	1.00	1.00	1.00
Engineer - Testing	1.00	4.80	4.80
Total			3,983.42

Comment:

- *The Company has provided the details of manpower, based on the existing capacity and their corresponding workforce, the proposed manpower seems to be sufficient to handle the plant.*
- *Wages cost is increasing by 5 % Every Year.*

Chapter 4

Industry Analysis

INTRODUCTION

Heating, ventilation, and air conditioning (HVAC) is the use of various technologies to control the temperature, humidity, and purity of the air in an enclosed space. Its goal is to provide thermal comfort and acceptable indoor air quality. HVAC system design is a sub discipline of mechanical engineering, based on the principles of thermodynamics, fluid mechanics, and Heat transfer. "Refrigeration" is sometimes added to the field's abbreviation as HVAC&R or HVACR, or "ventilation" is dropped, as in HACR.

HVAC is an important part of residential structures such as single family homes, apartment buildings, hotels, and senior living facilities; medium to large industrial and office buildings such as skyscrapers and hospitals; vehicles such as cars, trains, airplanes, ships and submarines; and in marine environments, where safe and healthy building conditions are regulated with respect to temperature and humidity, using fresh air from outdoors.

Ventilating or ventilation (the "V" in HVAC) is the process of exchanging or replacing air in any space to provide high indoor air quality which involves temperature control, oxygen replenishment, and removal of moisture, odors, smoke, Heat, dust, airborne bacteria, carbon dioxide, and other gases. Ventilation removes unpleasant smells and excessive moisture, introduces outside air, keeps interior building air circulating, and prevents stagnation of the interior air. Methods for ventilating a building are divided into mechanical/forced and natural types.

What is an Evaporator Coil and how does it works?

An air conditioner's evaporator coil, also called the evaporator core, is the part of the system where the refrigerant absorbs Heat. It's where the cold air comes from. The evaporator coil is inside or near the air handler where the blower fan is. Evaporator coils are made from Copper, steel, or aluminum because these metals conduct Heat easily. Most residential AC evaporators consist of Tubes bent into U-shapes and set into panels. The panels are typically positioned in the form of an "A."

These panels are lined with thin pieces of metal known as Fins, which bring the passing air to be cooled closer to the coils to maximize the refrigerant's effect. As the AC runs, the compressor pulls cold, low-pressure liquid refrigerant through the tubing in the evaporator coil. Before entering the evaporator coil, the refrigerant passes through the expansion valve. This valve relieves pressure from the liquid refrigerant, which rapidly cools it.

The liquid refrigerant leaving the expansion valve is quite cold, which allows it to absorb Heat from the air. The expansion valve also controls how much refrigerant flows to the evaporator. More advanced expansion valves, such as thermostatic expansion valves (TXVs), can precisely control the flow to improve the system's overall energy efficiency. As the refrigerant flows, the blower fan draws hot room air over the evaporator coil. The refrigerant absorbs Heat from the passing air, and as it does so, it warms up and evaporates.

When the water vapor in your warm household air hits the cold evaporator coils, the water vapor condenses into liquid and drips down into the condensate pan, which drains the water away outdoors. This is how your evaporator coil reduces the humidity of the room.

Caring for the Evaporator Coil because of how they operate, evaporator and condenser coils need to be kept clean to perform as intended and reach optimal energy efficiency. A dirty evaporator coil can experience several problems, including:

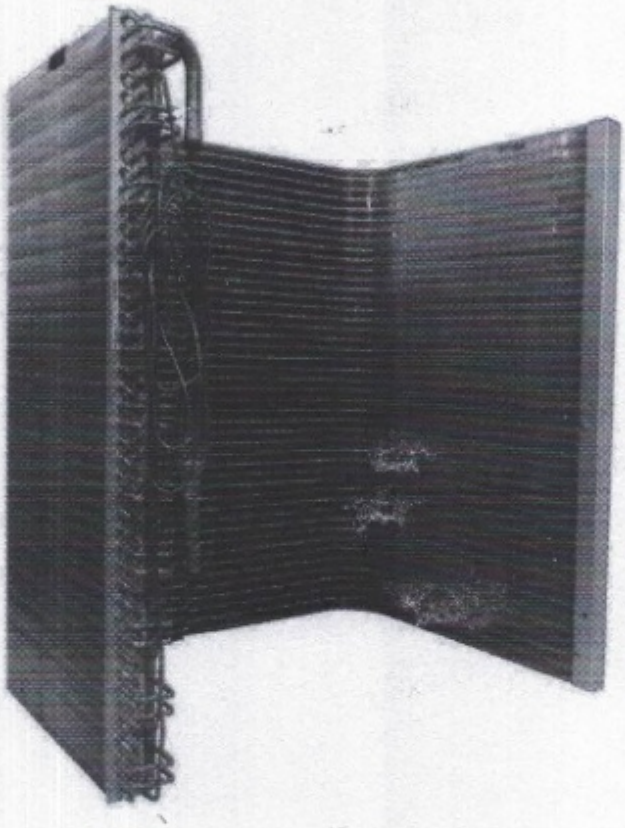
- Impaired Heat absorption and cooling capacity
- Higher energy use
- Higher pressures and temperatures
- Frost and ice buildup

Even a Fine layer of dust on the evaporator coil reduces its efficiency. The dust acts as an insulator, keeping the Heat in and the air away from the cold coils. That means the coil can't absorb as much Heat as it can when clean. Your system will then have to run longer to provide the indoor temperature you want, meaning it will use more energy. Because it isn't absorbing enough Heat, the refrigerant running through a dirty evaporator coil doesn't warm up as much as it should. This cold refrigerant causes water vapor in your air to freeze rather than condense into a liquid. Eventually, the whole evaporator coil can frost over.

A layer of frost on your evaporator is never normal. Letting your system run with a frozen evaporator raises the temperature in the compressor and can eventually cause this component to fail. Dust on the evaporator coil, debris on the outdoor condenser unit, a dirty air filter, and a refrigerant leak can all cause the evaporator to freeze.

Evaporator coils can also develop tiny pinhole leaks due to corrosion from the mixing of moisture from condensation with chemicals commonly found in household air. Oily residue around the evaporator or in the drain pan is a sign your coil is leaky and needs replacement.

The airborne chemicals that encourage these leaks are known as volatile organic compounds (VOCs) and come from new carpeting, upholstery, pressed wood furniture, air fresheners, cleaning chemicals, and many other sources. Ensuring good home ventilation reduces the VOCs in your indoor air, protecting the evaporator coil and your health.



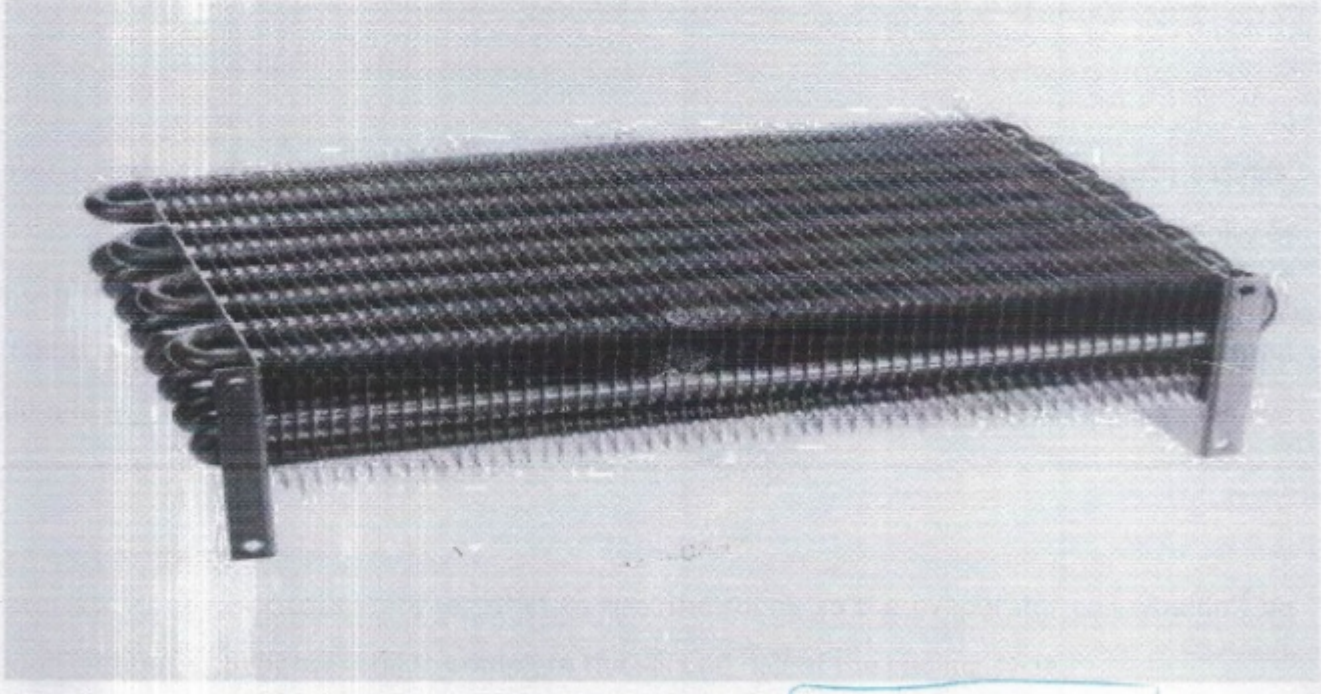
Evaporator Coils

What is Condenser Coil and how does Its Job?

A condenser plays a vital role in HVAC systems, as well as in industrial, commercial, and transportation Refrigeration systems. It serves the purpose of dissipating Heat into the environment, typically to the outdoor air.

Condenser coils is available in three main designs: end plates only, with frames, and with casings. Condensers with casings are specifically designed for mounting fans in separate condensing units or remote condensers. The fan plate features appropriately sized holes, which can be equipped with or without diffusers to optimize air distribution from the fans. Casings can be constructed using galvanized steel, aluminum, or stainless-steel sheets of varying thickness. For coils with special applications, we can incorporate brass and Copper end plates and frames.

Evaporator and condenser coils work together to cool the room, so the evaporator coil wouldn't be much good without a condenser coil to complete the second half of the cooling cycle.



***Condenser Coil**

What Is An Air Conditioner Condenser?

Air conditioner's condenser is contained in the large, square unit outside your house. Although the whole unit is called the "condenser unit," it contains multiple components, including the condenser Tubes and Fins, the compressor, a fan, and Copper tubing, as well as valves and switches.

After the refrigerant absorbs Heat from room's air, it travels outside via a Copper Tube to the condenser unit. Here, the low-pressure, warm refrigerant gas enters the compressor. The compressor pressurizes the refrigerant, turning it into a hot, high-pressure gas.

This gas leaves the compressor and flows into the condenser coils, which is where the refrigerant releases much of the Heat that was absorbed from your home. The fan on top of the outdoor unit blows air over the condenser coils, so the refrigerant inside loses Heat. The condenser's many coils increase the amount of time the refrigerant is in the path of blowing air, giving it plenty of time to release the Heat that was carried out of the room.

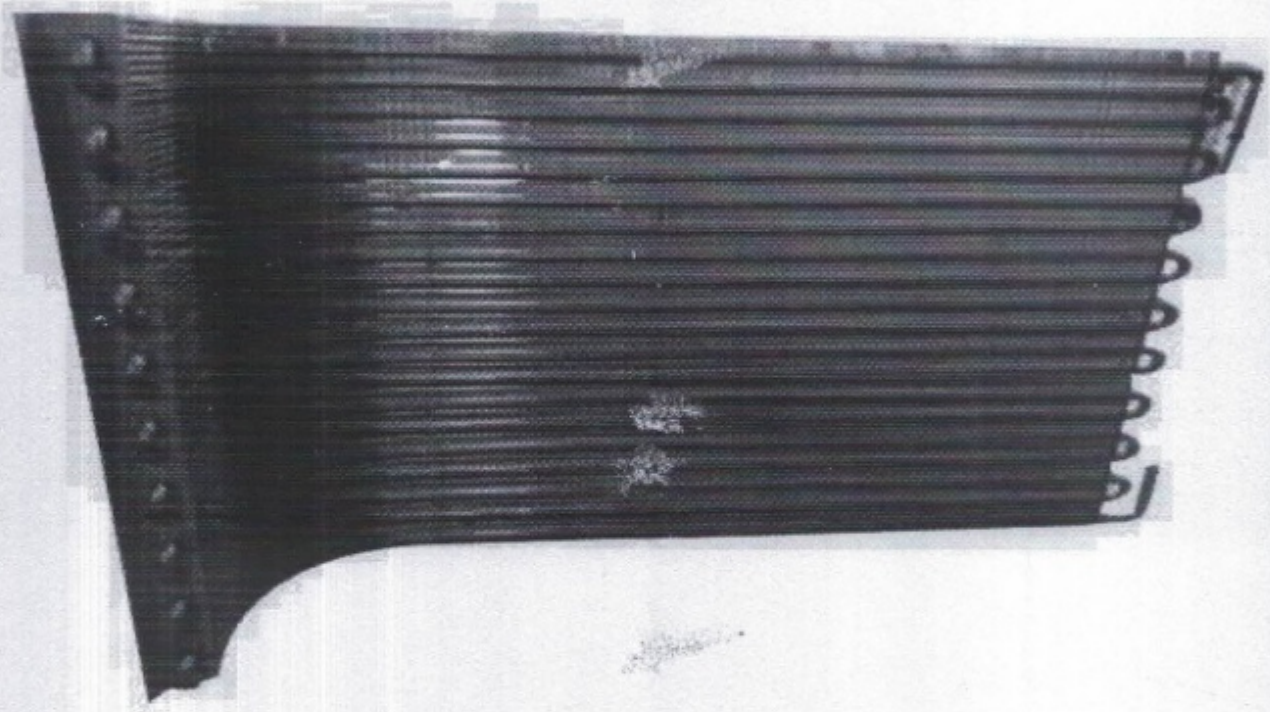
As it cools, the refrigerant changes from a hot gas to a hot liquid. From there, it flows back through a Copper Tube into your home and into the expansion valve in the indoor unit near the evaporator coil. Good airflow is critical for evaporator and condenser coils. Both these components transfer Heat, and dust or debris interferes with their ability to do this. For condenser units, the most common threat is a buildup of yard debris on the Fins.

This usually takes the form of grass clippings, fallen leaves, twigs, and pet hair that make it harder for the condenser to release Heat. This reduces your AC's energy efficiency and strains the condenser and other components.

On occasion, an AC condenser can develop frost or a complete casing of ice. Assuming the condenser unit is clean, ice-ups like this usually mean there's an airflow problem elsewhere in your system. It could

be a dirty air filter, dirty air registers and vents, a duct blockage, or a dirty evaporator coil. Ice on the condenser can also be caused by low refrigerant, which requires a call to a technician.

When the cooling season ends, protect the outdoor condenser from the elements by covering the top with a piece of wood held down at all four corners by bricks. This keeps snow from piling up inside.



**Air Conditioner Condenser

What Is A Fluid And Steam Coils?

Fluid coils are used to Heat or cool air within a conditioned space.

The fluid passes through Heat exchanging coil (Finned Tubes) which are blown by the air flow from the fan, as a result of which its temperature changes (decreases or increases depending on the temperatures difference air/fluid). The working fluid can be water, aqueous solutions of ethylene and propylene glycol, brine, a process product, or other viscous fluid. In fluid coils we use smooth Copper Tubes with different thickness and can use the Fins with anticorrosive coating. For cooling coils use hydrophilic coating.

Fluid Coil type Heat Exchangers can be used in Fluid coils are used to Heat or cool air within a conditioned Air Handling Units (AHU) to capture the warmth or chill in the air or water, to prevent it from being lost. It can also be used to transfer the Heat or cold in other systems such as dry-coolers, fan-coils, oil coolers etc. For cassette ceiling fan-coils we can produce bent coils of different types: L-coils, U-coils, O-coils and special form.

The headers of fluid coils can have different connecting fitting and additional valves depend on request of the customers. To ensure the highest quality results, we manufacture headers and end plates in our own press shop.

Steam coils type of Heat Exchangers are used in industrial air Heating and processing as well as in HVAC applications. Steam coils use the Heat that is released when steam condenses (change of state from vapor to a liquid). Coils in this case must be manufactured and designed with thicker materials, keeping in mind the exposure to high temperature and pressure plus added chemicals and easy removal of condensate.

Steam coils are used in a wide range of applications in several industries like HVAC, power generation,

food storage & processing, and military.

***Fluid and Steam Coils**

(Source: https://dataintelo.com/report/fluid-coils-market/)

Market Scope and Structure Analysis:

The global Fluid Coils market is expected to grow at a CAGR of 5.1% from 2022 to 2030. The growth of the global fluid coils market can be attributed to the increasing demand for residential, commercial, and industrial applications across the globe. In addition, the growing awareness about energy-efficient Heating and cooling systems is also fueling the growth of the global fluid coils market. The Tubed fluid coils segment is expected to hold a major share of the global fluid coils market during the forecast period.

Growth Factors:

- Increasing demand from the end-user industries for Heat Exchangers and coils.
- The growing popularity of miniaturized Heat Exchangers and coils.
- Rising demand for energy-efficient Heating and cooling systems.
- The proliferation of smart buildings that require advanced Heating, ventilation, and air conditioning (HVAC) systems.
- Technological advancements in the design and manufacturing of Fluid Coils.

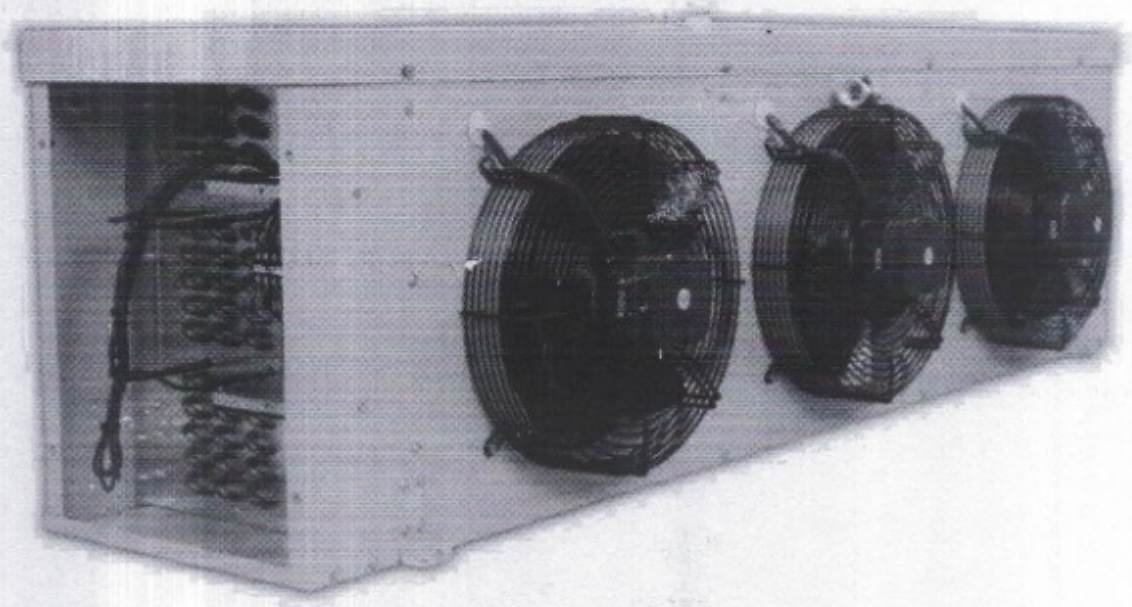
What Is Condensing Units And Air-Cooling Unit?

