CORRIGENDUM – II

Dated 08.03.2021

Sub: Expression of Interest (EOI) for Long Term Lease or Outright Sale of Gujarat Copper Project Bharuch, Gujarat, India

EOI No.: HCL/CO/M&C/EOI-GCP/1 Dated 05.02.2021

The Last Date of Submission of offers and Date of Opening of offers against above EOI has been extended to 1500 hrs on 15.03.2021 and 1500 hrs on 16.03.2021 respectively.

All other terms and conditions shall remain the same.

(Sunil Parashar)
General Manager (Commercial)
HINDUSTAN COPPER LIMITED
(A Government of India Enterprise)
Tamra Bhawan
1, Ashutosh Chowdhury Avenue
KOLKATA – 700019

CORRIGENDUM – I

Dated 22.02.2021

Sub: Expression Of Interest (EOI) for Long Term Lease or Outright Sale of Gujarat Copper Project Bharuch, Gujarat, India

EOI No.: HCL/CO/M&C/EOI-GCP/1 Dated 05.02.2021

The Last Date of Submission of offers against above EOI at Clause 2.0 (page 3) and Clause 4.13 (page 8) may please be read as “by 1500 hrs on 06.03.2021”.

Further, the Date of Opening of offers received against the EOI shall be 1500 hrs on 08.03.2021.

All other terms and conditions shall remain the same.

(Sunil Parashar)
General Manager (Commercial)
HINDUSTAN COPPER LIMITED
(A Govt. of India Enterprise)

1 Ashutosh Chowdhury Avenue
Kolkata – 700019

EXPRESSION OF INTEREST (EOI)

FOR

Long Term Lease or Outright Sale

of

Gujarat Copper Project
Bharuch, Gujarat, India

Reference No: HCL/CO/M&C/EOI-GCP/1

Date of Issue: 05.02.2021

Last date of submission: 06.03.2021 3:00PM
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1.0 Introduction:

Hindustan Copper Limited (HCL), a public sector undertaking under the administrative control of the Ministry of Mines, was incorporated on 9th November 1967. It is the only vertically integrated copper producing company with presence in mining, beneficiation, and smelting, refining and downstream saleable products. Further details about the company and its operations can be obtained from its website www.hindustancopper.com.

2.0 Objective of EoI:

HCL has purchased plant and machinery including lease hold land of Jhagadia Copper Ltd. situated at Plot no. 747, Jhagadia Industrial Estate, Bharuch, Gujarat, India, in terms of the public notice issued by ARCIL Mumbai on 17.11.2014. The plant has an installed capacity of 50,000 MT per annum to manufacture LME Grade “A” equivalent Copper Cathodes through the Secondaries smelting route. The plant can process all wide variety of copper materials including e-scrap. Copper Cathode produced by GCP one of the best in the industry. GCP cathode contains 99.998% copper as compared to LME A Grade standard of 99.995%.

Hindustan Copper Limited invites interested organisations to submit their expression of interest (EOI) for following options:

Option - I

**Long term lease of Plant and Machinery of Gujarat Copper Project** facilities located at Bharuch, Gujarat on 'as-is-where-is' condition. Also, for existing copper operations additional modification will be allowed without change in existing plant layout. In addition to existing primary business, the interested party may utilize existing premises for other business with due permission/agreement with HCL. The desired lease period is minimum three years. The successful lessee shall operate the plant strictly within the ambit of consent to operate obtained by HCL from Gujarat Pollution Control Board.

Option – II

**Outright sale of land, Plant & Machinery of Gujarat Copper Project.**

Copper bearing raw materials and Work-in-progress like copper rivets, blisters, scraps and anodes pledged to State Trading Corporation of India Limited are excluded from the sale process.

Interested organizations either as a single entity or in consortium created for the above purpose, shall submit their applications of the EoI latest by 15:00 hours (IST) on 06.03.2021, 2020 at NIC Portal, ‘https://etenders.gov.in’
3.0 GCP Plant Overview:

i. GCP occupies around 75 Acres of land. The plot 550 meters. X 570 meters is covered on three sides by GIDC Roads (two sides by major roads). National Highway No 48 (Ahmedabad – Mumbai) is around 12 kms from the plant location. All production (smelting and refining facilities are located in one corner with central utility services and R & D are located at the edge of the plant close the middle of the plot. The effluent Treatment Plant, water storage etc are on the north east end of the Plot. Adequate storage is provided for temporary storage of waste products and hazardous waste. Also, natural gas facility is available over the fence and interested parties at their own cost may install such facilities for use in operations instead of fuel oil. The location map of the plant is depicted below.