A complete Refrigeration circuit includes four main elements: compressor, condenser, throttle device and evaporator. The compressor compresses the refrigerant to a high saturation pressure and feeds it to the condenser for further cooling and condensation. The excess Heat of condensation is released into the surrounding air. The liquid refrigerant leaving the condenser passes through the expansion valve and is fed into the evaporator, where it evaporates, removing Heat from the environment.

Often the main components of a Refrigeration system are manufactured as separate units: the condensing unit and the air- cooling unit (unit cooler).

The condensing unit consists of a compressor, condenser coil and fan motor, connected by pipelines into one system on a mounting plate or in a closed casing. The operation of the condensing unit is carried out from the controls panel.

An air-cooling unit (unit cooler) consists of an evaporator coil, fan motor, electric panel, controls and optional electric Heaters for defrosting, throttle valve etc.



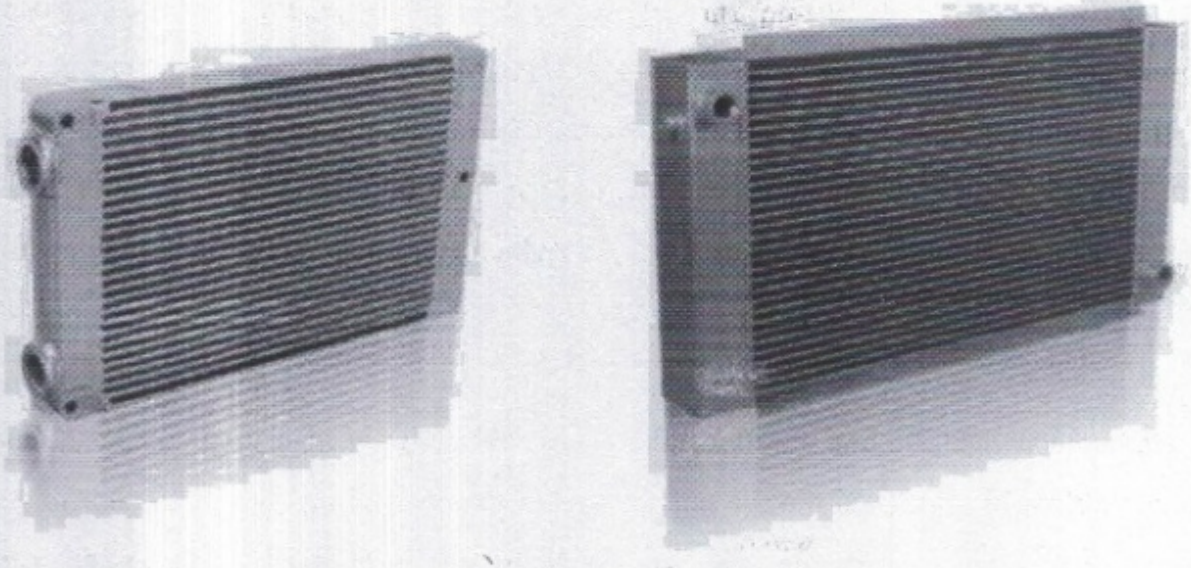
***complete Refrigeration circuit**

(Source:https://www.alliedmarketresearch.com/industrial-cooling-system-market-A12451)

What Is Bar And Plate Heat Exchanger?

Bar and plate coolers feature a wide variety of thermally efficient internal and external Fin patterns. Fins are laid between aluminum braze sheets and fitted with header and face bars. The assembled unit is placed into one of our modern brazing furnaces where precise control of time and temperature produces a unified core. Manifolds designed to meet each customer's particular piping requirements are welded into place to complete the cooler. We can also supply cores when manifolds already exist or must be fitted in the field.

These rugged, compact, light-weight units are ideal for both on- and off- highway markets. The value added to the product by packaging a complete cooling system consisting of multiple coolers (e.g., radiator, charge air cooler, hydraulic oil cooler).



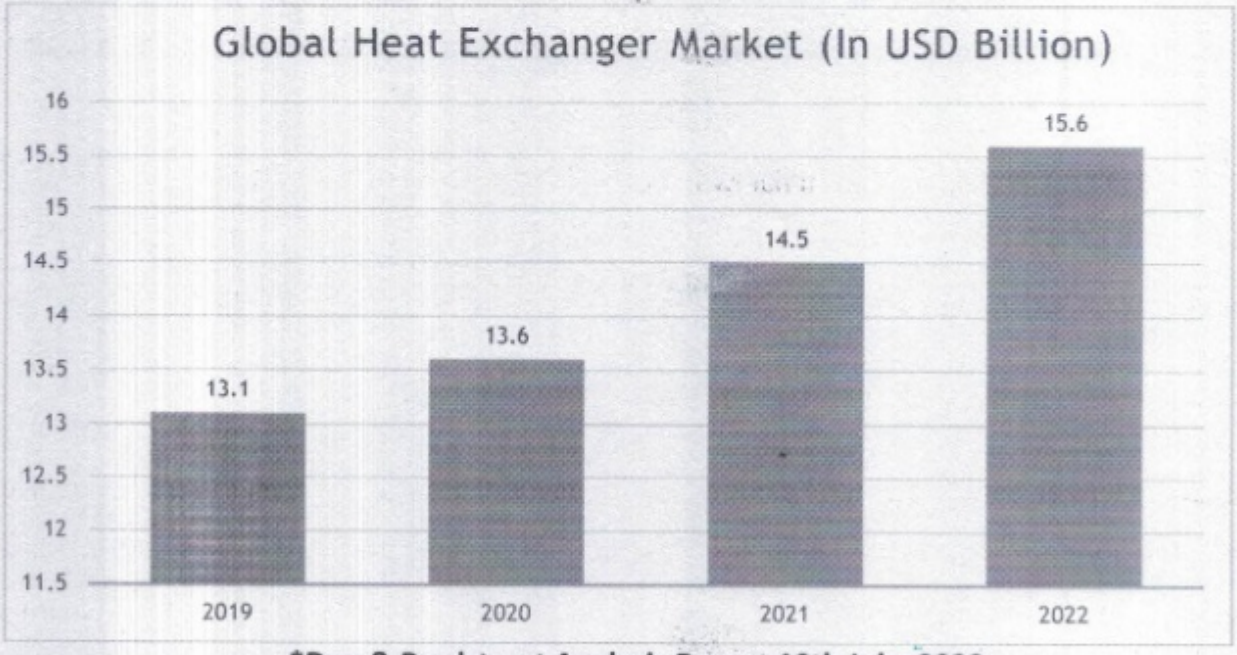
***Bar and Plate Exchanger**

Heat Exchanger Industry:

Global Heat Exchanger market is valued at USD 15.6 billion in 2022, with annual turnover in the industry increasing a CAGR of 6.2% between 2019 and 2022. Globally, the demand for Heat Exchanger is driven by two key factors – increasing demand for sustainable low energy consumption as well as cost-effective solutions to achieve the same.

On the one hand, industries across the world are investing in technologies & processes that are designed to reduce cost and improve operational efficiency. This is seen as a precursor to the next stage of evolution of the industrial sector – namely Industry 4.0 which involves close integration with digital technologies.

This development pathway has triggered innovations in products / hardware used as well as systems & processes. In the case of Heat Exchangers, the innovation is directed towards superior designs that would improve thermal efficiency which in turn will help in reducing energy cost as well as cut down their carbon footprint.



***Dun & Bradstreet Analysis Report 10th July, 2023**

Traditionally North America and Europe were the two strongest market for Heat Exchangers, partly due to their strong industrial base and the pace of innovations in manufacturing space. However, the gradual shift in manufacturing & industrial activity from developed markets to developing economies like China and India is triggering a change in global Heat Exchanger market.

Large scale industrialization in China and India has transformed APAC into a key market for Heat Exchangers. Countries like China, India and Southeast Asian nations which have led to increased demand for energy and infrastructure development, thus driving the need for Heat Exchangers in various sectors such as power generation, oil and gas, and chemical processing.

Further, the presence of a robust manufacturing base complementing expanding industrial sectors and supported by rising public and private investments in key industries have created a favorable market environment for Heat Exchangers in the Asia Pacific region This transformation has made APAC the fastest growing Heat Exchanger market. Between 2019 and 2022, the APAC Heat Exchanger market witnessed a compounded growth rate of 7%, higher than the growth that was registered in Americas and Europe.

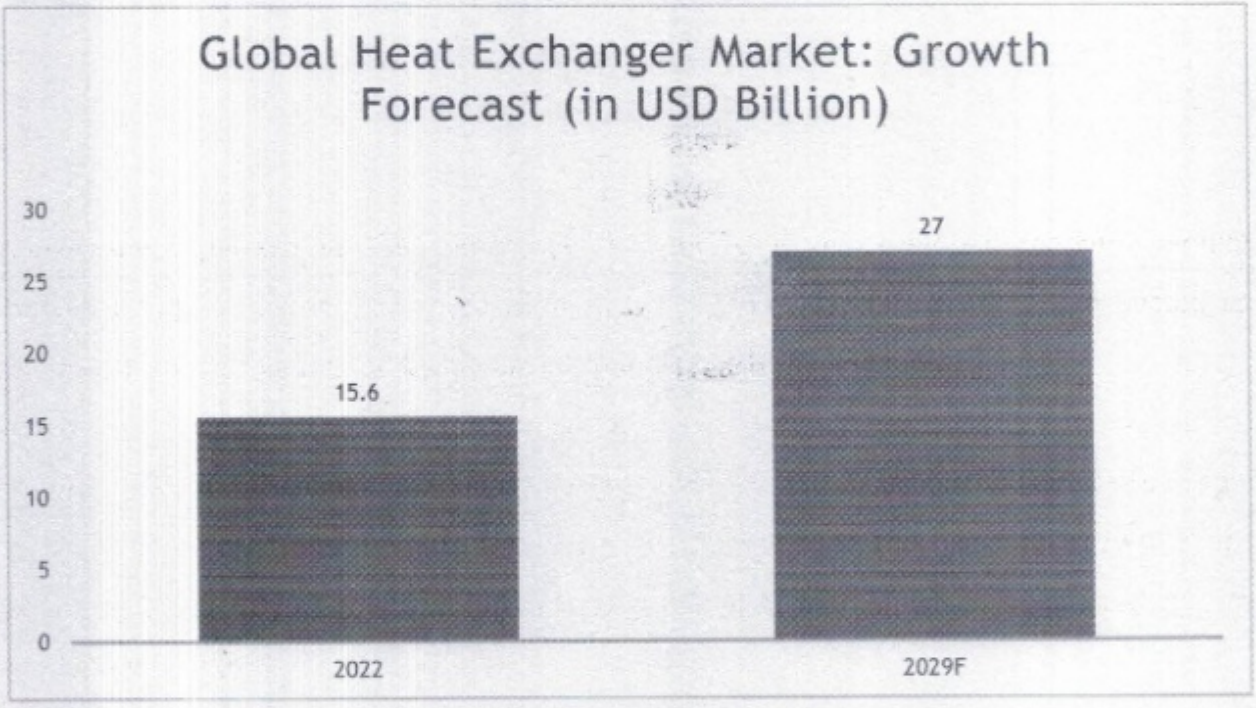
Market Scope and Growth Forecast:

Global Scenario:

At Global Level, Consolidated capital expenditure spending of S&P 500 companies grew by nearly 20% in 2022, over the previous year. For the year 2023, the capex spending by this segment is expected to be nearly 6%, with the lower growth rate attributed to the evolving uncertainties and recessionary fears across key developed economies. Despite this, the long-term outlook with respect to capital spending appears to be optimistic. Factors like transition to clean energy, increase in automation in manufacturing, and integration of digital technologies to industrial sector are all expected to favor capital spending.

Capital investment pattern in the coming years, specifically in developed markets, would be characterized by up gradation in manufacturing infrastructure. Capital spending is expected to be strongest in Asia Pacific market, led by increased spending in China and India.

By 2029, the global Heat Exchanger market is expected to reach USD 27 billion, up from the current size of USD 15.6 billion. This translates into a CAGR of 8%, higher than the historical growth that was recorded during 2017 – 2019. Growth would be strongest in APAC market, which is expected to increase by a CAGR of nearly 8.9%.



*** Dun & Bradstreet Analysis Report 10th July, 2023**

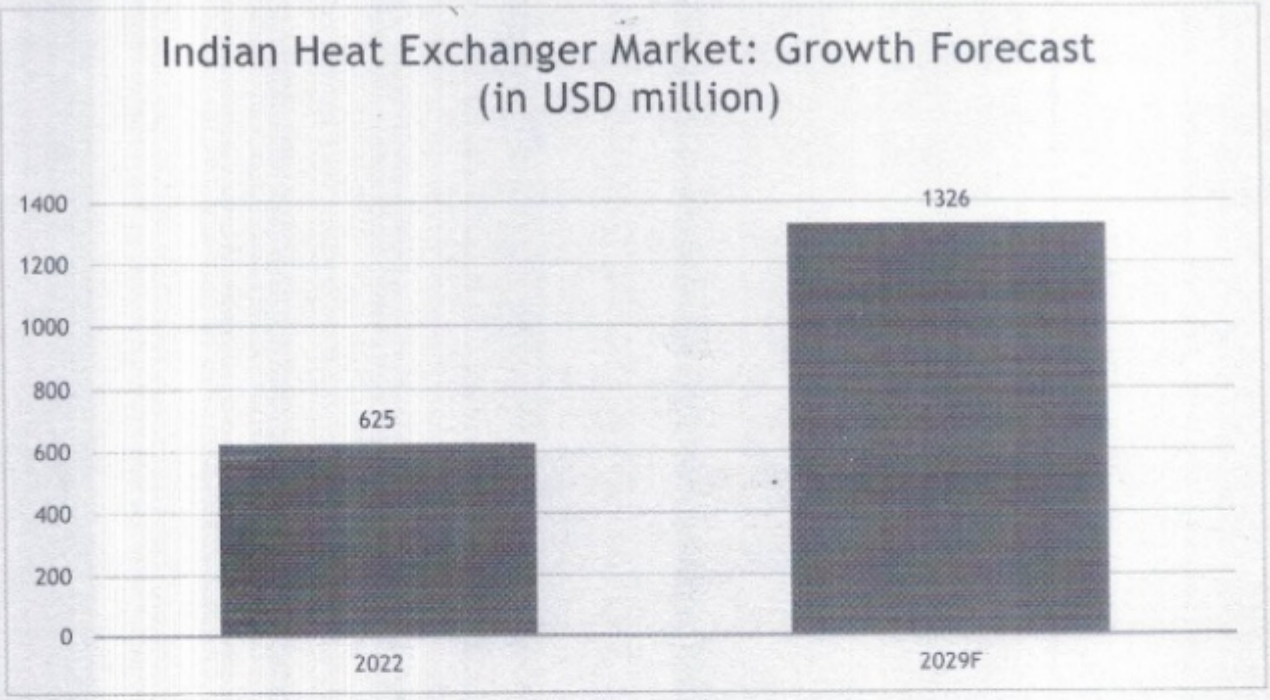
India Scenario:

Economic growth in India in the coming years would be underpinned by following factors – Government focus on improving the manufacturing infrastructure, and improvement in credit availability for the corporate sector.

Indian Government is taking steps to modernize and develop the domestic manufacturing capability, with the intention of increasing its contribution to GDP, from the current 15% to 25% by FY 2025. Flagship schemes like Make in India, Production Linked Incentive (PLI) scheme and Atmanirbhar Bharat was launched with the intention of meeting this goal.

The primary objective of these policies to import substitution (substituting imports with domestically manufactured goods), and later on become an export hub. This would involve substantial expansion in domestic manufacturing capabilities – across a wide range of industries. Schemes like Make in India and PLI is focused on multiple industries, hence the capacity expansion anticipated would be industry wide and not concentrated in select sectors.

These developments, together with improvement in capital investment scenario is expected to translate into modernization & expansion of domestic manufacturing capability. This expansionary phase would create demand for a wide range of capital goods, and Heat Exchangers – because of its ubiquitous application in process industries – is one of the major product segments to benefit. These developments would help the domestic Heat Exchanger market to increase from its current size of USD 625 million to USD 1,326 million by 2029. This would translate into a compounded growth rate of 11.3%.



*** Dun & Bradstreet Analysis Report 10th July, 2023**

- In India there is rapid market for HVAC Product because of high population, high demand of air conditioner, rapid change in technology, etc.

Top Impacting Factors:

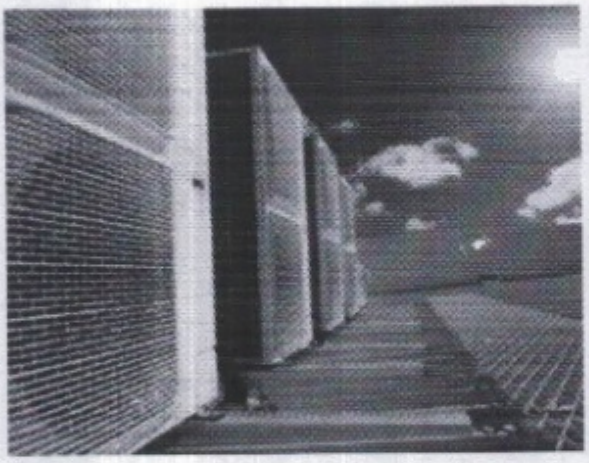
- The main factors that are responsible for elevating the slope of market growth for HVAC fan and evaporator coil market, consist of growth in modernization, the launch of energy-capable HVAC systems, rebate & incentive scheme provided by the governments, and increased expenditure in the construction sector all over the globe.
- Due to global warming, the rise in temperature has been the very cause of increased demand within the consumers for products of HVAC industry which will automatically boom the HVAC fan and evaporator coil market.
- The rise in the construction sector in areas such as the U.S. and Middle East is also the reason behind the growth.
- Along with this, the industry leaders such as Johnson Controls, Carrier Corporation, and Daikin Industries, have specifically enhanced market growth.

APPLICATIONS OF EVAPORATOR COILS AND CONDENSER COILS

Evaporator coils and condenser coils are well suited for a wide range of Heating, ventilation, air conditioning and Refrigeration applications.

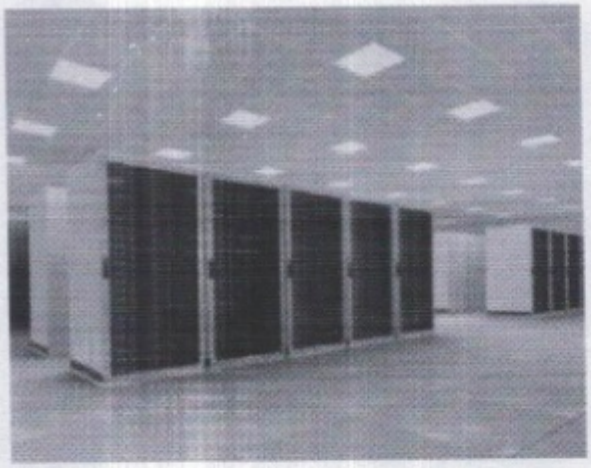
1. **Air Conditioning**

- **Commercial**: Fan coil units & cassette type HVAC for Residential, Hotels, Hospital AC, Cloth dryer/ Washing Machine, Rooftop HVAC Units
- **Industrial:** Construction and Civil e.g.: Paper & Pulp Mills
- **Mobile:** Automotive HVAC, Defense AC, Railway/Metro HVAC, Airport Shuttle, Transit Bus
- **Precision:** Precision Air Conditioning e.g.: Data Centre Cooling, Server Farms

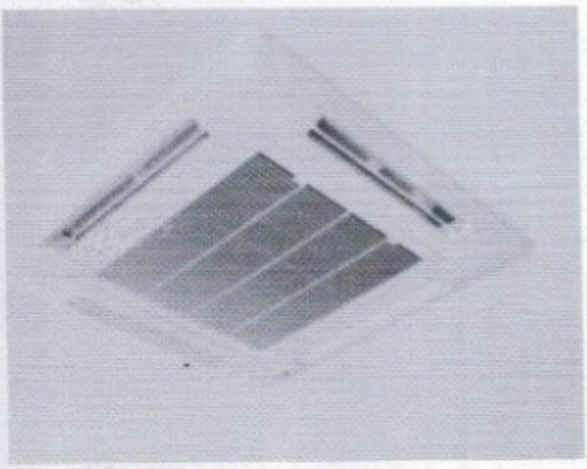


*AC-11-300x236

*AC-Bus-300x236

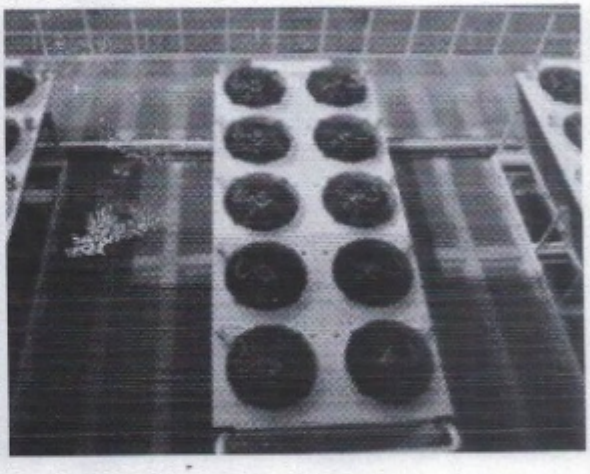


*AC-Data-Centre-1-300x236



*AC-Ceiling-1-300x236

*AC-Metro-2-300x236



*AV-Ventilation-300x236

2. **Refrigeration**

- **Commercial Refrigeration: Examples**: Frozen food Storage, Water Coolers, Vending Machines, Beverage Coolers, Truck and Container Refrigeration.

*Refrigeration-1-300x236

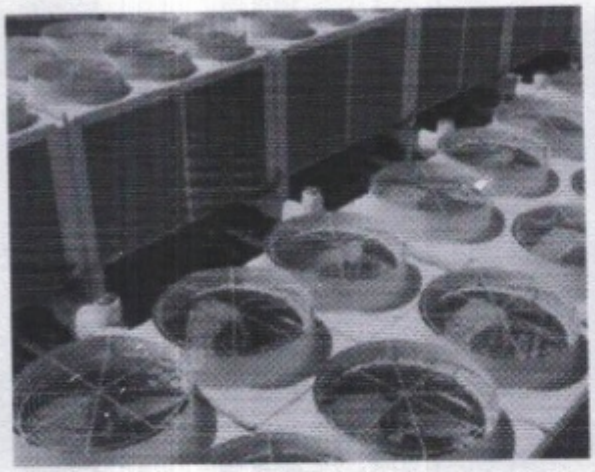
*Refrigeration-2-1-300x236

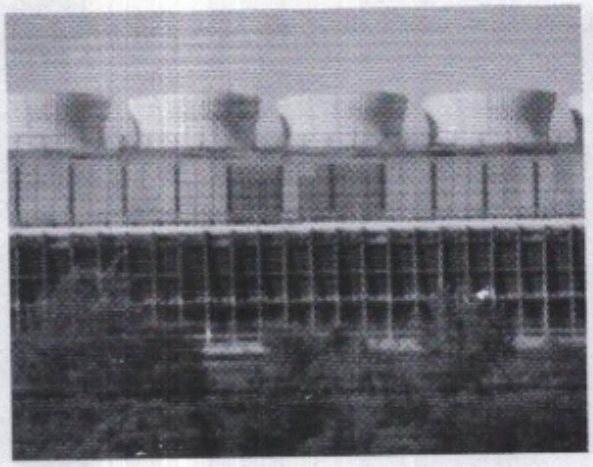
*Refrigeration-3-1-300x236

*Refrigeration-4-300x236

3. Process Cooling

- Oil, Gas and Chemical Plants, Power generation





LOCO MOTIVE INDUSTRY

KEY MARKET INSIGHTS

The global locomotive market size was valued at USD 8.63 billion in 2021. The market is Projected to grow from USD 8.93 billion in 2022 to USD 15.01 billion by 2029, exhibiting a CAGR of 7.70% during the forecast period.

Locomotive is a crucial part of the train system; it is a specific type of train car, which runs the whole train set. It is a self-propelled train car that generates energy by burning fuel or runs on electricity using magnetic levitation and other methods. It is used to push or pull other train cars, helping transport goods and passengers worldwide from one place to another.

Growth

DRIVING FACTORS

Increasing Freight Transportation and E-commerce Logistics to Drive Market Growth

As the population is increasing, the difficulty in transportation is rising, resulting in traffic congestion and pollution emitted by vehicles on the road. Due to this, railway transit has become a prime mode of transport to travel within or across cities on a daily basis. Moreover, mass transit of people by rail provides them with cost-efficient and time-saving traveling.

For instance, in 2021, the number of commuters traveling by train in China was recorded at around 2.61 billion. This number exceeded by 18.5% as compared to the number of commuters who traveled in 2020, which was 2.53 billion. Thus, increasing train passengers will drive the locomotive market growth during the forecast period.

The expansion of urban and metropolitan regions also creates a lucrative demand for rail network expansion. With the increasing number of routes, new locomotive requirements are generated to fulfil various transportation demands. Governments of various states and countries are also focused on expanding the railway networks and investing a huge amount of capital in developing railways that will drive the market.

Key Industry Development

- In October 2022, Union Pacific signed a partnership with ZTR to develop new hybrid-electric locomotives. Five more hybrid-electric locomotives are expected to be delivered in 2024. Union Pacific will replace one diesel locomotive with two locomotives, known as 'mother-slug' sets.
- In September 2022, Siemens Mobility extended its partnership agreement with leasing rolling stock specialist Akiem. Under this agreement, Siemens Mobility will provide a supply of 65 Vectron AC and Vectron MS locomotives to Akiem. The trains contain a maximum power of

6.4MWs and attain a maximum speed of 200km/h or 230km/h providing fast freight and passenger services across several countries in Europe.

- In July 2022, Wabtec Corp signed a contract with Union Pacific to modernize 600 locomotives. The contract was valued at USD 1 billion. The modernization of locomotives will improve fuel efficiency by up to 18%, increase reliability by more than 80%, boost haulage ability by more than 55%, and extend the life of the engines.
- In April 2022, Stadler signed a contract with Becon Rail for 30 bi-mode locomotives in the U.K. Under this contract, Stadler will deliver 30 Class 99 bi-mode Co locomotives along with its spare parts to be used for its operation in the U.K. The new locomotives are designed to be compatible with British gauge, and the specification combines 25kV A.C. electric and diesel operating modes. GB Rail freight will operate these locomotives.
- In November 2021, Wabtec Corp signed a contract with Egyptian National Railways (ENR) to supply 100 ES30ACi Evolution Series Locomotives and a multi-year service agreement to maintain the fleet. The European Bank for Reconstruction and Development funded the locomotive supply contract.

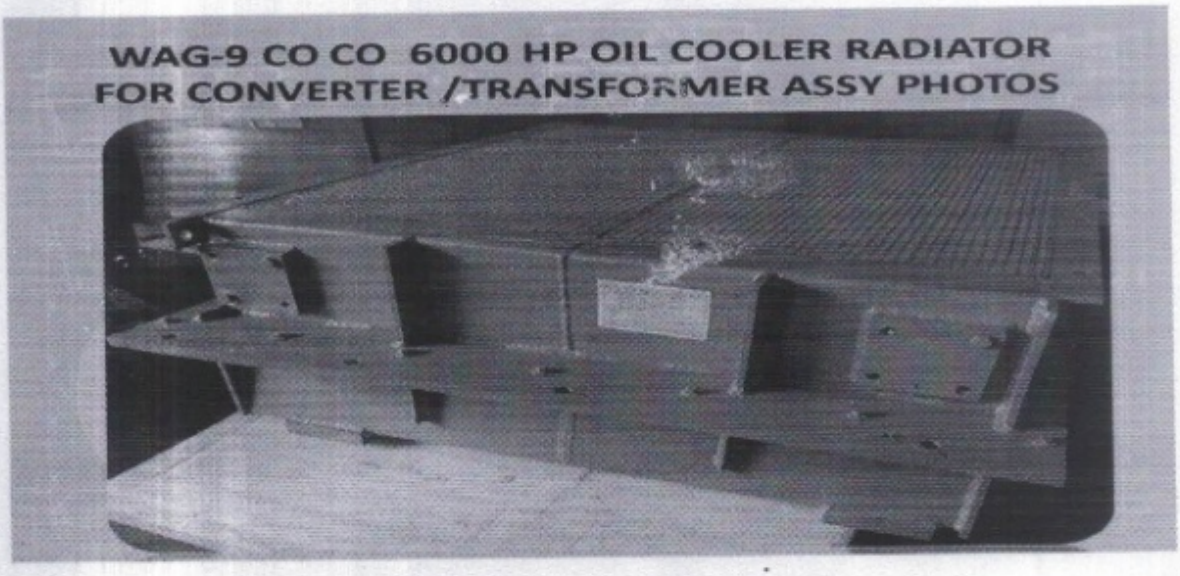
(Source: https://www.fortunebusinessinsights.com/locomotive-market-103285)

Product Related to Locomotive Industry

1. Oil cooler and Radiators

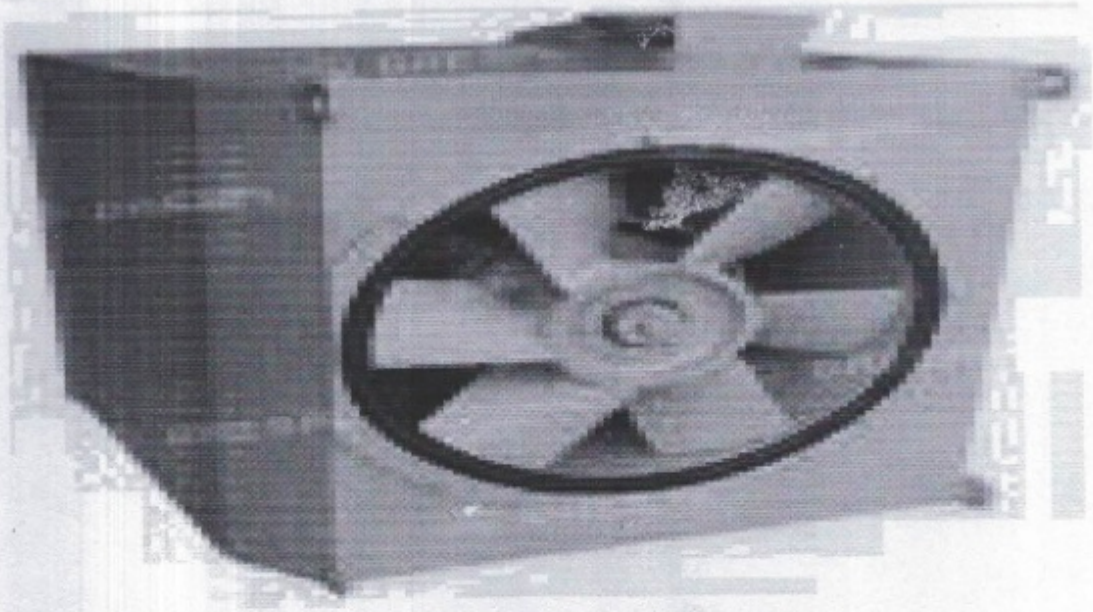
To Loco Manufacturers of Indian Railways to Chittranjan Loco works, Banaras Loco works, Patiala Loco works and for spares to all the LOCO sheds. The product is used for Transformer and convertor of Loco oil cooling. Each loco requires two no's and there will be potential of 4500 locos Indian railways manufactures in year and as sparer for loco shed all over India. These are sold through the online Tender participation in IRPS system.

It also used in Defense as Oil cooler and Radiators with complete assembly in Rack to Battle tank manufacturers – Heavy vehicle factory, AVADI, CHENNAI. This will be by online Tender through the defense portal.



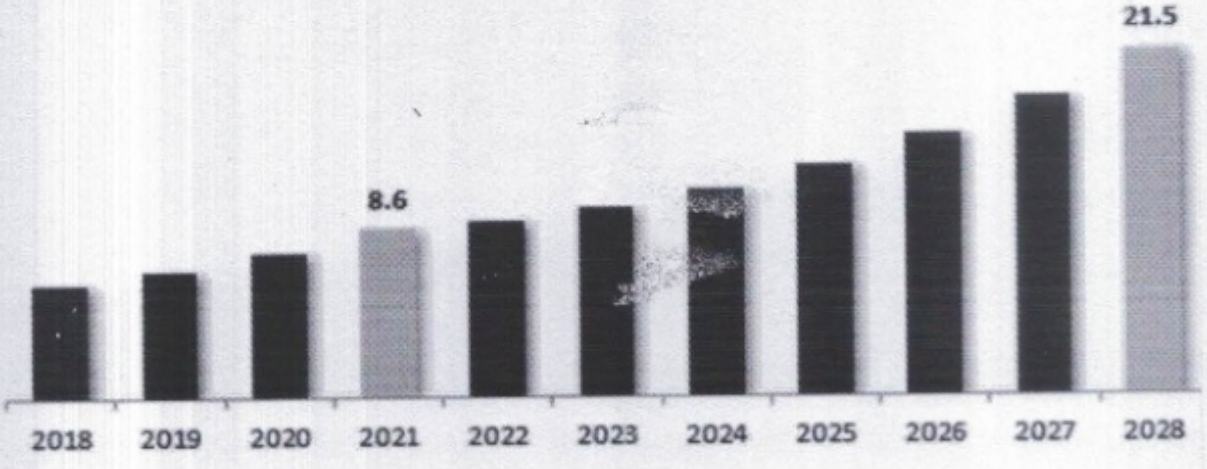
2. OIL COOLING UNIT WITH BLOWER & MOTOR:

The product is specifically used in LOCOMOTIVE. So, the LOCOMOVIVE Manufacturers – CLW, BLW, PLW and for service replacement all LOCOMOVIVE Sheds in India. It is Indian Railway's product comes in on line tender of IRPS system. The potential is 9000 to 10000 units per annum.



INDIAN HVAC INDUSTRY

India HVAC market was worth USD 8.6 billion in 2021 and is further Projected to reach USD 21.5 billion by the year 2028, growing at a CAGR of 14.80% in the forecast period. The market is growing at a high rate owing to factors such as rising disposable income and purchasing power of the consumers along with increasing investment towards infrastructural development and construction of various residential and commercial facilities. Furthermore, the integration of advanced technologies such as IoT is also offering significant growth opportunities to the India HVAC market.



Source: BlueWeave Consulting

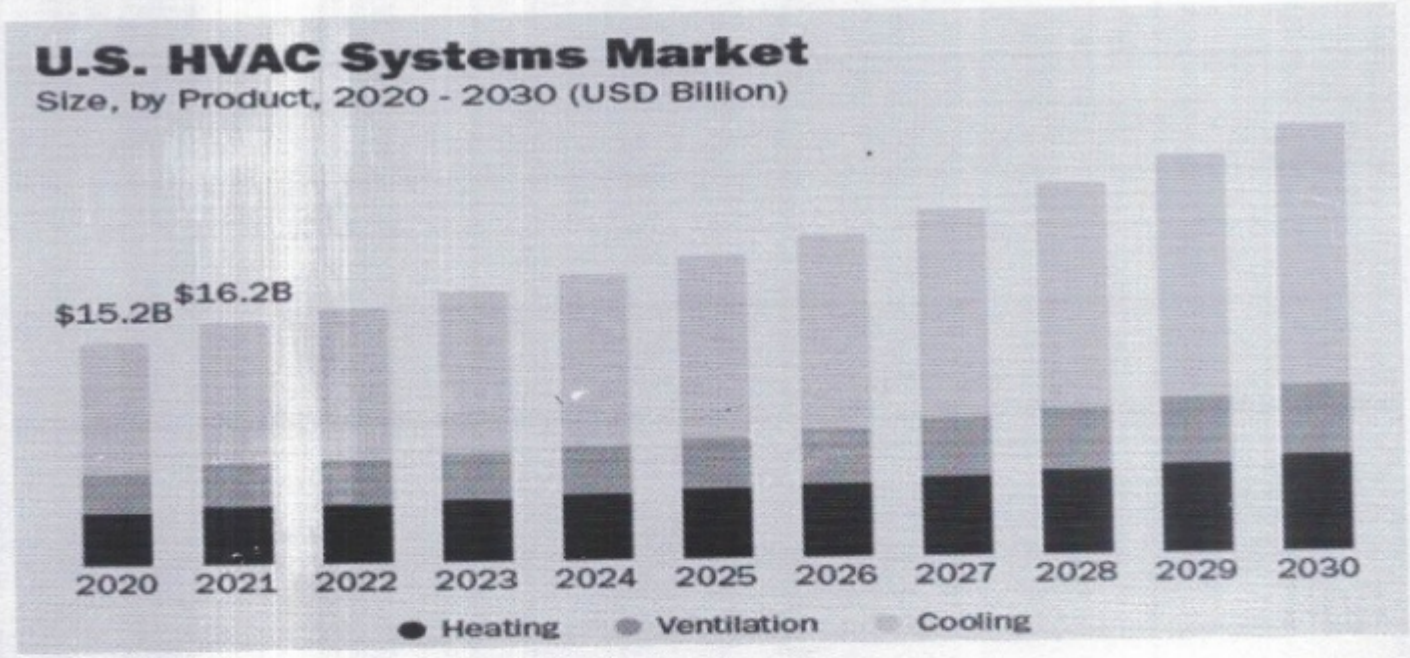
Rapid industrialization and urbanization, coupled with aggressive drive on infrastructure front have all accelerated the demand for Heat Exchangers. The strong annual growth in revenue is a result of these supporting factors. In addition, the ubiquitous nature of Heat Exchanger – which Finds application across all major industry segments – have ensured that a general growth in industrial activity and positive economic sentiment translate into demand for the product.

Apart from these direct demand drivers, the increasing focus on efficient energy usage to contain carbon emissions is shaping up as an indirect demand driver. Heat Exchangers with its ability to facilitate efficiency Heat transfer helps in optimizing energy demand. Given the dominant role played by hydrocarbon energy sources, any optimization in energy demand will directly translate into lower carbon emissions. So, Heat Exchangers is expected to play a major part in India's sustainable development journey.

(Source: https://www.blueweaveconsulting.com/report/india-HVAC-market)

GLOBAL HVAC INDUSTRY

The global HVAC systems market size was valued at USD 136.3 billion in 2022 and is Projected to grow at a compound annual growth rate (CAGR) of 6.3% from 2023 to 2030. Varied climatic conditions and the need to maintain ambient environment in a building is a key trend expected to impact the Heating, ventilation, and air conditioning (HVAC) systems market over the forecast period. In recent times, availability of smart features and energy efficiency have been key purchase criteria for most customers, and the trend is expected to gain traction over the next few years.