![Location Map](image)

ii. Anodes produced in anode furnace are subjected to electrolytic refining in poly concrete cells to produce LME Grade A cathode. The residues from the Refining i.e. anode slime can be treated further for precious metal recovery or be sold to the slime processor. A new de-copperisation system with two leaching tanks is installed for the slime treatment. Refinery plant is also having Bismuth removal system from electrolyte for better quality cathode production.

3.1 Plant Collaborators and Designers

i. Smelter Technology Supplier: Boliden Contechn AB, Sweden
ii. Refinery Technology Supplier: Mount ISA Mines Ltd. (now Xstrata Technology, Australia)

The plant is based on modern and proven technology which is capable of processing wide array of copper bearing materials including electronic scrap.
3.2 Salient Features of the Plant

i. Largest secondary recycler in India capable of producing LME A grade Copper Cathodes
ii. Secondary Copper Smelter & Refinery Complex
iii. Flexibility to process various grades of copper/precious metal bearing raw materials including E-scrap
iv. Highly automated plant ensures high quality output
v. The gas cleaning system ensures that dioxins are not formed during operations
vi. Production possible through both Kaldor and Anode furnace depending upon the raw material mix
vii. Short lead time in changing over from one raw material mix to another
viii. Environment friendly technology & process. World class environmental protection measures to ensure all Regulatory Compliances & Basel Convention Norms
ix. Plant with State of art pollution control units including fugitive gas collection system to comply with Stringent environmental norm
x. A zero effluent discharge plant
xi. Well developed sampling & laboratory facilities

The Plant comprises of the following Units:

i. Top Blown Rotary Converter (Kaldo) for smelting
ii. Gas Cleaning section(Dual Alkali system)
iii. Slag granulation Unit
iv. Converters
v. De-dusting Units for Kaldor, Converter & Anode furnaces
vi. Anode Furnaces
vii. Anode Casting wheel
viii. Copper Refinery (based on ISA technology) including Rectifier-Transformers, Refinery Cranes and Wenmec supplied machines for Anode Preparation, Cathode Stripping & Strapping and Scrap Anode washing
ix. Effluent Treatment Plant /Zero discharge facility comprising of ETP-I,II & III & Secured land-fill
x. Propane & oxygen Storage & distribution facility
xi. Electrical Switchyard & Captive Power Plant (DG Sets)
 xii. Process & drinking water storage & distribution
xiii. Plant for Utilities comprising of Soft water, DM water, Boilers (with Steam distribution system) & Cooling Towers
xiv. Fire Hydrant system
xv. Above ground Piping & Cable rack
xvi. Fuel Oil Storage, pumping & distribution system
xvii. Control Laboratory
xviii. Cable shredding plant
3.3 Production Performance

The plant was commissioned in Oct'2016 and was operated till July'2019. Since then, the Plant is under care and maintenance. All electrical circuits are energised and cold trial of all the equipment are regularly taken up. During the above operations, the copper recovery considering anode and refinery operations was respectively 99.5% and 99.7% % which is as per the standard norms for secondary copper plant.

3.4 E-Waste – A Big Opportunity

India generating huge quantity of e-waste annually. Non-Ferrous metals constitute 13% of the e-waste. E-waste is richer in rare metals than their ores, containing 10 times higher copper content than copper ore. E waste generation in India expected to increase to 200 lakh MT by 2025. Kaldo process is a proven technology for e-scrap processing. Government of India has passed new E-waste guidelines placing the onus on producers and bulk consumers for the safe disposal. The Kaldo furnace of the plant has the facility to process around 12,000 tonnes of e-waste annually.

A brief writeup on the plant is given at annexure – I.

4.0 General:

4.1 Requests for clarification:

If at any time after submission of the EoI, HCL requires any clarification on the application submitted by the interested party, it reserves the right to request such information from any or all of the interested party(ies) and such party will be obliged to respond to any reasonable request for such information and to supply the same within such reasonable timeframe as may be required.