In the Asia Pacific, the market for HVAC systems is anticipated to witness healthy growth over the mid-term. An increase in multi-family and individual homeowners is creating avenues for future growth. The HVAC industry is gradually shifting focus on energy efficiency. Green initiatives are the focus area for several OEMs with an emphasis on saving money while reducing greenhouse emissions. Therefore, over the recent years, there has been a shift toward eco-friendly HVAC units. This includes products that consume less power and operate on renewable sources of energy thereby reducing energy costs

As such over the last few years the use of geothermal cooling and Heating equipment has been on a rise, subsequently reducing dependence on fuel-based equipment. Customer inclination towards comfort is creating avenues for growth. To meet the demand OEMs are developing products that are not just energy-efficient but also incorporate the latest technologies offering better connectivity. Today buildings constructed are "green" resulting in an increase in installations of thermostats, sensors, and smart meters that can be controlled from a smartphone or PC. The software enabled HVAC systems are also trending, and are expected to create opportunities over the forecast period. Technology is slowly making in-roads in the HVAC field, creating favorable long-term growth avenues.

On the one hand, industries across the world are investing in technologies & processes that are designed to reduce cost and improve operational efficiency. This is seen as a precursor to the next stage of evolution of the industrial sector – namely Industry 4.0 which involves close integration with digital technologies. This development pathway has triggered innovations in products / hardware used as well as systems & processes. In the case of Heat Exchangers, the innovation is directed towards superior designs that would improve thermal efficiency which in turn will help in reducing energy cost as well as cut down their carbon footprint.

(Source: https://www.grandviewresearch.com)

SCOPE OF THE INDUSTRY

The residential segment dominated the market for HVAC systems and accounted for the largest revenue share of 39.9% in 2022. An increase in multi-family and individual homeowners is creating avenues for the residential HVAC segment. As such in 2021 the segment was approximately valued at more than USD 50.0 billion. In developed parts of the world, the demand for residential HVAC (Heating, ventilation, and air conditioning) is expected to be more or less stagnant; however, the demand from newer markets particularly developing markets will be slightly on a higher end. This is primarily ascribed to the growing population in emerging markets and market maturity in developed markets.

Commercial HVAC space offers huge opportunities for growth. The segment is Projected to grow at a CAGR exceeding 6.8% from 2023 to 2030. Several trends including green & smart technology to automated systems are expected to play a pivotal role in shaping the future of commercial HVAC market.

Recent Development:

In May 2023, Carrier Corporation introduced i-Vu Pro v8.5 for upgrading controller firmware, improving serviceability for customers, and reducing downtime of connected HVAC equipment. The latest enhancements are expected to help customers with Internet of Things (IoT) connectivity, robust security, and leading serviceability features.

In May 2023, Toshiba Carrier Corporation (TCC) unveiled its new Digital Invertor (DI) series in China. The DI series is ductless split air-conditioning system designed for commercial uses and is easy to install and is energy efficient.

In April 2023, Toshiba Carrier Corporation expanded its Heater Air light commercial total Heat Exchanger series in Japan provide high-quality ventilation solutions and enhance indoor air quality with design flexibility and higher energy efficiency.

In February 2023, Hitachi launched air365 Max an end-to-end solution for architects, HVAC professionals, and building owners, integrated with Hitachi's original Smooth Drive 2.0 technology to reduced CO2 emissions.

In June 2021, Hitachi with Johnson Controls launched Air Cloud Home which provides comfort, price competitive, and is energy efficient. In June 2021, Hitachi introduced PRIMAIRY system in North America, a line of high-efficiency single-zone mini-split systems.

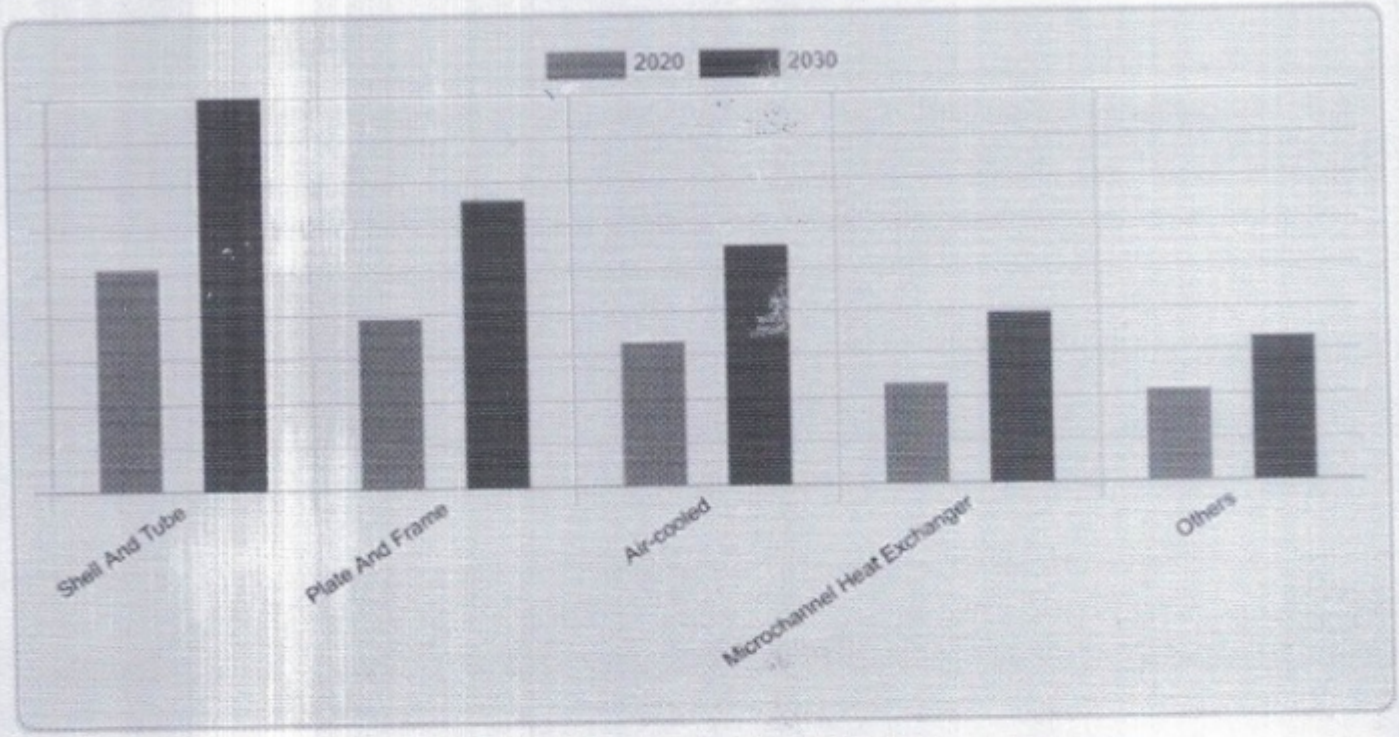
Heat Exchanger Market Outlook – 2030:

The global Heat Exchanger market size was valued at $16.7 billion in 2020, and is Projected to reach $28.3 billion by 2030, growing at a CAGR of 5.5% from 2020 to 2030. A Heat Exchanger is a device that facilitates the process of Heat exchange between two fluids that are at different temperatures. Heat Exchangers are used in many engineering applications, such as Refrigeration, Heating and air-conditioning systems, power plants, chemical processing systems, food processing systems, automobile radiators, and waste Heat recovery units.

In addition, air preHeaters, economizers, evaporators, super Heaters, condensers, and cooling towers used in a power plant are a few examples of Heat Exchangers. Moreover, Heat Exchangers are an enabling technology for efficient power generation with a closed, recuperated Brayton cycle, using supercritical carbon dioxide (CO2) as the working fluid. Heat Exchangers influence the overall system efficiency and system size. Heat Exchanger designs must balance between Heat Exchanger effectiveness and pressure drop to achieve the desired tradeoff between system efficiency and system size. This tradeoff between system efficiency and system size is expected to vary with each energy conversion system application.

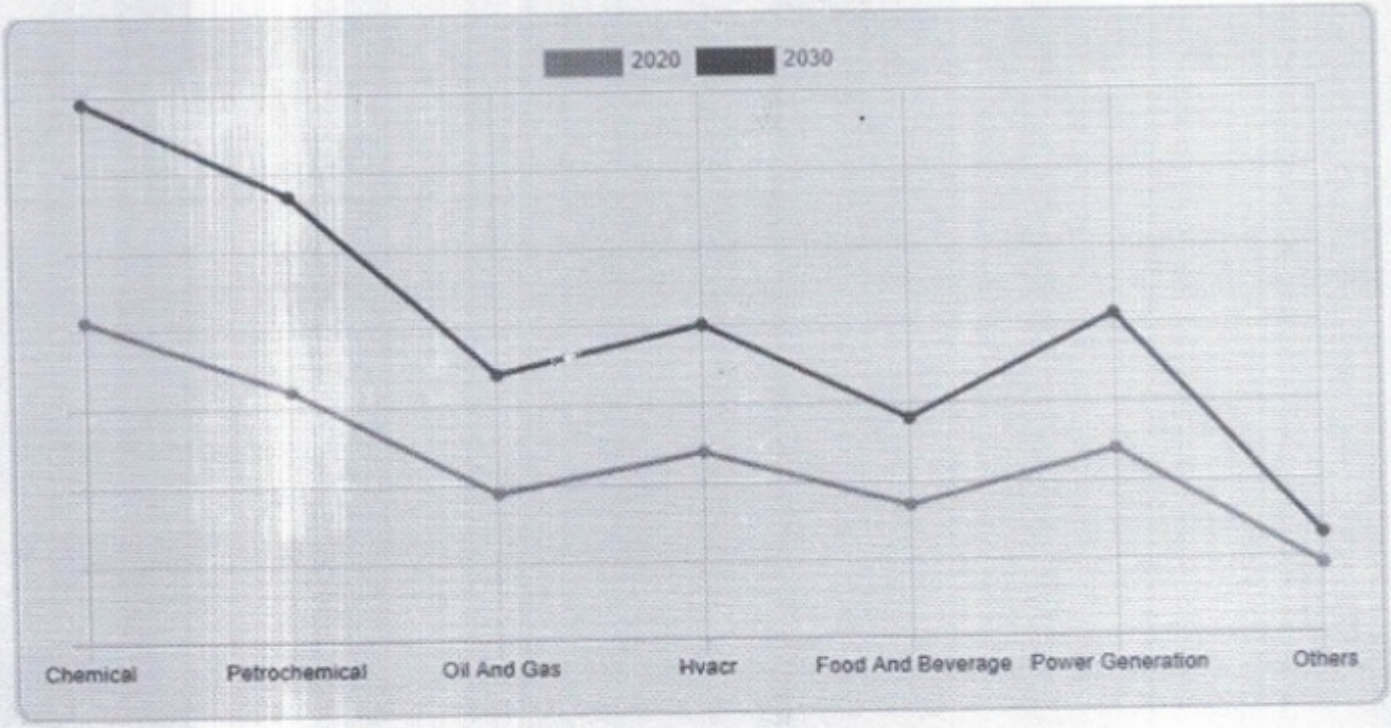
Global Heat Exchanger Market, by Type:

By type, the shell and Tube segment dominated the global Heat Exchanger market in 2020, and is projected to remain the fastest-growing segment during the forecast period. This is attributed to its advantages over other types of Heat Exchangers that include, low price as compared to plate type coolers, ease of application in higher operating temperatures and pressures, and others. Shell and Tube Heat Exchangers are a preferred choice owing to the ease of servicing and their compatibility for use with different types of seawater coolants.



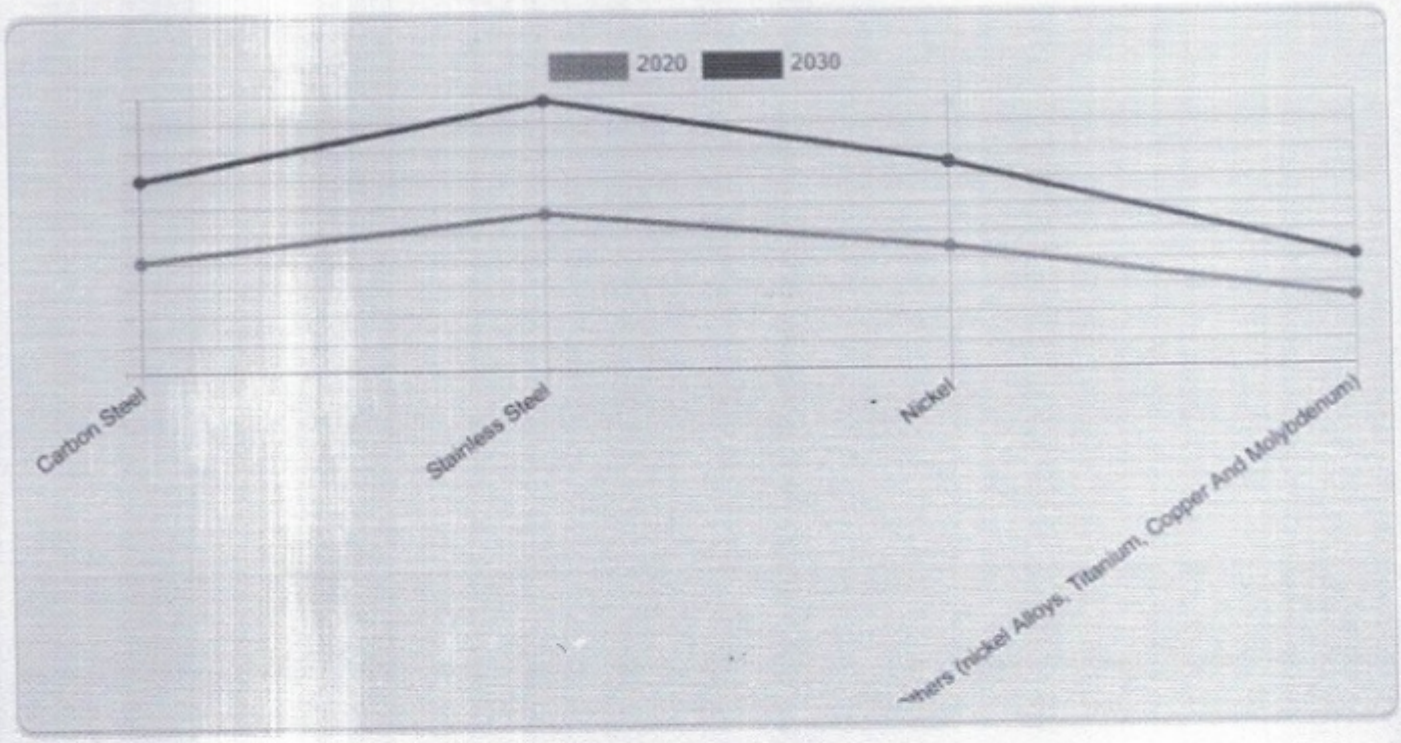
Global Heat Exchanger Market, by End-user Industry:

By end-user industry, the chemical segment dominated the global Heat Exchanger market in 2020, and is projected to remain the fastest-growing segment during the forecast period. This is attributed to its high adoption of Heat Exchangers in the chemical industry owing to their application in a complex series of processes, such as Heating, cooling, condensing, evaporation, separation, and others. In addition, Heat Exchangers also withstand the continuous chemical reactions, allowing critical processes to be completed safely as well as efficiently.



Global Heat Exchanger Market, by Material of Construction:

By Material of construction, the stainless steel segment dominated the global Heat Exchanger market in 2020, and is projected to remain the fastest-growing segment during the forecast period. This is attributed to its high beneficial characteristics, such as resistance against corrosion in a wide range of pH levels, lightweight, high thermal conductivity, and no requirement of special fluids, as it is compatible with plain clean water. It is a bit expensive; however, due to its aforementioned characteristics, it is preferred for long-run application.



COMPETITIVE LANDSCAPE:

Heat Exchanger industry is capital and technology intensive, which creates a steep entry barrier. The industrial landscape in India (and across the globe) is changing at a fast pace as digital technology are integrating into mainstream manufacturing. This has created the need for superior capital goods & industrial machinery which can fit into this evolving landscape as well as delivery superior output. In the case of Heat exchanges, the demand is for superior efficiency and Heat capture. Hence, now more than ever, the manufacturers need to invest in R&D to improve their manufacturing capability. This exercise translates into higher capex, which deters new entrants.

Even among existing players, there is a high pressure to innovate and widen their product offering. As conventional manufacturing techniques make way to newer methods, consumers are increasingly demanding better products which can deliver tangible results. To stay relevant Heat Exchanger manufacturer will have to engage with their consumers, identify the emerging trend, and devise a future growth strategy. These developments are changing the nature of the industry, making it more

dynamic. Under this changing scenario, existing players have to invest in capital, skill / talent, and innovation to stay relevant and maintain / increase market share.

KEY GROWTH DETERMINANTS IN HVAC INDUSTRY: -

- The increasing adoption of smart home technology and connected devices is expected to provide further opportunities for growth in the HVAC industry in India. The rise in disposable incomes and the growth of the middle class are also expected to contribute to the market's growth.
- The rising disposable income and various government initiatives focusing on improving the energy efficiency of appliances are contributing to the market growth. Government campaigns, such as Atithi Devo Bhava and Digital India, resulting in a high inflow of tourists, thus leading to growth in hospitality and tourism-related businesses.
- The "Make in India" initiative, launched by the Indian government in 2014, aims to encurage foreign companies to invest in India and promote the country as a global manufacturing hub. The HVAC equipment manufacturing sector has the potential to benefit from this initiative significantly.
- The India Cooling Action Plan (ICAP) is a government initiative to promote sustainable cooling solutions in India and address the country's growing demand for cooling services. The plan recognizes the impact of inefficient cooling systems on energy consumption and greenhouse gas emissions and seeks to promote energy-efficient and environmentally friendly cooling technologies.

Monitoring instruments to help improve the effectiveness of HVAC systems:

The HVAC industry is undergoing a digital transformation, and there is a growing need for advancements in monitoring instruments to help improve the efficiency and effectiveness of HVAC systems. Some of the key advances in monitoring instruments needed to digitalize the HVAC sector include:

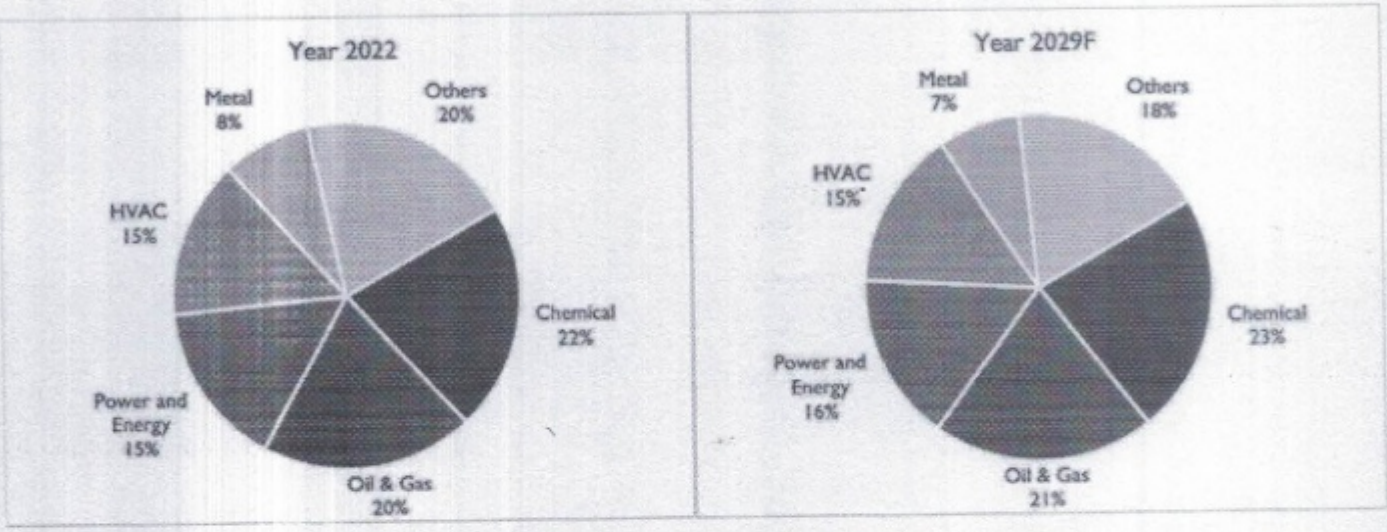
- **Smart Thermostats**: These devices allow for remote control of temperature settings and provide real time monitoring and data analysis of energy consumption.
- **Building Automation Systems (BAS)**: BAS are networked systems allowing central control and monitoring of various building systems, including HVAC. These systems can help optimize energy usage and improve comfort levels in buildings.
- **Indoor Air Quality Monitors:** These monitors can detect and measure various indoor air quality parameters, including temperature, humidity, and levels of pollutants and allergens.
- **Remote Monitoring and Diagnostic Tools:** These tools allow for remote monitoring and diagnosis of HVAC systems, reducing the need for on-site visits and improving maintenance efficiency.
- **Energy Management Systems:** These systems can monitor energy consumption and help optimize energy usage in buildings, reducing waste and lowering costs.

User Industry:

Chemical manufacturing is the predominance consumer of Heat Exchanger in India, followed by oil & gas industry. Chemical industry is expected to remain the largest consumer of Heat Exchangers, as the ambitious capacity expansion programs planned in chemical industry would translate into higher demand for Heat Exchangers. India already possess a strong chemical manufacturing hub – from basic chemicals to petrochemicals to specialty chemicals. The Government is focusing on strengthening India's position as a global chemical manufacturing hub and increase the country's share in global chemical trade. Multiple policies targeted various segments of the chemical industry – pharmaceuticals

/ specialty chemicals – has been announced and the coming years would witness strong activity in terms of capacity expansion.

Backed by these factors, the value of Heat Exchangers consumed by Indian chemical industry is expected to reach nearly USD 300 million in 2029, translating into a CAGR of 12.3%.



***Dun & Bradstreet Analysis Report 10th July, 2023**

Industry and Company Risks:

1. **Dependence on Construction Activity:**

   Demand for HVAC and Refrigeration equipment is driven by new residential and commercial construction activity. The construction sector is cyclical and new construction can fall sharply during a weak economy. While new installations are the most sensitive to difficult economic conditions, replacement of existing systems can also decline as homeowners and commercial building owners focus on repairing, rather than replacing, older systems.

2. **Variable Material Costs:**

HVACR equipment manufacturers purchase sheet metal, Copper tubing, other metal and plastic parts, and electronic components to produce their products. The prices of these commodities are dependent on global market conditions and can vary widely from year to year. For example, sheet metal prices can rise by over 5% in a single year. At the same time, HVACR equipment prices have risen by less than 5% per year. Companies must carefully manage raw material costs to maintain their gross margins. 5.3 Industry Risk Rating: Stable/Satisfactory

3. **Energy Efficiency:**

Regulations HVACR equipment manufacturers are forced to keep up with evolving regulations to promote energy efficiency. The US Department of Energy (DOE) issued standards for rooftop commercial air conditioners calling for a 13% increase in energy efficiency in 2018-2022 and increases of up to 30% starting in 2023. DOE also changed the metric for measuring energy efficiency from Seasonal Energy Efficiency Ratio (SEER), which measures a machine's performance on the hottest or coldest day of the year, to Integrated Energy Efficiency Ratio (IEER), which assesses performance over an entire season. Achieving higher IEER ratings will require equipment redesign by manufacturers.

4. **Competition from Imports:**

Domestic manufacturers compete with foreign HVACR equipment manufacturers, who account for about 31% of the US market. HVAC and Refrigeration equipment imports rose 44% between 2012 and 2017 and 9.5% in 2018, fell 0.3% in 2019, then rose 2.3% in 2020. The largest import sources are China, Mexico, and Canada, followed by Thailand, Germany, and South Korea. Foreign manufacturers enjoy lower labor costs than domestic manufacturers but are vulnerable to changes in trade policies between countries.

5. Availability of HVACR Installers:

A shortage of skilled HVACR installers could limit growth for equipment manufacturers. Manufacturers typically rely on HVACR contractors to sell and install residential and commercial systems for new construction and building upgrades. Jobs for HVACR mechanics and installers are expected to grow 4% from 2019 to 2029 according to the Bureau of Labor Statistics, in line with the growth for all occupations. This growing demand, combined with the retirement of "baby boomer" technicians, will likely result in a shortage of qualified technicians. This potential shortage is also driven by the evolving skills required of technicians as HVAC systems use more electronic components and become more complex.

(Sources: https://raincatcher.com/images/raincatcher_images/HVAC-industryreport.pdf)

Demand Drivers for HVACR INDUSTRY:

- The rapid rise in industrialization and urbanization worldwide is one of the primary factors driving the market's growth. The significant increase in the construction of different commercial and residential buildings worldwide is creating considerable demand for HVAC equipment as a space Heating and cooling system, ventilation control, humidity control, and air filtration. For instance, as per the IEA, the global building construction sector's value increased by 5% compared to the previous year, reaching over USD 6.3 trillion.

- Rising energy costs directly impact building owners' and tenants' profit/loss statements. The invasion of Ukraine affected energy markets worldwide, particularly in Europe, which remains the primary market for Russian oil and gas due to the lack of these energy sources in European countries. However, due to Russia's invasion of Ukraine, the European Union decided to cut Russian oil imports by two-thirds, resulting in a surge in energy prices. Consequently, the demand for energy-efficient HVAC systems has recently increased significantly.

- Heating, ventilating, and air-conditioning in a commercial building usually consume more energy than any other activity in the building. According to the US Department of Energy's studies of commercial buildings, HVAC equipment usually account for over 40% of a building's energy usage. Owing to the huge amount of energy, HVAC systems use improvements in equipment efficiency translate to significant reductions in building operating costs.
- The high initial cost of HVAC equipment can be challenging for its demand because the high cost may deter some customers from purchasing or upgrading their systems. This is especially true for homeowners or small business owners who may have limited budgets and may not be able to afford the upfront costs of a new system. Secondly, the high cost of HVAC equipment can result in long payback periods for customers. This means that the cost savings resulting from the new system's improved energy efficiency may not offset the initial investment for several years.
- (Source:https://www.mordorintelligence.com/industry-reports/HVAC-equipment -market)

Chapter 5

Project Proposal

1. **Cost of Project**

(Amount in Lakhs)

Particular	Phase - 1	Phase – 2
Land and Site Development	458.25	4,129.08
Factory Building	161.69	11,689.38
Plant & Machinery *	740.01	11,001.68
Miscellaneous Deposits	-	108.64
Contingency *	18.55	961.79
Total	**1,378.50**	**27,890.57**

Note: - The increase in the cost of plant and machinery for both Phase-I and Phase-II of the project has been primarily attributed to fluctuations in foreign exchange rates. As a result of these changes, the contingency has been utilized to that extent and after such adjustment contingency amount pending to be utilized remains 2.06% for Phase-I and 4.24% for Phase-II. These changes reflect the reallocation of funds to cover the increased costs associated with Building Development and acquiring plant and machineries (as the case maybe), ensuring that the project remains financially viable while accommodating these market fluctuations.

2. **Components of the Project cost:**

   I. **Land & Site Development, Factory Building, Plant & Machinery and Miscellaneous Deposits**

   The Factory Building, Plant & Machinery and Miscellaneous Deposits are covered in technical assessment chapter.

3. **Means of Finance:**

Name of the Facility	Phase – 1	Phase – 2
Share Holder's Fund	**500.00**	**24,246.10**
Unsecured Loan From Parent Company & / Or Other	**878.50**	**3,644.47**
Total	**1,378.50**	**27,890.57**

Note :- For Proposed Project it is pertinent to note that, as on date whole funding is allocated/shown in Equity Share Capital (on the basis of face value of Rs 10 each) in this projection however it may vary at the time of actual allocation due to change in issue price of shares.

Comment:

- **As per explanation and information provided by the company.**

Chapter 6

Financial Projections

KRN HVAC PRODUCTS PVT LTD — **INR Lakhs**

Cost of Project

Particulars	Proposed Project I	Proposed Project II	Total Amount
Land and Site Development	458.25	4,129.08	4,587.33
Building Development	161.69	11,689.38	11,851.07
Plant & Machinery	740.01	11,001.68	11,741.69
Miscellaneous Deposits	-	108.64	108.64
Contingency	18.55	961.79	980.34
Total Cost of Project	1,378.50	27,890.57	29,269.07

Means of Finance — **INR Lakhs**

Particulars	Proposed Project I	Proposed Project II	Total Amount
Share Holder's Fund	500.00	24,246.10	24,746.10
Reserves and Surplus	-	-	-
Unsecured Loan From Parent Company & / Or Others	878.50	3,644.47	4,522.97
Total Means of Finance	1,378.50	27,890.57	29,269.07

Note :- For Proposed Project it is pertinent to note that, as on date whole funding is allocated/shown in Equity Share Capital (on the basis of face value of Rs 10 each) in this projection however it may vary at the time of actual allocation due to change in issue price of shares

Land and Site Development — **INR Lakhs**

Particulars	Proposed Project I	Proposed Project II	Total Amount
Land including conveyance charges Plot F-50 (2361sqm)	350.00	-	350.00
Registration charges Plot F-50 (2361sqm)	10.33	-	10.33
Land including conveyance charges Plot G-51 (1675sqm)	90.00	-	90.00
Registration charges Plot G-51 (1675sqm)	7.92	-	7.92
Land including conveyance charges Plot SP-124 (71924sqm)	-	3,998.97	3,998.97
Registration charges Plot SP-124 (71924sqm)	-	130.11	130.11
Total	458.25	4,129.08	4,587.33

Building Proposed Phase-I — **INR Lakhs**

Particulars	Area Mtr	Rate	Amount
Factory Shed	1.00	13,702,500.00	137.03
Total			137.03
Add:- GST @ 18%		18%	24.66
Grand Total			161.69

Building Proposed Phase-II — **INR Lakhs**

Particulars	Sq Ft	Rate	Amount
Building, Civil & other works	615,506.01	1,576.35	9,702.50
Add:- Architect Fees @		2.1%	203.75
Add:- GST @ 18%		18.0%	1,783.13
Grand Total			11,689.38

Installed Capacity

Assumptions	Proposed Project I	Proposed Project II
Capacity (in Nos.)		
Fin & Tube Type Heat Exchanger Units, Tubings & Sheet Metal Parts	106,799.00	322,810.00
HVAC Components (Piping, U bend & I-Kit) & Sheet Metal Components	-	23,817,916.00
Bar & Plate Heat Exchanger and Cooling Unit with Blower & Motor	-	3,168.00
Roll Bond Evaporator	-	2,904,000.00

Miscelleneous Deposit (Project-II) — **INR Lakhs**

Particulars	Amount
Security deposit to Land Authority (RIICO)	39.99
Security deposit to Electricity Department	20.97
Security deposit to other Govt. Regulatory Authority	47.68
Grand Total	108.64

KRN HVAC PRODUCTS PVT LTD — **INR Lakhs**

Plant & Machinery Breakup

Date of Quotation/ Purchase Order	Description	Supplier Name	Proposed Project I	Proposed Project II
02 June 2023	Fin Press 60 Ton H 8462421200	JDM JingDa Machine Co. LTD	161.38	
24 May 2023	7*28R*2P(19.05*22mm) fin die with spare parts	YHM Forgein Trade Co. LTD	64.04	
24 May 2023	7*42R*2P(12.7*21mm) fin die with spare parts	YHM Forgein Trade Co. LTD	103.01	
02 June 2023	Hairpin Bender 8462299000 UXZ3150	JDM JingDa Machine Co. LTD	58.63	
02 June 2023	Vertical Expander Hydraulic YZL2500 8463900090	JDM JingDa Machine Co. LTD	111.62	
17 August 2023	MNTR machine	Associated tech pvt	4.52	
18 July 2023	Copper pipe saw machine	shree ganga engineers	1.00	
23 June 2023	Dock Leveller	Industrutal equipment co.	5.90	
20 July 2023	Industrial RO 2000 LPH	Shante Engineers	3.58	
20 July 2023	DM Plant 1500 LPH	Shante Engineers	3.92	
12 July 2023	DG 500 Kva	Sudhir power limited	41.34	
11 August 2023	High Pressure Compressor	Shakti pneumatics	3.11	
10 August 2023	Vertical air receiver tank 500 ltr	sonitech india pvt ltd	1.45	
10 August 2023	High pressure heatless air dryer	sonitech india pvt ltd	2.00	
20 July 2023	Tube removing tool (O.M.T.R.)	OMTR S.R.L.	15.69	
25 August 2023	Utility pipe line, LPG, O2, N2, High Pressure	Global engineers & contractor	11.71	
18 August 2023	Utility Low pressure Air Line	indo equipment corporation	2.22	
28 June 2023	Power distribution Panel	MY Choice service & solution	3.20	
11 August 2023	3.5C X 400 sqm Aluminium armoured cable 156 meter	Yash Engineering Solution	2.12	
09 September 2023	Earthing for equipment and DG	MY Choice service & solution	2.40	
26 August 2023	Highbay LIGHT 150 W-Havells, STREET LIGHT 60W-Havells	rajasthan hardware & tools	1.61	
22 July 2023	Water Leak Test SS TANK 5650*3000*300 MM	Global engineers & contractor	1.72	
17 August 2023	Fire hydrant systerm	Brhma Fire Service	11.45	
09 September 2023	Electric work cable tray and cable laying	MY Choice service & solution	2.88	
15 September 2023	cable for equipment power connection	Yash Engineering Solution	4.44	
15 September 2023	MCB and socket for equipment power connection	JSR Enterprises	2.18	
05 July 2024	Fin Press 60 Ton	JDM JingDa Machine (Ningbo) Co., Ltd		514.77
05 July 2024	Hairpin Bender 3000 mm	JDM JingDa Machine (Ningbo) Co., Ltd		210.59
05 July 2024	Hairpin Bender 3000 mm 5 mm	JDM JingDa Machine (Ningbo) Co., Ltd		50.14
05 July 2024	Hairpin Bender 3000 mm 12.7 mm	JDM JingDa Machine (Ningbo) Co., Ltd		57.66
05 July 2024	Expander Vertical 2.5 m	JDM JingDa Machine (Ningbo) Co., Ltd		417.83
05 July 2024	Expander Vertical 2.5 m 5 mm	JDM JingDa Machine (Ningbo) Co., Ltd		112.81
21 March 2024	Fin Press Cabin	Envirotech System Ltd		137.90
22 March 2024	Fin Die 12.7 mm	YHM(Wuxi)Foreign Trade Co.,Ltd.		40.95
22 March 2024	Fin Die 6.35 mm X 25.4	YHM(Wuxi)Foreign Trade Co.,Ltd.		79.89
22 March 2024	Fin Die 6.35 mm X 19.05	YHM(Wuxi)Foreign Trade Co.,Ltd.		83.40
22 March 2024	Fin Die 5 mm	YHM(Wuxi)Foreign Trade Co.,Ltd.		96.52
22 March 2024	Fin Die 7.94 mm	YHM(Wuxi)Foreign Trade Co.,Ltd.		80.64
22 March 2024	Fin Die 9.52 mm X 25.4	YHM(Wuxi)Foreign Trade Co.,Ltd.		53.73
22 March 2024	Fin Die 9.52 mm X 25	YHM(Wuxi)Foreign Trade Co.,Ltd.		53.73
22 March 2024	Fin Die 15.88 mm	YHM(Wuxi)Foreign Trade Co.,Ltd.		65.93
22 March 2024	HORIZONTAL EXPANDER MOCA-TS-7000	CMS S.P.A.		295.73
20 March 2024	Ball Expanding machine SS 5/8"	CMS S.P.A.		68.24
22 March 2024	Coil Bending CBV	CMS S.P.A.		172.89
22 March 2024	Coil Bending O	CMS S.P.A.		150.14
22 March 2024	Cut Off Line chipless 1	Zhongshan OMS Trading Co., Ltd		22.98
22 March 2024	Cut Off Line chipless 2	Zhongshan OMS Trading Co., Ltd		14.79
22 March 2024	Cut Off Line saw type	Zhongshan OMS Trading Co., Ltd		18.55
22 March 2024	Coil Bending L	Zhongshan OMS Trading Co., Ltd		18.05
22 March 2024	U Bend machine 9.52 mm	Zhongshan OMS Trading Co., Ltd		17.47
22 March 2024	U Bend machine 5 mm	Zhongshan OMS Trading Co., Ltd		16.38
22 March 2024	U Bend machine 7 mm	Zhongshan OMS Trading Co., Ltd		17.47
22 March 2024	U Bend machine 12.7 mm	Zhongshan OMS Trading Co., Ltd		20.56
22 March 2024	U Bend machine 6.35 mm	Zhongshan OMS Trading Co., Ltd		17.47
22 March 2024	Size & Ringing machine 9.52 mm	Zhongshan OMS Trading Co., Ltd		29.42
22 March 2024	Size & Ringing machine 5 mm	Zhongshan OMS Trading Co., Ltd		21.39
22 March 2024	Size & Ringing machine 7 mm	Zhongshan OMS Trading Co., Ltd		25.40
22 March 2024	Size & Ringing machine 12.7 mm	Zhongshan OMS Trading Co., Ltd		22.65
22 March 2024	Size & Ringing machine 6.35 mm	Zhongshan OMS Trading Co., Ltd		25.40
22 March 2024	U Bend Cleaning machine	Zhongshan OMS Trading Co., Ltd		47.63
22 March 2024	Straightening and cutting machine with inserting insulation tube	Zhongshan OMS Trading Co., Ltd		25.91
22 March 2024	Flaring machine	Zhongshan OMS Trading Co., Ltd		7.52
22 March 2024	pancake machine	Zhongshan OMS Trading Co., Ltd		4.18
22 March 2024	capillary tube cutting and beading machine (Saw cutting type)	Zhongshan OMS Trading Co., Ltd		18.38
22 March 2024	T Drill machine for pipe drilling	Zhongshan OMS Trading Co., Ltd		30.84