4.2 EoI Process

Following the submission of EoI, all interested parties will be provided with an opportunity to hold further discussions with the Senior Management of HCL. They will also be furnished with further information if required after signing of Non-Disclosures Agreement (NDA). However, information will be provided at the sole discretion of HCL. All organisations before submission of bids will be provided with an opportunity to:

(i) conduct a technical and financial due diligence

(ii) hold further discussions with the senior management of HCL and

(iii) undertake plant visits.

The terms relating to submission of bids will be set out in the RFP and other document(s) to be prepared for the purpose and also a pre-bid conference will be held with the prospective bidders.

4.3 Modification/Cancellation
HCL will be at liberty to amend/modify/delete any of the above conditions and/or the process as may be deemed necessary in the light of the facts and circumstances of the case. HCL reserves the right to proceed with/cancel the EOI process irrespective of the response to its invitation. HCL at its discretion may extend the last date for submission of EOI. Interested parties are advised to keep themselves informed of any such modification/cancellation that may be notified. Any corrigendum to the EOI or extension of schedule of bid submission, shall be uploaded in NIC opp e tendering portal. HCL shall not be notifying any such modification separately through any other media.

4.4 Governing Laws/Jurisdiction/Arbitration

All matters relating to the EOI and selection of Interested Party and the bidding procedure shall be governed by the laws of Union of India. Only courts at Kolkata (with exclusion of all other courts) shall have the jurisdiction to decide or adjudicate on any matter, which may arise out of or in connection with the selection of an Interested Party.

4.5 Legal Status of GCP: During the currency of the lease agreement GCP, all the legal liabilities of the arising from the current court cases will be borne by HCL.

4.6 Party has to provide all the information's required as per EOI and formats attached for the purpose. HCL reserves the right to reject wrong information received in response to EOI.

4.7 Party will be responsible for all the costs associated with preparation of the response of EOI and participation in discussions.

4.8 The offers that are incomplete which do not substantially meet the requirement's prescribed in the EOI are liable to be rejected by HCL.

4.9 The detail of the facilities on offer for leasing envisaged by HCL as given in the EOI documents are indicative and under finalization. The detail Terms & Condition of contract will follow in main Tendering process, which will follow after. HCL reserve the right to change any terms & condition of EOI in their main tender.

4.10 While this EOI has been prepared in good faith, HCL does not make any representation or warranty, express or implied or accept any responsibility or liability, whatsoever, in respect of any statement or omission herein or the accuracy, completeness or reliability of information contained herein and shall incur no liability under any law, statute, rules or regulation as to the accuracy, reliability or completeness of this request, even if any or damage is caused by any act or omission on its part.

4.11 Opening of EOI: - The Respondent may remain present personally or may depute an authorized representative at the time of opening of EOI documents.

4.12 Further information/clarifications:
Any request for further information or clarification relating to the contents of this EOI document, may be submitted in writing to:

a. Shri S.S.Sethi, GM(Operations), Corporate Office
   Email - shyam_ss@hindustancopper.com
b. Shri Abhimanue Singh, DGM (Mech) & Unit Head GCP
   Email - abhimanue_s@hindustancopper.com
c. Shri R. Adhikari, DGM (Chemical), Corporate Office
   Email - ramananda_a@hindustancopper.com

HCL reserves the right not to respond, to questions raised or provide clarifications sought, in its sole discretion, if it considers that it would be inappropriate to do so. Nothing in this section shall be taken or read as compelling on the part of HCL requiring to respond to any question or to provide any clarification. No extension of any time and date referred to in this Preliminary Information Memorandum (PIM) shall be granted on the basis or grounds that HCL have not responded to any question/provided any clarification.

4.13 Submission of the EOI:

The interested respondents are required to submit their EOI by 1500 Hrs on 06.03.2020 in the NIC cpp portal as per procedure detailed below.

The Interested party may submit their EOI duly signed by the authorized signatory. The Bid must be in English and each copy shall be bound in a separate volume.

Instructions to the Interested Parties.

The bidders will have to submit the EOI online through NIC portal:

The following may please be noted by the bidders:

1) Interested Parties already having Digital Signature Certificate (DSC) or already registered in CPP for e procurement for tendering in any other organization can use the same for HCL.

2) No Techno-Commercial document is to be submitted offline. Shortfall documents, if any, may be sought from bidders over e-mail.

3) Interested Parties have to check Corrigendum uploaded against the EOI from time to time on CPP portal and resubmit their applications in case of any change in their offer due to the corrigendum before the final bid submission date/time.

4) For bidder's registration or Bid submission Procedure is also available "Bidder Manual Kit" in https://etenders.gov.in/eprocure/app

Registration procedure:

1. Please visit the Link https://etenders.gov.in/eprocure/app

2. Click on 'Online Bidder Enrollment'.
3. Put your Login ID (Enter email address for login id. eg: abc@nic.com. Care may be taken to enter valid e-mail ID. This information will be kept confidential. The login ID cannot be modified once registered.)

4. Put your correspondence Id. (Correspondence Email ID can be same as your Login ID.)

5. Put your Mobile Number (Note: As Mobile and Email are the modes of correspondence, ensure that mobile no and email id provided is correct.)

6. Fill rest of the form containing firm's details like name, address, PAN etc. to register as bidder. For enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class II/Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify / nCode / eMudhra etc.), with their profile.

Bid Submission Procedure:(Only by bidders having valid Digital Signature Certificate -DSC)

1. Please visit the Link https://etenders.gov.in/eprocure/app

2. Enter your login ID & Captcha

3. Enter password & Captcha

4. Click to DSC Login & enter PIN.

5. Click at ‘Search Active Tenders’.

6. Enter Tender ID & other search criteria & then Click ‘Search’ to search the Tender.

7. Upon finding the desired Tender, click the checkbox to mark the Tender as ‘favorite’.

8. Click on ‘My Tenders’ on left hand side menu panel to find out the favorite Tender list.

9. View the desired Tender by clicking logo under ‘View’ column. Tender details will appear.

10. Scroll down the page containing Tender details.

11. Download the EOT from ‘Tender Documents’ section.

12. Click ‘Proceed for Bid Submission’ to proceed ahead.

13. Tick ‘I Agree’ & ‘Next’ to proceed further.


15. Click ‘Submit OID’ then click ‘Submit Other Important Documents’.

16. Click ‘Encrypt & Upload’ to upload cover documents.
17. Click folder logo in ‘Technical’ box to upload technical cover documents.
18. As new window opens, click ‘Browse’ to select & attach the documents.
19. After selecting the documents, sign & upload them digitally by clicking "Sign & Upload'.
20. Click ‘Ok’ in the message pop-up box to proceed ahead.
21. After selecting the documents, sign & upload them digitally by clicking "Sign & Upload'.
22. Click ‘Ok’ in the message pop-up box to proceed ahead.
23. Click ‘Next’ in Bid Submission -> Packet Details window to proceed ahead.
24. View Bid details and scroll down to check the same.
26. If all correct, click ‘Freeze Bid' to lock/freeeze your offer.
27. Click ‘Print Acknowledgement’ & ‘Print Bid Details’ to print the same & keep it for record.

NB: You do not require registering again for different tender enquiries of HCL. Registration on the website is free of cost.

GePNIC Contact Person:

Important 1: For Registration related issues, all tenderers are requested to contact:
Mr. SK Imran, Mobile Number: 91 8777791736 or Support e-mail : support-eproc@nic.in

Important 2: For Bidding related issues, please call NIC Help Desk Number: 0120-4200 462, 4001 002, 4001 005, 6277 787

For Hindustan Copper Limited

(Sunil Parashar)
General Manager (Commercial)
Form 1

Submission of Bid

(To be forwarded on the letter head of the interested party submitting the EoI)

Ref: Date

To

General Manager (Commercial)
Hindustan Copper Limited
1 Ashutosh Chowdhury Avenue
Kolkata – 700 019
INDIA

Sub: Expression of Interest for long term lease of Gujarat Copper Project and
outright sale of Gujarat Copper Project located at Bharuch

Please refer to the invitation for Expression of Interest issued in respect of the above
mentioned subject matter. We have read and understood the contents of the invitation
for EOI. We are desirous to undertake long term lease of Gujarat Copper Project /
outright sale* of Gujarat Copper Project located at Bharuch.