KRN HVAC PRODUCTS PVT LTD — **INR Lakhs**

Plant & Machinery Breakup

Date of Quotation/ Purchase Order	Description	Supplier Name	Proposed Project I	Proposed Project II
22 March 2024	End forming machine	Zhongshan OMS Trading Co., Ltd		12.00
22 March 2024	End forming machine Horizontal	Zhongshan OMS Trading Co., Ltd		38.21
22 March 2024	End forming machine spinning	Zhongshan OMS Trading Co., Ltd		16.43
22 March 2024	End closing machine	Zhongshan OMS Trading Co., Ltd		15.42
22 March 2024	CNC Tube Bender big	Zhongshan OMS Trading Co., Ltd		88.50
22 March 2024	CNC Tube Bender medium	Zhongshan OMS Trading Co., Ltd		18.88
22 March 2024	CNC Tube Bender small	Zhongshan OMS Trading Co., Ltd		13.38
19 April 2024	Ultrasonic cleaning	Super Sonics		22.69
18 June 2024	T Drill BIG	Neutec Engineering & Technology		92.51
18 June 2024	T Drill MEDIUM	Neutec Engineering & Technology		20.14
22 March 2024	He Leak Testing Chamber 1	Nxtek Yantra Private Limited		108.30
22 March 2024	He Leak Testing Chamber 2	Nxtek Yantra Private Limited		137.75
22 March 2024	He Leak Testing Chamber Sniffer	Nxtek Yantra Private Limited		39.90
22 March 2024	Vacuum Leak Testing	Nxtek Yantra Private Limited		36.04
22 March 2024	Drying Oven Big size (with conveyor)	RDR Taichi Pvt Ltd		60.63
22 March 2024	Drying Oven Big size (Vertical)	RDR Taichi Pvt Ltd		50.86
22 March 2024	Drying Oven Small size (Header)	RDR Taichi Pvt Ltd		20.41
22 March 2024	Tube Removing Tool	OMTR S.R.L.		29.12
21 March 2024	Brazing Seazor Lifter	Shree Ganga Engineers		21.50
05 July 2024	Leak Test Tank Big	Global Engineers & Contractors		4.24
05 July 2024	Leak Test Tank Medium	Global Engineers & Contractors		4.20
05 July 2024	Leak Test Tank Small	Global Engineers & Contractors		1.82
03 April 2024	Assy Conveyor line (CCU IDU)	Shree Ganga Engineers		20.37
23 March 2024	Jib Crain	Industrial Equipment Company		36.81
22 March 2024	Spray Paint booth	Shree Sai Associates		15.50
05 July 2024	Rack	Industrial Equipment Company		44.25
23 March 2024	Fork Lift 3.0 Ton	Industrial Equipment Company		13.20
23 March 2024	Fork Lift 2.0 Ton	Industrial Equipment Company		12.80
23 March 2024	Articulated Forklift	Industrial Equipment Company		36.76
23 March 2024	Hand Pallet 2.5 Ton	Industrial Equipment Company		2.15
23 March 2024	Battery operated lifter	Industrial Equipment Company		1.90
23 March 2024	Dock Leveler	Industrial Equipment Company		18.30
05 July 2024	Hand Pallet 3.0 Ton 3 meter	Brightway Engineers		2.85
05 July 2024	Hand Pallet 5.0 Ton	Brightway Engineers		2.30
21 March 2024	Carpenter Saw Cutter	RTech		0.58
05 July 2024	NCT	Amada (India) Pvt Ltd		190.00
05 April 2024	Laser Cutting	Qingdao Dadong Automation Technology Co., Ltd		63.51
17 June 2024	Compressor for laser cutting	Industrial Equipment Company		8.02
05 July 2024	Press Brake small size	Hindustan Hydraulics Pvt Ltd		30.50
05 July 2024	Press Brake big size	Hindustan Hydraulics Pvt Ltd		96.00
22 March 2024	Edge Bending	Zhongshan OMS Trading Co., Ltd		27.99
21 March 2024	CLADE SHEET CUTTING Machine	Hertz Controls (India) Pvt. Ltd.		13.25
20 March 2024	Cooling Tower	Composite Aqua Systems & Equipments Pvt. Ltd.		1.64
21 March 2024	Fin Forming machine	YHM(Wuxi)Foreign Trade Co.,Ltd.		89.42
20 March 2024	Leak Detactor	A-S Marketing		1.92
21 March 2024	Vacuum Furnace	HHV Thermal Technologies Pvt. Ltd.		380.00
22 March 2024	SS Brazing Fixture	Wuxi Yongheng Aluminium Industry Co., Ltd.		6.86
21 March 2024	Ultrasonic Cleaning	Life - Care Equipments Pvt. Ltd.		21.85
23 March 2024	SCROLL CHILLER - 50 TONS	Nu-Vu Conair Private Limited		41.82
20 March 2024	3 Tig welding -Al	Rahul Enterprises		10.50
20 March 2024	2 Mig welding- AL	Rahul Enterprises		3.68
23 March 2024	Radial drilling machine	Associated Technocrats Pvt Ltd		4.30
23 March 2024	Lathe	Associated Technocrats Pvt Ltd		9.50
23 March 2024	Milling	Associated Technocrats Pvt Ltd		4.83
05 July 2024	Band saw	ITL Industries Limited		1.32
17 June 2024	Low Air Compressor Fix Speed	Industrial Equipment Company		18.52
17 June 2024	Low Air Compressor VFD	Industrial Equipment Company		21.20
21 March 2024	High Air Compressor	Shakti Pneumatics		12.88
21 March 2024	Heatless air dryer	Sonitech India Private Limited		8.80
21 March 2024	Air receiver 500 ltr	Sonitech India Private Limited		6.40
23 March 2024	RO Plant	Shante Engineers		14.63
23 March 2024	DM Plant	Shante Engineers		8.66
05 July 2024	Coil Straightning & Sliting	Global Engineers & Contractors		40.00
05 July 2024	BR Machine	Global Engineers & Contractors		25.00
21 March 2024	Oven	RDR Taichi Pvt Ltd		40.00

KRN HVAC PRODUCTS PVT LTD

Plant & Machinery Breakup

INR Lakhs

Date of Quotation/ Purchase Order	Description	Supplier Name	Proposed Project I	Proposed Project II
05 July 2024	HI Mill	Wuxi DLS Rolling Mill Manufacture Co., Ltd		653.94
05 July 2024	Hi CRM	Wuxi DLS Rolling Mill Manufacture Co., Ltd		348.85
05 July 2024	In Machine	Global Engineers & Contractors		45.00
21 March 2024	Powder Coating	RDR Taichi Pvt Ltd		300.00
24 March 2024	Design, Supply, Installation, testing and Commissioning of 8 MWp Solar On-grid System with Mono Cut Cells PV Modules - Rofftop Mounted as per BOM	Smart Roof Solar Solutions Pvt Ltd		2,640.00
	Total		627.12	**9,417.42**
	Add:- GST @ 18%		112.88	1,219.94
	*Add:- GST @ 13.80%		-	364.32
	Total		740.00	11,001.68

KRN HVAC PRODUCTS PVT LTD — **INR Lakhs**

Balance Sheet

Year ending 31st March -->	2023-24 Actual	2024-25 Proj	2025-26 Proj	2026-27 Proj	2027-28 Proj	2028-29 Proj
Shareholder's Fund						
Equity Share Capital	500.00	24,746.10	24,746.10	24,746.10	24,746.10	24,746.10
Reserve & Surplus	(49.51)	431.01	3,840.02	10,801.28	20,185.15	34,033.95
	450.49	**25,177.11**	**28,586.12**	**35,547.38**	**44,931.25**	**58,780.05**
Non Current / Finance Liabilities						
Total Long Term Loans						
Long Term Lease Liabilities	1,636.05	545.33	-	-	-	-
Long Term Provision	-	-	-	-	-	-
Unsecured Loans	3,659.43	4,522.97	4,522.97	3,022.97	-	-
Defferred Tax Liability	3.62	-	31.47	-	-	-
	5,299.10	**5,068.30**	**4,554.44**	**3,022.97**	**-**	**-**
Current Finance Liabilities						
Short Term Lease Liabilities	1,090.72	1,090.72	545.33			
Current Liabilities						
Sundry Creditors	97.69	904.87	6,285.50	8,066.94	8,615.20	6,550.81
Other Liabilities	19.55	292.76	512.34	563.57	619.93	681.92
	117.24	**1,197.63**	**6,797.84**	**8,630.51**	**9,235.13**	**7,232.73**
Total -->	**6,957.55**	**32,533.76**	**40,483.73**	**47,200.86**	**54,166.38**	**66,012.78**
Property Plant & Equipment	2,487.02	2,423.66	23,216.30	23,283.49	20,423.28	17,563.07
CWIP	393.85	23,652.85	-			
ROU	2,987.63	2,987.63	2,987.63	-	-	-
Non - Current Assets						
Investment	15.50	15.50	15.50	15.50	15.50	15.50
Non C.A./Deposit	62.80	108.64	108.64	108.64	108.64	108.64
Deferred Tax Assets	-	0.46	-	4.44	99.06	244.54
Current Assets, Loan & Advances						
Inventory	-	872.48	6,731.59	12,105.01	18,763.13	25,238.33
Debtors	30.82	1,235.22	7,056.75	11,053.88	13,506.45	21,504.13
Other current assets	965.18	247.04	308.81	540.41	567.43	1,163.22
Total Current Assets	996.00	2,354.74	14,097.15	23,699.30	32,837.01	47,905.68
Cash & Cash Equivalents	14.74	990.28	58.51	89.49	682.89	175.35
Total -->	**6,957.55**	**32,533.76**	**40,483.73**	**47,200.86**	**54,166.38**	**66,012.78**

KRN HVAC PRODUCTS PVT LTD — **INR Lakhs**

Deferred Tax Assets / Liabilities	2023-24 Actual	2024-25 Proj	2025-26 Proj	2026-27 Proj	2027-28 Proj	2028-29 Proj
Depreciation As per Companies Act 2013	7.13	149.39	2,860.21	2,860.21	2,860.21	2,860.21
Depreciation As per Income Tax Act 1961	29.22	125.62	3,046.27	2,650.97	2,308.82	2,012.42
Other Expe	(1.00)	-	-			
Difference	21.09	(23.77)	186.06	(209.24)	(551.39)	(847.79)
Rate of Tax	17.16%	17.16%	17.16%	17.16%	17.16%	17.16%
Provision of DTL/(DTA)	**3.62**	**(4.08)**	**31.93**	**(35.91)**	**(94.62)**	**(145.48)**

KRN HVAC PRODUCTS PVT LTD **INR Lakhs**

Profit & Loss

Particulars	2023-24 Actual	2024-25 Projected	2025-26 Projected	2026-27 Projected	2027-28 Projected	2028-29 Projected
Revenue From Operations						
Sales	23.62	5,929.07	42,340.53	66,323.29	81,038.72	103,219.85
Other Income	*9.39*					
Total Revenue	**33.01**	**5,929.07**	**42,340.53**	**66,323.29**	**81,038.72**	**103,219.85**
Manufacturing Expenses	49.06	5,155.98	35,504.12	54,474.80	65,809.72	82,510.59
(Increase)/Decrease in FG	-	(221.58)	(1,343.14)	(797.14)	(510.62)	(779.55)
(Increase)/Decrease in WIP	-	(123.79)	(771.37)	(1,016.01)	(835.62)	(668.03)
Depreciation /Amortisation	7.13	149.39	2,860.21	2,860.21	2,860.21	2,860.21
Total Costs	**56.19**	**4,960.00**	**36,249.82**	**55,521.86**	**67,323.69**	**83,923.22**
Gross Profit	**(23.18)**	**969.07**	**6,090.71**	**10,801.43**	**13,715.03**	**19,296.63**
% of Revenue	*-70.2%*	*16.3%*	*14.4%*	*16.3%*	*16.9%*	*18.7%*
Preliminary Exps. w/o	-	-	-	-	-	-
EBIT	**(23.18)**	**969.07**	**6,090.71**	**10,801.43**	**13,715.03**	**19,296.63**
% of Revenue	*-70.2%*	*16.3%*	*14.4%*	*16.3%*	*16.9%*	*18.7%*
Admin, Travelling, etc.	22.71	118.58	635.11	994.85	1,215.58	1,548.30
Selling & Distribution Expense	-	88.94	423.41	663.23	810.39	1,032.20
Finance Cost	-	-	814.13	724.13	362.76	-
Interest Expense (Lease Liability)	-	197.00	104.29	17.38	-	-
Total of Other Expenses	**22.71**	**404.52**	**1,976.94**	**2,399.59**	**2,388.73**	**2,580.50**
EBT - operating	**(45.89)**	**564.55**	**4,113.77**	**8,401.84**	**11,326.30**	**16,716.13**
% of Revenue	*-139.0%*	*9.5%*	*9.7%*	*12.7%*	*14.0%*	*16.2%*
Other - Non Operating Income/Expenses :-						
Interest on Investment		*1.40*	*-1.40*	*1.40*	*1.40*	*1.40*
Income Tax Expenses :-						
Deferred Tax (Exp)/Income	(3.62)	4.08	(31.93)	35.91	94.62	145.48
Provision for Taxation	-	(89.52)	(674.22)	(1,477.90)	(2,038.45)	(3,014.21)
EAT	**(49.51)**	**480.51**	**3,409.02**	**6,961.25**	**9,383.87**	**13,848.80**
% of Revenue	*-150.0%*	*8.1%*	*8.1%*	*10.5%*	*11.6%*	*13.4%*
Cash Profit (Including Other Income)	**(42.38)**	**629.90**	**6,269.23**	**9,821.46**	**12,244.08**	**16,709.01**
% of Revenue	*-128.4%*	*10.6%*	*14.8%*	*14.8%*	*15.1%*	*16.2%*

KRN HVAC PRODUCTS PVT LTD **INR Lakhs**

Statement of Sources and Disposition of Funds

Particulars	2023-24 Actual	2024-25 Proj	2025-26 Proj	2026-27 Proj	2027-28 Proj	2028-29 Proj
Sources of Funds						
EBIT	(23.18)	969.07	6,090.71	10,801.43	13,715.03	19,296.63
Interest on Investment	-	1.40	1.40	1.40	1.40	1.40
Addition to Capital	500.00	24,246.10	-	-	-	-
Depriciation & Amortisation	7.13	149.39	2,860.21	2,860.21	2,860.21	2,860.21
Decrease in ROU		-	-	2,987.63	-	-
Increase In Long/Short Term Lease Liabilities	2,726.76	-	-	-	-	
Increase In Un-Secured Loan	3,659.43	-	-	-	-	-
Decrease in Non Current Assets	-					
Increase in Current Liabilities	117.23	1,080.42	5,600.18	1,832.69	604.62	(2,002.40)
Total Sources of Funds -->	**6,987.37**	**26,446.38**	**14,552.50**	**18,483.36**	**17,181.26**	**20,155.84**
Disposition of Funds						
Preliminary & Pre-operative Expense	-	-	-	-	-	-
Increase/(Decrease)in Capital Work In Progress	393.85	23,259.00	(23,652.85)	-	-	-
Increase in ROU	2,987.63					
Increase in Property Plant & Equipments	2,494.15	86.03	23,652.85	2,927.40	-	-
Decrease In Long/Short Term Lease Liabilities		1,090.72	1,090.72	545.33	-	-
Increase in Current Assets	995.99	1,358.74	11,742.39	9,602.16	9,137.71	15,068.67
Increase in Investment/Deposit	78.30	45.84	-	-	-	-
Decrease in Long Term Liabilities						
Decrease in Unsecured Loan	-	(863.54)	-	1,500.00	3,022.97	-
Finance, Admin and S&D Exp	22.71	404.52	1,976.94	2,399.59	2,388.73	2,580.50
Tax on Profit	-	89.52	674.22	1,477.90	2,038.45	3,014.21
Total Disposition of Funds -->	**6,972.63**	**25,470.83**	**15,484.27**	**18,452.38**	**16,587.86**	**20,663.38**
Opening Balance	-	14.74	990.28	58.51	89.49	682.89
Net Surplus/(Deficit)	14.74	975.54	(931.77)	30.98	593.40	(507.54)
Closing Balance	**14.74**	**990.28**	**58.51**	**89.49**	**682.89**	**175.35**

KRN HVAC PRODUCTS PVT LTD

General Assumptions

1	Model is based on Annual time periods		
2	Duration of the model is 6 years		
3	Currency	INR	
4	Currency Scale	100,000	INR Lacs

Business Assumptions

1	**Time Line**					
	Proposed Project -II Start Month	Apr-25				
2	**Year**	**2024-25**	**2025-26**	**2026-27**	**2027-28**	**2028-29**
	Working Days	300	300	300	300	300
	Operational Hours	22	22	22	22	22
	No of Shifts Per Day	3	3	3	3	3

Financial Assumptions

1 Revenue Assumptions

Particulars	**2024-25**	**2025-26**	**2026-27**	**2027-28**	**2028-29**
Rate per (Nos/Unit)					
Fin & Tube Type Heat Exchanger Units, Tubings & Sheet Metal Parts	18,973.09	19,542.28	20,128.55	20,732.41	21,147.06
% of Change in every year	3.00%	3.00%	3.00%	3.00%	2.00%
HVAC Components (Piping, U bend & I-Kit) & Sheet Metal Components	53.19	54.78	56.43	58.12	59.28
% of Change in every year	3.00%	3.00%	3.00%	3.00%	2.00%
Bar & Plate Heat Exchanger and Cooling Unit with Blower & Motor	-	450,000	463,500	477,405	486,953
% of Change in every year	0.00%	0.00%	3.00%	3.00%	2.00%
Roll Bond Evaporator	-	485	500	515	525
% of Change in every year	0.00%	0.00%	3.00%	3.00%	2.00%

KRN HVAC PRODUCTS PVT LTD

2 Operating Expenses

	Particulars	2024-25	2025-26	2026-27	2027-28	2028-29
A	**Manufacturing Expenses**					
	Raw Material Consumed	4,216.87	29,291.64	46,991.87	57,354.96	72,685.85
	Total Raw Material Cost	**4,216.87**	**29,291.64**	**46,991.87**	**57,354.96**	**72,685.85**
	Consumable Cost	126.51	878.75	1,409.76	1,720.65	2,180.58
	Utilities :-					
	Power (1.5% of Turnover)	93.38	700.21	1,206.50	1,621.62	2,272.01
	Employees Cost	691.13	4,604.72	4,834.96	5,076.71	5,330.54
	Factory Overhead :-					
	Repairs & Maintenace	4.50	4.61	6.92	10.38	15.57
	Insurance (0.1% of FA)	23.59	24.18	24.79	25.41	26.04
	Misc.Factory Ovehd.	-	-	-	-	-
	Total Manufacturing Expenses	**5,155.98**	**35,504.12**	**54,474.80**	**65,809.72**	**82,510.59**
B	**Depreciation as per Books**	149.39	2,860.21	2,860.21	2,860.21	2,860.21
C	**(Increase)/Decrease in WIP**					
	Opening Stock					
	WIP	-	123.79	895.17	1,911.17	2,746.80
	Less: Closing Stock					
	WIP	123.79	895.17	1,911.17	2,746.80	3,414.83
	Total	**(123.79)**	**(771.37)**	**(1,016.01)**	**(835.62)**	**(668.03)**
D	**(Increase)/Decrease in Finished Goods**					
	Opening Stock					
	Finished Goods	-	221.58	1,564.72	2,361.86	2,872.48
	Less: Closing Stock					
	Finished Goods	221.58	1,564.72	2,361.86	2,872.48	3,652.03
	Total	**(221.58)**	**(1,343.14)**	**(797.14)**	**(510.62)**	**(779.55)**
E	**Admin, Travelling, etc.**					
	Annual Exp	118.58	635.11	994.85	1215.58	1548.30
	Total	**118.58**	**635.11**	**994.85**	**1,215.58**	**1,548.30**
F	**Selling & Distribution Expense**					
	Annual Exp	88.94	423.41	663.23	810.39	1032.20
	Total	**88.94**	**423.41**	**663.23**	**810.39**	**1,032.20**

3 Income Tax rates

Basic Tax Rate	15.0%
Surcharge @10%	1.5%
Education Cess @4%	0.7%
Tax Rate	**17.16%**

Note :-

It is assumed that the Company has elected to exercise the option permitted under Section 115BAB of the Income Tax Act, 1961 as introduced by the the Taxation Laws (Amendment) Ordinance, 2019, Accordingly, provision for income tax is calculated as per section 115BAB.