The information template as per the format indicated in the EOI duly signed by us is
enclosed.

You and your authorized representatives may contact the person(s) listed below for
further information. The undersigned is (are) fully authorized to act on behalf of the
respondent

We shall be glad to receive further communication on the subject.

Signature

Name

(For <Respondent>)

*- Please cut the option which is not applicable.
Form-2

Information Template
(from Interested organizations)

Following information are to be provided by the Interested organization

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Particulars</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Name of the Organization/consortium &amp; nature of current business</td>
</tr>
<tr>
<td>2.</td>
<td>Address:</td>
</tr>
<tr>
<td></td>
<td>- Registered office with telephone number and email address</td>
</tr>
<tr>
<td></td>
<td>- Administrative/ Corporate office with telephone number and email address</td>
</tr>
<tr>
<td>3.</td>
<td>Name of the Key Executive (Authorized representative by the Board of the company)</td>
</tr>
<tr>
<td>4.</td>
<td>Company Incorporation Number (as per ROC) if any</td>
</tr>
<tr>
<td>5.</td>
<td>List of Present Directors as on 30.9.2020</td>
</tr>
<tr>
<td>6.</td>
<td>Authorized Share Capital as on 30.9.2020</td>
</tr>
<tr>
<td>7.</td>
<td>Paid up Share Capital &amp; Share holding pattern as on 30.9.2020</td>
</tr>
<tr>
<td>8.</td>
<td>Net Worth of the company as on 30.09.2020 (excluding revaluation reserves, if any.)</td>
</tr>
<tr>
<td>9.</td>
<td>Audited Balance Sheet as at 31.03.2020, 31.03.2019 and 31.03.2018 along with Profit &amp; Loss accounts, schedules, directors and auditor's report and notes on accounts</td>
</tr>
<tr>
<td>10.</td>
<td>Business relations with Hindustan Copper Ltd., if any in the previous years</td>
</tr>
<tr>
<td>11.</td>
<td>Interested organisation to submit their proposed business model along with their proposed terms &amp; conditions with HCL and technical capability / experience in respect of processing of copper material.</td>
</tr>
<tr>
<td>12.</td>
<td>Desired leased period/tenure</td>
</tr>
</tbody>
</table>
1.0 KALDO PLANT & AUXILLARIES

i. The plant was designed by Boliden for the production of 50,000t/y Cu cathode from processing different types of raw material like scraps, secondaries, low Sulphur (<5%) oxide concentrates containing copper and other impurities and E-scrap. The primary smelting unit is the Kaldo furnace; otherwise known as a top blown rotary converter (TBRC). Process flow chart for the furnace operations is as under:

![Process Flow Chart]

ii. Black copper produced in the Kaldo is further processed in the converters to blister copper or Converting can be done in Kaldo itself in other way. The discharge slag from the Kaldo is granulated and sold. The blister copper is fire refined in the anode furnaces. The fire refined copper is cast into anodes and subsequently electrolytically refined in a tank-house. The bleed is neutralized, and the heavy metals are subsequently precipitated. The gypsum is recovered as by-product and the heavy metal precipitates are deposited in a local waste disposal dump. The dust laden hot gas from the Kaldo furnace is quenched in a venturi scrubber with an alkaline solution to remove Sulphur dioxide.

iii. The cooled gas is cleaned in a filter bag house. The dust collected in the venturi scrubber is pumped to a thickener and subsequently filtered. The filter cake is returned to the Kaldo furnace. Kaldo plant consists of following installations:
iv. **Advantages of Top Blown Rotary Converter Technology:**

i. Large flexibility for charging of any type of raw materials. Both low grade and high grade materials can be treated, e.g.: ashes, sweepings, slag, shredded cables, drosses from foundries, oxides, reverts containing copper and electric motors with high iron content can be processed separately or together in the same cycle. The plant can be easily switched over between different metals e.g. from copper to lead and vice versa without any change of plant equipment.

ii. Fine materials can be introduced directly into the furnace without any pre-treatment, such as agglomeration, sintering & briquetting, etc.

iii. Rotation of the vessel gives stirring effect, which in turn speed up kinetics of the reactions.

iv. Both smelting and converting can be done in the same furnace.

v. As raw materials contain low sulphur compared to that of primary smelter, atmosphere is more environmental friendly.

vi. The design of the TBRC process allows the furnace to be enclosed in a casing, which is kept under negative pressure that effectively minimizes stray emissions from the process to the levels complying with the stringent environmental norms.

vii. Suitable for both large and small scale operations with profitable results.

viii. Ability of TBRC furnace to operate with more than 90 % oxygen enrichment.
2.0 ANODE FURNACE AREA

i. Molten Blister copper is poured into ladle and transferred to the Anode furnace through 60 MT EOT Crane. Alternatively, solid blister copper (having more than 98% Cu) purchased from outside parties melted and fire refined in the furnaces. Anode furnace Area comprises of following installations.

- Anode furnaces (2 nos) of size of 200 MT capacity complete with drive assembly (for both Pneumatic & Electric).
- The drive mechanism consists of Gear box, Drive Pinion, Girth gear, Rider ring & support rollers.
- Propane Pressure regulating station along with distribution of Propane to various points / Burners such as After Burner, Tuyeres and Burners for Launder
- Burner management System for LDO / FO
- Gas duct at Anode Furnace exit.

ii. The Flue gases from the Anode Furnace flows through a water-cooled duct into the After Burner (Incinerator) from where it is taken to the De-dusting Unit through ducts to reduce dust load from flue gases before finally discharging through main common stack.

iii. Anode Cast Wheel: The processed molten metal from the Anode Furnace flows through castable lined Launder (heated with Propane Burners) to the Casting Ladle through Intermediate Ladle & Autoweigher for casting (in Anode Cast Wheel) as Anodes to be fed to the Refinery. Technology-Wenmec, Finland, Design Capacity 43 tonnes/hr, along with 24 nos. Moulds, Mould dressing unit, Bosh tank, Water spraying system, Pre-loosening device, Anode reject hoist, 15 MT EOT crane.

3.0 REFINERY

i. The refinery is having ISA-Technology from Xtrata Australia (earlier MIM) to produce LME Grade A Copper cathode. Refining is fully automated having equipment for preparation of anodes, handling of scrap, stripping of cathode & special crane for all handleings.

ii. Anodes are subjected to electrolytic refining in poly concrete cells to produce LME Grade A cathode. The residues from the Refining i.e. anode slime is also treated further for precious metal recovery. A new de-copperisation system with two leaching tanks is installed for the slime treatment. Refinery is also having Bismuth removal system from electrolyte for better quality cathode production. Refinery &
Smelter effluents are treated as per the statutory requirement in Effluent Treatment Plant (ETP-2)

iii. **Salient features of GCP Refinery:**

- Installed capacity of GCP Refinery- 50000 MT of Copper Cathode
- Total no. of production cells – 264
- Liberator cells - 24
- Commercial rectifier: Make - Hind Rectifier, Rating -25 K amps/160V
- Liberator cell rectifier: Make - Hind Rectifier, Rating - 20 K amps/100V
- Cathode stripping m/c: Make - WENMEC, Cap - 250 Mother blanks/hr
- Anode Preparation m/c: Make - WENMEC, Cap -250 Anodes per hr
- Scrap anode washing m/c: Make - WENMEC, Cap – 400 scraps per hr
- Cranes : 3 Nos
- KUNZ crane : 25 MT Capacity
- EOT crane : 15 MT Capacity
- EOT Crane : 5 MT Capacity
- Cathode Production till date: 24399 MT

4.0 **Technical status after refurbishment till date:**

**Kaldo:**
- Blister copper Production 952 MT
- Heat produced 43 nos.
- Refractory lining: complete lining to be done before starting.