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KRN HVAC PRODUCTS PVT LTD

Other Cost Details

WAGES : - Proposed Phase I	No.	Cost (Per Year)	2024-25	2025-26	2026-27	2027-28	2028-29
Supervisor- Prodn.	2.00	6.00	12.60	13.23	13.89	14.59	15.32
Plant Operators (All Prodn.)	5.00	10.00	52.50	55.13	57.88	60.78	63.81
Quality Supervisor	2.00	6.00	12.60	13.23	13.89	14.59	15.32
Quality Inspector	2.00	4.00	8.40	8.82	9.26	9.72	10.21
Security Supervisor	1.00	3.60	3.78	3.97	4.17	4.38	4.59
Security Guard	2.00	3.00	6.30	6.62	6.95	7.29	7.66
Asst. Manager - HR/Admin	1.00	6.00	6.30	6.62	6.95	7.29	7.66
Stores Exe.	1.00	3.00	3.15	3.31	3.47	3.65	3.83
Loading Labour	2.00	3.00	6.30	6.62	6.95	7.29	7.66
Peons	2.00	1.20	2.52	2.65	2.78	2.92	3.06
Sweeper/ Cleaner	4.00	3.00	12.60	13.23	13.89	14.59	15.32
Electrician	1.00	3.00	3.15	3.31	3.47	3.65	3.83
Maintenance Eng.	2.00	3.60	7.56	7.94	8.33	8.75	9.19
Manager- PE & Maint	1.00	7.00	7.35	7.72	8.10	8.51	8.93
Manager- Prodn.	1.00	7.00	7.35	7.72	8.10	8.51	8.93
Manager- Quality	1.00	7.00	7.35	7.72	8.10	8.51	8.93
Manager- HR/Admin	1.00	7.00	7.35	7.72	8.10	8.51	8.93
Dy Manager -Accounts	1.00	7.00	7.35	7.72	8.10	8.51	8.93
Sr.Engineer - Purchase	1.00	6.00	6.30	6.62	6.95	7.29	7.66
Driver	2.00	3.00	6.30	6.62	6.95	7.29	7.66
Gardner	1.00	3.00	3.15	3.31	3.47	3.65	3.83
Canteen Staff	4.00	3.00	12.60	13.23	13.89	14.59	15.32
			202.86	**213.00**	**223.65**	**234.84**	**246.58**

KRN HVAC PRODUCTS PVT LTD

Other Cost Details

WAGES: - Proposed Phase II	No.	Cost (Per Year)	2024-25	2025-26	2026-27	2027-28	2028-29
Manager-Prodn.	10.00	12.00	126.00	132.30	138.92	145.86	153.15
Manager-Quality	10.00	12.00	126.00	132.30	138.92	145.86	153.15
Manger PE / Maint	10.00	12.00	126.00	132.30	138.92	145.86	153.15
Manager- Stores	10.00	7.50	78.75	82.69	86.82	91.16	95.72
Manager- Purchase	10.00	8.00	84.00	88.20	92.61	97.24	102.10
Manager- SCM	10.00	8.00	84.00	88.20	92.61	97.24	102.10
Manager D/D	10.00	10.50	110.25	115.76	121.55	127.63	134.01
Manager Accounts	5.00	9.60	50.40	52.92	55.57	58.34	61.26
Manager- HR/Admin/IR	5.00	10.00	52.50	55.13	57.88	60.78	63.81
Manager- EHS	5.00	10.00	52.50	55.13	57.88	60.78	63.81
Officer Safety & Welfare	10.00	6.00	63.00	66.15	69.46	72.93	76.58
Sr. Executive /Exe- EHS & Safety	4.00	6.80	28.56	29.99	31.49	33.06	34.71
Sr. Engineer/ Eng. - Prodn.	20.00	38.00	798.00	837.90	879.80	923.78	969.97
Sr. Engineer/Engineer - Quality	10.00	20.00	210.00	220.50	231.53	243.10	255.26
Sr. Engineer/ Engineer - PE/Maint.	10.00	15.00	157.50	165.38	173.64	182.33	191.44
Sr. Executive/Executive - Stores	3.00	7.20	22.68	23.81	25.00	26.25	27.57
Sr. Executive/ Exe. - Purchase	2.00	8.40	17.64	18.52	19.45	20.42	21.44
Sr. Executive/Exe. - SCM	2.00	8.40	17.64	18.52	19.45	20.42	21.44
Sr. Engineer /Eng- D/D	4.00	7.50	31.50	33.08	34.73	36.47	38.29
Sr. Executive /Exe. Accounts	2.00	10.40	21.84	22.93	24.08	25.28	26.55
Sr. Executive/ Exe.- HR/Admin	4.00	12.00	50.40	52.92	55.57	58.34	61.26
Security officer	2.00	4.56	9.58	10.05	10.56	11.09	11.64
Security Superevisor	4.00	3.60	15.12	15.88	16.67	17.50	18.38
Security Guard	6.00	3.00	18.90	19.85	20.84	21.88	22.97
Prodn. Operators	20.00	15.00	315.00	330.75	347.29	364.65	382.88
Quality Inspector	5.00	12.00	63.00	66.15	69.46	72.93	76.58

KRN HVAC PRODUCTS PVT LTD

Other Cost Details

Maint. ITI , Fitter, Electrician, Tool & Helper / ETP & S	20.00	12.00	252.00	264.60	277.83	291.72	306.31
Loading Labour	6.00	3.00	18.90	19.85	20.84	21.88	22.97
Peons / Canteen Staff	6.00	3.00	18.90	19.85	20.84	21.88	22.97
Sweeper / Cleaner	15.00	8.00	126.00	132.30	138.92	145.86	153.15
Hotriculture Gardner	6.00	3.00	18.90	19.85	20.84	21.88	22.97
Driver	10.00	4.50	47.25	49.61	52.09	54.70	57.43
Workman	5.00	10.00	52.50	55.13	57.88	60.78	63.81
Supervisor	11.00	6.00	69.30	72.77	76.40	80.22	84.23
Manager- Procn.	5.00	8.00	42.00	44.10	46.31	48.62	51.05
Manager- QC & QA	10.00	10.00	105.00	110.25	115.76	121.55	127.63
Manager- Maint	8.00	10.00	84.00	88.20	92.61	97.24	102.10
Manager- MKT	3.00	5.00	15.75	16.54	17.36	18.23	19.14
Sr. Engineer/Engineer -D&D	3.00	5.30	16.70	17.53	18.41	19.33	20.29
Sr. Engineer/Engineer -QC & QA	2.00	5.50	11.55	12.13	12.73	13.37	14.04
Service Engineer	4.00	10.00	42.00	44.10	46.31	48.62	51.05
Executive/ Engineer - Sales	25.00	20.00	525.00	551.25	578.81	607.75	638.14
Manager- Testing	1.00	1.00	1.05	1.10	1.16	1.22	1.28
Engineer - Testing	1.00	4.80	5.04	5.29	5.56	5.83	6.13
Total			**4,182.59**	**4,391.72**	**4,611.31**	**4,841.87**	**5,083.97**
Grand Total			**4,385.45**	**4,604.72**	**4,834.96**	**5,076.71**	**5,330.54**

Note :-

1. Wages cost is increasing by 5 % Every Year

KRN HVAC PRODUCTS PVT LTD

Revenue and Raw Material Cost

Particulars	2024-25 Proj	2025-26 Proj	2026-27 Proj	2027-28 Proj	2028-29 Proj
Installed Capacity (Nos. Per annum)					
Fin & Tube Type Heat Exchanger Units, Tubings & Sheet Metal Parts	106,799	429,609	429,609	429,609	429,609
HVAC Components (Piping, U bend & I-Kit) & Sheet Metal Components	-	23,817,916	23,817,916	23,817,916	23,817,916
Bar & Plate Heat Exchanger and Cooling Unit with Blower & Motor*	-	3,168	3,168	3,168	3,168
Roll Bond Evaporator*	-	2,904,000	2,904,000	2,904,000	2,904,000
Total Days of Operation	300	300	300	300	300
Number of Working Hours	22	22	22	22	22
Total Capacity Utilization (%)					
Fin & Tube Type Heat Exchanger Units, Tubings & Sheet Metal Parts	30.00%	30.00%	50.00%	60.00%	75.00%
HVAC Components (Piping, U bend & I-Kit) & Sheet Metal	0.00%	40.00%	70.00%	70.00%	75.00%
Bar & Plate Heat Exchanger and Cooling Unit with Blower & Motor*	0.00%	40.00%	40.00%	50.00%	75.00%
Roll Bond Evaporator*	0.00%	50.00%	50.00%	60.00%	75.00%
Production (in Nos.)					
Fin & Tube Type Heat Exchanger Units, Tubings & Sheet Metal Parts	32,040	128,883	214,805	257,765	322,207
HVAC Components (Piping, U bend & I-Kit) & Sheet Metal Components	-	9,527,166	16,672,541	16,672,541	17,863,437
Bar & Plate Heat Exchanger and Cooling Unit with Blower & Motor*	-	1,267	1,267	1,584	2,376
Roll Bond Evaporator*	-	1,452,000	1,452,000	1,742,400	2,178,000
Sales (in Nos.)					
Fin & Tube Type Heat Exchanger Units, Tubings & Sheet Metal Parts	30,488	124,041	210,509	255,617	318,985
HVAC Components (Piping, U bend & I-Kit) & Sheet Metal Components	-	9,050,808	16,315,272	16,672,541	17,803,892
Bar & Plate Heat Exchanger and Cooling Unit with Blower & Motor*	-	1,204	1,267	1,568	2,336
Roll Bond Evaporator*	-	1,379,400	1,452,000	1,727,880	2,156,220
Raw Material Cost (in Lacs Rs.)					
Copper Tube, Aluminiium Foils, SS & GI Sheets	4,216.87	21,899.13	38,684.03	47,014.42	58,507.98
Aluminium Sheet, Electrical items etc	-	2,709.45	3,230.41	4,117.14	6,256.37
Aluminium Sheet for Bond Roll Evaporator	-	4,683.06	5,077.43	6,223.40	7,921.50
Total Raw Material Cost	**4,216.87**	**29,291.64**	**46,991.87**	**57,354.96**	**72,685.85**

KRN HVAC PRODUCTS PVT LTD

Revenue and Raw Material Cost

Particulars	2024-25 Proj	2025-26 Proj	2026-27 Proj	2027-28 Proj	2028-29 Proj
Sales (in Lacs Rs.)					
Fin & Tube Type Heat Exchanger Units, Tubings & Sheet Metal Parts	5,784.46	24,240.39	42,372.31	52,995.65	67,455.89
HVAC Components (Piping, U bend & I-Kit) & Sheet Metal Components	-	4,958.45	9,206.40	9,690.24	10,554.75
Bar & Plate Heat Exchanger and Cooling Unit with Blower & Motor*	-	5,418.90	5,873.47	7,485.71	11,375.22
Roll Bond Evaporator*	-	6,690.09	7,253.47	8,890.57	11,316.43
Wastage Sales	144.61	1,032.70	1,617.64	1,976.55	2,517.56
Trading Sales					
Sales of Services					
Total Projected Sales	**5,929.07**	**42,340.53**	**66,323.29**	**81,038.72**	**103,219.85**
Consumable Cost (in Lacs Rs.)					
Consumables (1% of Total RM Cost)	42.17	292.92	469.92	573.55	726.86
Accessories / Fittings (2% of Total RM Cost)	84.34	585.83	939.84	1,147.10	1,453.72
Total Raw Material Cost	**126.51**	**878.75**	**1,409.76**	**1,720.65**	**2,180.58**

KRN HVAC PRODUCTS PVT LTD

Details of Closing Stock

Particulars	2024-25 Proj	2025-26 Proj	2026-27 Proj	2027-28 Proj	2028-29 Proj
Finished Goods (in Nos)					
Fin & Tube Type Heat Exchanger Units, Tubings & Sheet Metal Parts	1,602	6,444	10,740	12,888	16,110
HVAC Components (Piping, U bend & I-Kit) & Sheet Metal Components	-	476,358	833,627	833,627	893,172
Bar & Plate Heat Exchanger and Cooling Unit with Biower & Motor*	-	63	63	79	119
Roll Bond Evaporator*	-	72,600	72,600	87,120	108,900
Finished Goods (in Lacs Rs.)					
Fin & Tube Type Heat Exchanger Units, Tubings & Sheet Metal Parts	221.58	944.48	1,621.35	2,003.99	2,555.09
HVAC Components (Piping, U bend & I-Kit) & Sheet Metal Components	-	143.53	282.24	290.71	291.23
Bar & Plate Heat Exchanger and Cooling Unit with Blower & Motor*	-	212.63	204.40	264.00	405.63
Roll Bond Evaporator*	-	264.08	253.87	313.78	400.08
Total--->	**221.58**	**1,564.72**	**2,361.86**	**2,872.48**	**3,652.03**
Period of Holding in Months	**0.50**	**0.50**	**0.50**	**0.50**	**0.50**
Raw Material (In Kgs/Nos)					
Copper Tube, Aluminiium Foils, SS & GI Sheets	3,268.00	19,226.00	37,683.00	61,138.00	81,374.00
Aluminium Sheet, Electrical items etc	-	195.00	258.00	439.00	714.00
Aluminium Sheet for Bond Roll Evaporator	-	293,362.00	352,917.00	577,460.00	786,122.00
Raw Material Cost (in lacs Rs.)					
Copper Tube, Aluminiium Foils, SS & GI Sheets	527.11	3,193.62	6,447.34	10,774.14	14,627.00
Aluminium Sheet, Electrical items etc	-	395.13	538.40	943.51	1,564.09
Aluminium Sheet for Bond Roll Evaporator	-	682.95	846.24	1,426.20	1,980.38
Total--->	**527.11**	**4,271.70**	**7,831.98**	**13,143.85**	**18,171.47**
Period of Holding in Months	**1.75**	**1.75**	**2.00**	**2.75**	**3.00**
Work In Process/WIP (in lacs Rs.)					
Fin & Tube Type Heat Exchanger Units, Tubings &	123.79	716.13	1,528.93	2,197.44	2,731.87
HVAC Components (Piping, U bend & I-Kit) & Sheet Metal Components	-	67.14	143.34	206.01	256.11
Bar & Plate Heat Exchanger and Cooling Unit with Blower & Motor*	-	67.14	143.34	206.01	256.11
Roll Bond Evaporator*	-	111.90	238.90	343.35	426.85
Total--->	**123.79**	**895.17**	**1,911.17**	**2,746.80**	**3,414.83**
Period of Holding in Days	**7**	**7**	**10**	**12**	**12**

Depreciation Calculation (As per Companies Act, 2013)

2023-24									
			Gross Block			Depreciation			
Sr. No.	Descriptions Of Assets	Rate of Depre	Opening Balance	Additions	Closing Balance	Opening Balance	Current Year Depreciation	Closing Balance	Net Block As 31-Mar-24
1	Land (Leasehold)		-	1,659.93	1,659.93	-	-	-	1,659.93
2	Factory Building	4.87%	-	164.82	164.82	-	0.67	0.67	164.15
3	Plant & Machinery	18.10%	-	669.40	669.40	-	6.46	6.46	662.94
4	Misc. Fixed Assets	13.57%	-	-	-	-	-	-	-
	TOTAL		-	2,494.15	2,494.15	-	7.13	7.13	2,487.02

2024-25									
			Gross Block			Depreciation			
Sr. No.	Descriptions Of Assets	Rate of Depre	Opening Balance	Additions	Closing Balance	Opening Balance	Current Year Depreciation	Closing Balance	Net Block As 31-Mar-25
1	Factory Land		1,659.93	-	1,659.93	-	4.63	4.63	1,655.30
2	Factory Building	4.87%	164.82	-	164.82	0.67	8.03	8.70	156.12
3	Plant & Machinery	18.10%	669.40	86.03	755.43	6.46	136.73	143.19	612.24
4	Misc. Fixed Assets	13.57%	-	-	-	-	-	-	-
	TOTAL		2,494.15	86.03	2,580.18	7.13	149.39	156.52	2,423.66

2025-26									
			Gross Block			Depreciation			
Sr. No.	Descriptions Of Assets	Rate of Depre	Opening Balance	Additions	Closing Balance	Opening Balance	Current Year Depreciation	Closing Balance	Net Block As 31-Mar-26
1	Factory Land		1,659.93	-	1,659.93	4.63	46.34	50.97	1,608.96
2	Factory Building	4.87%	164.82	12,184.85	12,349.67	8.70	601.43	610.13	11,739.54
3	Plant & Machinery	18.10%	755.43	11,468.00	12,223.43	143.19	2,212.44	2,355.63	9,867.80
4	Misc. Fixed Assets	13.57%	-	-	-	-	-	-	-
	TOTAL		2,580.18	23,652.85	26,233.03	156.52	2,860.21	3,016.73	23,216.30

2026-27									
			Gross Block			Depreciation			
Sr. No.	Descriptions Of Assets	Rate of Depre	Opening Balance	Additions	Closing Balance	Opening Balance	Current Year Depreciation	Closing Balance	Net Block As 31-Mar-27
1	Factory Land		1,659.93	2,927.40	4,587.33	50.97	46.34	97.31	4,490.02
2	Factory Building	4.87%	12,349.67	-	12,349.67	610.13	601.43	1,211.56	11,138.11
3	Plant & Machinery	18.10%	12,223.43	-	12,223.43	2,355.63	2,212.44	4,568.07	7,655.36
4	Misc. Fixed Assets	13.57%	-	-	-	-	-	-	-
	TOTAL		26,233.03	2,927.40	29,160.43	3,016.73	2,860.21	5,876.94	23,283.49

Depreciation Calculation (As per Companies Act, 2013)

2027-28									
			Gross Block			Depreciation			
Sr. No.	Descriptions Of Assets	Rate of Depre	Opening Balance	Additions	Closing Balance	Opening Balance	Current Year Depreciation	Closing Balance	Net Block As 31-Mar-28
1	Factory Land		4,587.33	-	4,587.33	97.31	46.34	143.65	4,443.68
2	Factory Building	4.87%	12,349.67	-	12,349.67	1,211.56	601.43	1,812.99	10,536.68
3	Plant & Machinery	18.10%	12,223.43	-	12,223.43	4,568.07	2,212.44	6,780.51	5,442.92
4	Misc. Fixed Assets	13.57%	-	-	-	-	-	-	-
	TOTAL		**29,160.43**	**-**	**29,160.43**	**5,876.94**	**2,860.21**	**8,737.15**	**20,423.28**

2028-29									
			Gross Block			Depreciation			
Sr. No.	Descriptions Of Assets	Rate of Depre	Opening Balance	Additions	Closing Balance	Opening Balance	Current Year Depreciation	Closing Balance	Net Block As 31-Mar-29
1	Factory Land		4,587.33	-	4,587.33	143.65	46.35	190.00	4,397.34
2	Factory Building	4.87%	12,349.67	-	12,349.67	1,812.99	601.42	2,414.41	9,935.25
3	Plant & Machinery	18.10%	12,223.43	-	12,223.43	6,780.51	2,212.44	8,992.95	3,230.48
4	Misc. Fixed Assets	13.57%	-	-	-	-	-	-	-
	TOTAL		**29,160.43**	**-**	**29,160.43**	**8,737.15**	**2,860.21**	**11,597.36**	**17,563.07**

Depriciation Calculation (As per Income Tax Act, 1961)

2023-24

Sr. No.	Descriptions Of Assets	Rate of Depre. %	Opening Balance	Additions	Total Balance.	Depre.	Additional Depreciation	Total Depreciation	Net Block As
1	Factory Land	-	-	1,659.93	1,659.93	-	-	-	1,659.93
2	Factory Building	10.00%	-	164.82	164.82	4.12	-	4.12	160.70
3	Plant & Machinery	15.00%	-	669.40	669.40	25.10	-	25.10	644.30
	TOTAL		-	2,494.15	2,494.15	29.22	-	29.22	2,464.93

2024-25

Sr. No.	Descriptions Of Assets	Rate of Depre. %	Opening Balance	Additions	Total Balance	Depre.	Additional Depreciation	Total Depreciation	Net Block As
1	Factory Land	-	1,659.93	-	1,659.93	-	-	-	1,659.93
2	Factory Building	10.00%	160.70	-	160.70	16.07	-	16.07	144.63
3	Plant & Machinery	15.00%	644.30	86.03	730.33	109.55	-	109.55	620.78
	TOTAL		2,464.93	86.03	2,550.96	125.62	-	125.62	2,425.34

2025-26

Sr. No.	Descriptions Of Assets	Rate of Depre. %	Opening Balance	Additions	Total Balance	Depre.	Additional Depreciation	Total Depreciation	Net Block
1	Factory Land	-	1,659.93	-	1,659.93	-	-	-	1,659.93
2	Factory Building	10.00%	144.63	12,184.85	12,329.48	1,232.95	-	1,232.95	11,096.53
3	Plant & Machinery	15.00%	620.78	11,468.00	12,088.78	1,813.32	-	1,813.32	10,275.46
	TOTAL		2,425.34	23,652.85	26,078.19	3,046.27	-	3,046.27	23,031.92

2026-27

Sr. No.	Descriptions Of Assets	Rate of Depre. %	Opening Balance	Additions	Total Balance	Depre.	Additional Depreciation	Total Depreciation	Net Block
1	Factory Land	-	1,659.93	2,927.40	4,587.33	-	-	-	4,587.33
2	Factory Building	10.00%	11,096.53	-	11,096.53	1,109.65	-	1,109.65	9,986.88
3	Plant & Machinery	15.00%	10,275.46	-	10,275.46	1,541.32	-	1,541.32	8,734.14
	TOTAL		23,031.92	2,927.40	25,959.32	2,650.97	-	2,650.97	23,308.35

2027-28

Sr. No.	Descriptions Of Assets	Rate of Depre. %	Opening Balance	Additions	Total Balance	Depre.	Additional Depreciation	Total Depreciation	Net Block
1	Factory Land	-	4,587.33	-	4,587.33	-	-	-	4,587.33
2	Factory Building	10.00%	9,986.88	-	9,986.88	998.69	-	998.69	8,988.19
3	Plant & Machinery	15.00%	8,734.14	-	8,734.14	1,310.13	-	1,310.13	7,424.01
	TOTAL		23,308.35	-	23,308.35	2,308.82	-	2,308.82	20,999.53

2028-29

Sr. No.	Descriptions Of Assets	Rate of Depre. %	Opening Balance	Additions	Total Balance	Depre.	Additional Depreciation	Total Depreciation	Net Block
1	Factory Land	-	4,587.33	-	4,587.33	-	-	-	4,587.33
2	Factory Building	10.00%	8,988.19	-	8,988.19	898.82	-	898.82	8,089.37
3	Plant & Machinery	15.00%	7,424.01	-	7,424.01	1,113.60	-	1,113.60	6,310.41
	TOTAL		20,999.53	-	20,999.53	2,012.42	-	2,012.42	18,987.11

Calculation Of Income Tax

Particulars	2023-24 Actual	2024-25 Proj	2025-26 Proj	2026-27 Proj	2027-28 Proj	2028-29 Proj
Income Tax As Per Normal Provision						
EBT	(45.89)	564.55	4,113.77	8,401.84	11,326.30	16,716.13
Add:						
Interest On Investment	-	1.40	1.40	1.40	1.40	1.40
Other Income	-	-	-	-	-	-
Depriciation as Per Books	7.13	149.39	2,860.21	2,860.21	2,860.21	2,860.21
Interest Expenses on ROU		197.00	104.29	17.38	-	-
Less:						
Depriciation as Per Income Tax Act, 1961	29.22	125.62	3,046.27	2,650.97	2,308.82	2,012.42
Actual Interest Cost		197.09	104.39	17.40		
Gross Total Income	**(67.98)**	**589.63**	**3,929.01**	**8,612.47**	**11,879.09**	**17,565.32**
Set off of Losses	-	**(67.98)**	-	-	-	-
Taxable Income	-	521.65	3,929.01	8,612.47	11,879.09	17,565.32
Income Tax	-	**89.52**	**674.22**	**1,477.90**	**2,038.45**	**3,014.21**

Note :-

It is assumed that the Company has elected to exercise the option permitted under Section 115BAB of the Income Tax Act, 1961 as introduced by the the Taxation Laws (Amendment) Ordinance, 2019, Accordingly, provision for income tax is calculated as per section 115BAB.

Chapter 7

SWOT Analysis

SWOT Analysis

Strengths

1. Established track record of promoters in HVAC industry.
2. Stable demand for Heat Exchanger industry.
3. Qualified and experienced senior management team.
4. Long standing relationships with leading clientele.
5. Effective quality control checks.
6. Consistent Financial performance of promoter company.

Weakness

1. Price of raw materials is volatile and its availability.
2. Sale of the own product is highly dependent on sale of other products.
3. Lack Of skilled labor
4. Keeping up with new technology.
5. HVAC workforce shortages.

Opportunity

1. Increasing working population.
2. Urbanization.
3. Brand enhancement and differentiation.
4. Enter the new product line with business reputation.
5. Increase in demand of HVAC products.
6. High customer base.
7. Increasing in global demand for HVAC products.

Threats

1. The generic threat of economic slowdown.
2. Possible Entry of Global Players.
3. A low cost import from China.
4. Raw material quality.
5. High testing cost
6. Increasing in competition.
7. Changing client behavior.
8. Talent crunch.
9. High maintenance charges.

Chapter 8

Risk Analysis

Q-serv has prepared risk matrix and also commented on mitigation strategy keeping in mind the probable risks that may be faced by the Project.

No.	Risk	Details	Comments	Risk Allocated
A.	General Risk			
1	Regulatory policy/ Licensing requirement	Changes in Government policies/ regulatory compliances	The Company shall ensure to adhere to the regulations and compliances. All regulatory requirements should be met	Moderate
2	Promoters'/Directors' knowledge of the market	Company is owned & Managed by its Promoters /Directors.	The directors have relevant experience and knowledge in the Manufacturing Heat Exchangers and Refrigeration units.	Low
3	Sponsor risk	Infusion of fund is through Promoter Company.	The promoters/Company is to bring funding for the proposed Project.	High

No.	Risk	Details	Comments	Risk Allocated
B.	Risks during Establishment			
1	Completion risk - Time and Cost Overrun.	Any delay in procurement of Machinery & Land or Construction of Plant may lead to time and cost overrun.	The plant is currently based on the funds from Holding Company. So, the commissioning of expansion is dependent on IPO Listing of holding company, Land acquisition, Machinery procurement and construction activity.	Moderate
2	Legal Approvals	Approvals from various government/ statutory bodies	The company has the necessary regulatory/statutory approvals of the existing plant. However, the company should adhere to the regulatory norms for the proposed expansion.	Moderate

No.	Risk	Details	Comments	Risk Allocated
C.	Operational Risk			
1	Market Risk	Ability to generate the Projected revenue.	The Group should make dynamic marketing strategy.	Low
2	Competitive ness	The Company should be competitive in respect of quality andprice.	The company must be competitive in respect of the quality specification of the Finished Product.	Low
3	Natural Calamities/ Contingencies	Risk involved in loss due to natural calamities/continge ncies like fire/theft	To mitigate the risk, Company has to obtain the insurance covering all the contingencies.	Low
4	Quality Control	Manufacturing Industry	The company should have a proper Quality checking and control system.	Moderate

Chapter 9

Summary of Updates

Summary of Updates

Project 1: Existing Unit at Neemrana

- **Land Acquisition:** The unit located in Neemrana occupies a plot of 4,036 square meters. The acquisition was formalized through registries dated July 20, 2023, for Plot F-50, and July 17, 2023, for Plot G-51.
- **Construction Status:** Construction of the unit has been completed successfully, and production has commenced. The facility is now operational and actively contributing to the company's revenue.
- **Utility Infrastructure** Water and power supply lines have been established and are fully connected.
- **Machineries** have been procured and installed. The unit is fully functional and engaged in the production of high-quality HVAC products, meeting current market demands.
- **Status of Cost of Project:** **Rs. In Lakhs**

Particulars	Updated Cost of Project (A)	Amount Spent as on 15.07.2024 (B)	Amount Yet to be Spent (C=A-B)
Land and Site Development	458.25	458.25	-
Building Development	161.69	161.69	-
Plant & Machinery	740.01	641.33	98.67
Contingency	18.55	-	18.55
Total	**1378.50**	**1,261.28**	**117.23**

Note: - The increase in the Cost of Building Development (Rs.23.63 Lakhs) and Plant & Machinery (Rs 1.64 Lakhs) for the phase – I has been adjusted against contingency .

Project 2: Proposed Expansion at Kolila Joga

- **Land Acquisition:** The proposed expansion project is located on a 71,924 square meter plot at SP1-24, Kolila Joga, Neemrana, Rajasthan. The land was secured through an allotment letter dated August 23, 2023, issued by RIICO, with a standard allotment letter received on September 20, 2023. An initial payment of 25% of the land cost was made at the time of allotment. The remaining 75% (Rs. 2,999.23 lakhs) is to be settled in 11 quarterly installments, commencing January 18, 2024 with Interest @ 8.50% per Annum.

- **Construction Status:** Civil work for Project-2 has commenced and is ongoing. Timely provision of funds is essential to ensure the successful completion of construction activities and the overall success of the project.

- **Funding Arrangements:** Funding for Project-2, amounting to Rs. 27,890.57 lakhs, is contingent upon the timely listing of the parent company. Alternative financing options are being explored to prevent any potential delays.

- **Regulatory Compliance:** The Company is actively pursuing the necessary regulatory and statutory approvals from respective Authorities and/ or Regulatory Bodies, as the case may be, required for the proposed expansion.

- **Status of Cost of Project: -**

(Rs. In Lakhs)

Particulars	Amount as per Cost of Project (A)	Changes due to Change in supplier of Machinery (B)	Adjusted Against Contingency (C)	Updated Cost of Project (D)=(A+B+C)	Amount spent as on 15.07.2024 (E)	Amount Yet to be Spent (F) = (D-E)
Land and Site Development	4,129.08	-	-	4,129.08	1,680.33	2,448.75
Building Development	11,689.38	-	-	11,689.38	1,437.52	10,251.86
Plant & Machinery	10,038.42	947.30 *	15.96 #	11,001.68	465.66	10,536.02
Miscellaneous Deposits	108.64	-	-	108.64	60.96	47.68
Contingency	977.75	-	(15.96)	961.79	-	961.79
Total	**26,943.27**	**947.30**	**-**	**27,890.57**	**3,644.47**	**24,246.10**

*** Changes due to change in the supplier & machinery technology resulting in incremental cost of project by Rs. 947.30 Lakhs (Net). Details of the changes are as under:**

Details of Machine from New Supplier & Old Supplier					
Sr No	**Machinery(ies)**	**Vendor**	**New / Old Supplier**	**Purchase From**	**Cost (INR in Lakhs) (Incl Tax)**
		Machinery(ies) to be Included in the Project			
1.	Hi Mill	Wuxi DLS Rolling Mill Manufacture Co., Ltd	New Supplier	China	771.66
2.	Hi CRM				411.64
Total (A)					**1,183.30**
		Machinery(ies) to be Excluded in the Project			
3.	Hi Mill	Global Engineers & Contractors	Old Supplier	India	141.60
4.	Hi CRM				94.40
Total (B)					**236.00**
			Net Incremental Cost (A) – (B)		**947.30**

Reasoning for Change in Rolling Mill Supplier and Technology

Context and Background

Initially, the project plan involved purchasing a rolling machine from an Indian supplier. This decision was based on the supplier's capability to produce both-side inflating Roll Bond Evaporators, which are essential for the domestic refrigerator cooling market. However, upon further evaluation, significant limitations were identified that necessitated reconsidering the supplier and technology.

Limitations of Indian Mills

1. Width Constraints: Indian mills can produce both-side inflating Roll Bond Evaporators, but only up to a maximum width of 500 mm. This limitation hinders our ability to meet the evolving demands of the market, particularly for applications requiring wider panels, such as in E-Vehicle battery cooling, which requires a width of approximately 750 mm.

2. Application-Specific Limitations: Both-side inflating panels, though suitable for refrigerator cooling, are not ideal for solar panel cooling. The double-sided inflation can lead to tube pinching or damage, making these panels unsuitable for the delicate requirements of solar panel cooling. Currently, Roll Bond Evaporators used for solar panel cooling are imported from China, as no Indian manufacturer produces one-side inflating panels, which are more appropriate for such applications.

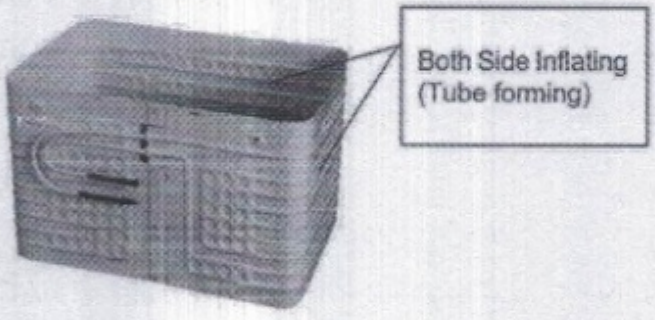
3. Lack of Advanced Technology: The absence of Indian manufacturers capable of producing one-side inflating Roll Bond Evaporators represents a significant technological gap. This technology is crucial for emerging markets such as solar panel and E-Vehicle battery cooling, where advanced, specialized panels are required.

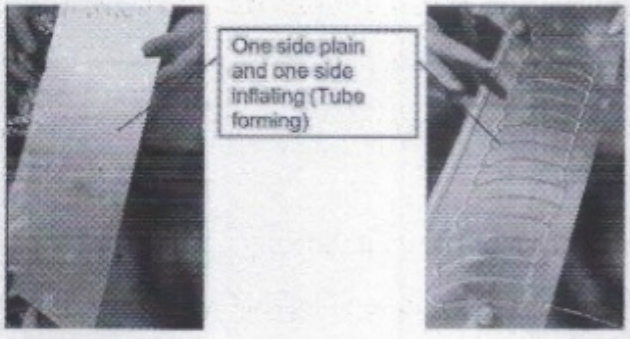
Rationale for Selecting Chinese Mills

1. Comprehensive Production Capabilities: Chinese mills offer the ability to produce both one-side and both-side inflating Roll Bond Evaporators. This flexibility allows us to cater to the needs of both the refrigerator cooling market and the rapidly growing sectors of solar panel and E-Vehicle battery cooling. By sourcing from Chinese suppliers, we can cover all these markets under one manufacturing process.

2. Advanced and New Technology for India: Introducing one-side inflating technology to India through a Chinese mill will place us at the forefront of innovation in the industry. This will not only meet current market demands but also position us to address future needs as they arise.

3. Increased Panel Size Capability: The new Chinese mill will enable the production of Roll Bond Evaporators with an upgraded maximum width of 750 mm, significantly expanding our manufacturing capabilities beyond the current 500 mm limitation imposed by Indian mills. This increase in size is essential for E-Vehicle battery cooling applications.





Based on above, the decision to change the rolling mill supplier and adopt new technology from a Chinese manufacturer is a strategic move aimed at overcoming the limitations of the currently available Indian mills. The advanced capabilities of the Chinese mill will enable us to produce both one-side and both-side inflating Roll Bond Evaporators, covering a broader market spectrum, including refrigerator cooling, solar panel cooling, and E-Vehicle battery cooling. This change, though leading to an increase in the cost of plant and machinery, is justified by the significant enhancement in operational efficiency,

product quality, and market reach. It ensures that the project is future-proof, technologically advanced, and aligned with the highest industry standards.

 # Foreign Exchange Fluctuation:

To address the fluctuation in foreign exchange rates on July 15th, 2024 w.r.t to the amounts yet payable for the project machineries to be imported, which resulted in an increased cost of acquiring the machine by Rs. 15.96 lakhs compared to initial estimates, the adjustment has been made against the contingency fund anticipated initially. This approach ensures that the project remains within its financial limits without requiring additional funding for the said purpose. The contingency was set aside for such unforeseen expenses, and its utilization in this context is both prudent and aligned with standard project management practices. This strategy helps to mitigate the impact of exchange rate fluctuations while keeping the overall budget intact.

Chapter 10.

Conclusion

Based on our assessment of the industrial and economic landscape, and considering the information provided by the company, we have concluded the following:

- The Parent Company is actively engaged in the HVAC industry and is led by Mr. Santosh Kumar Yadav, the Managing Director, who possesses extensive experience in this sector. The company's established market network provides a significant advantage for the proposed expansion. To ensure the successful execution of this expansion, it is recommended that the company invest in hiring a highly experienced team.

- The funding of the Project Cost (Phase-1 & Phase -2) of Rs. 29,269.07 Lakhs is as under:

Rs. In Lakhs

Name of the Facility	Phase - 1	Phase – 2	Total
Share Holder's Funds	**500.00**	**24,246.10**	**24,746.10**
Unsecured Loan From Parent Company & / Or Other	**878.50**	**3,644.47**	**4,522.97**
Total	**1,378.50**	**27,890.57**	**29,269.07**

The funding for Phase 2 of the project, amounting to ₹27,890.57 lakhs, is partially contingent upon the timely completion of the Parent Company's IPO. To prevent any delays in the expansion, it is crucial that the IPO be executed promptly. Should there be any postponements with the IPO, it is advisable for the company to seek a bank loan or alternative financing to ensure the project proceeds on schedule.

- The company has successfully secured land for Phase 1, which is adequately designated for the plant's operations. The registration process for the land associated with Phase 2 was finalized on March 24, 2024. Further, an initial payment of 25% of the land cost was paid at the time of allotment, with the remaining 75% (Rs. 2,999.23 lakhs) to be paid in 11 quarterly installments starting from January 18, 2024 with interest @ 8.50% per annum.

- The civil work for Phase 1, including design, drawing, and construction costs, aligns with current market standards and project requirements. The civil work for Phase 2 has already commenced and is currently in progress.

- The Major Machineries related to Phase -1 has been successfully acquired by the Company.

- The proposed factory site is strategically located with excellent connectivity to major transportation routes.

- The company is well-positioned to effectively source both technical and non-technical manpower without encountering significant challenges.

- The company will initiate the process to obtain the required permissions, approvals, and sanctions from the relevant authorities.

- The company is advised to obtain a comprehensive insurance policy covering all project assets under construction, the factory building, and any other critical assets. This policy should protect against unforeseen risks such as fire, natural calamities, and other potential hazards.

- It is advisable for the management of the company to maintain a sufficient cash reserve to mitigate the impact of any adverse fluctuations in revenue and raw material costs that could affect the project's profitability.

- The overall outlook for the HVAC industry appears positive and promising. However, several trends that may impact the industry and the company include:
    - Economic Growth
    - Advances in HVAC Technology
    - Shifts in Consumer Preferences
    - Changes in Government Policies

- Timely completion of all sanctions and approval – The Company should ensure the timely completion of all necessary sanctions and approvals required for the proposed project.

Considering the anticipated demand, the directors' experience in the same industry, the project's location, the projected debt-service indicators, operational aspects, and the risk mitigation strategies outlined in the report, it can be concluded that the proposed project by M/s. KRN HVAC Products Private Limited is both economically viable and technically feasible, provided that the projected outcomes are achieved.

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