**Anode furnace:**

- Anode copper Production : 27500 MT
- Heat produced:
  - Anode furnace “A” 114 Nos
  - Anode furnace “B” 95 Nos
- Refractory lining 50% erosion
**Details of Utility Plant/Equipment**

**Mechanical:**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Plant/Equipment</th>
<th>Capacity</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>D.M. water plant</td>
<td>800 m3/day</td>
<td>Boiler</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Kaldo</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Anode</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Refinery</td>
</tr>
<tr>
<td>1</td>
<td>Package Boiler</td>
<td>For operations new boiler need to</td>
<td>Smelter (FO tank, Propane tank)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>be installed</td>
<td>Refinery (Electrolyte)</td>
</tr>
<tr>
<td>A</td>
<td>Plant water Circuit: Drinking water</td>
<td>Pumping capacity: 20 m3/hr</td>
<td>Total Plant</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>DM plant</td>
</tr>
<tr>
<td>B</td>
<td>Plant water Circuit: Filter water</td>
<td>Storage capacity: 2400 M3, (Approx. requirement: 800 m3/day)</td>
<td>Smelter (Anode, Kaldo)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Refinery</td>
</tr>
<tr>
<td>3</td>
<td>A. Centrifugal Air comp (2nos of IR</td>
<td>A.4375 m3/hr @7 bar, B. 525 CFM @ 7 bar</td>
<td>Smelter (Anode, Kaldo)</td>
</tr>
<tr>
<td></td>
<td>make)</td>
<td>(Tank Capacity: 85 M3 )</td>
<td>Refinery</td>
</tr>
<tr>
<td></td>
<td>B. Screw Compressor (2nos of ELGI</td>
<td></td>
<td>Utility (DM plant, Boiler)</td>
</tr>
<tr>
<td></td>
<td>make)</td>
<td></td>
<td>Total Plant</td>
</tr>
<tr>
<td>4</td>
<td>Fire Hydrant Ring</td>
<td>Storage tank capacity: 700M3,</td>
<td>Smelter (Anode, Kaldo)</td>
</tr>
<tr>
<td></td>
<td>(Main pump electric driven-01no,</td>
<td>Pumping capacity: 170M3/Hr, Head:88M,Pressure:8.5 bar</td>
<td>Refinery</td>
</tr>
<tr>
<td></td>
<td>Main pump diesel engine driven-01no)</td>
<td>Ring pipe Size: Dia-150NB, Length-3000mtr(approx.)</td>
<td>Utility (Boiler)</td>
</tr>
<tr>
<td>5</td>
<td>FO and LDO Oil Tank</td>
<td>200KL Each, FO Circuit: Size -50NB dia, 800 Mtrs, LDO Circuit: Size -50NB dia, 950 Mtrs.</td>
<td>Smelter (Anode, Kaldo)</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Utility (Boiler)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>R&amp;D Lab (use of LDO only)</td>
</tr>
<tr>
<td>Sl. No.</td>
<td>System/ Equipment</td>
<td>Details</td>
<td></td>
</tr>
<tr>
<td>--------</td>
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<td>-------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Power Demand Connection</td>
<td>3700 KVA at 66KV, Category: EHT-1</td>
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<tr>
<td>2.</td>
<td>Voltage Levels used</td>
<td>Three types:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(i) 66 KV</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(ii) 6.6 KV</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(iii) 415 V</td>
<td></td>
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<tr>
<td>3.</td>
<td>HT Sub-stations</td>
<td>Three nos. at 6.6 KV voltage level</td>
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<tr>
<td>4.</td>
<td>LT Power Distribution/ MCC</td>
<td>(i) Refinery &amp; Electrolysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(ii) CSM</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(iii) APM &amp; SAWM</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(iv) Offsite</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(v) Kaldo Drives</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(vi) Kaldo General</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(vii) Anode Storage</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(viii) De-Dusting Unit</td>
<td></td>
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<td></td>
<td></td>
<td>(ix) Gas Cleaning</td>
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<td></td>
<td></td>
<td>(x) Cable Shredding Plant</td>
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<td></td>
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<td>(xi) MRS</td>
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<tr>
<td></td>
<td></td>
<td>(xii) Cooling Tower</td>
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<tr>
<td></td>
<td></td>
<td>(xiii) Fire Hydrant</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>(xiv) Tank Farm</td>
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<td></td>
<td></td>
<td>(xv) DM Plant</td>
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<td></td>
<td></td>
<td>(xvi) Boiler</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>(xvii) Filter Pump House</td>
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<tr>
<td>5.</td>
<td>DG Sets</td>
<td>Two Nos.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(i) 370 KVA, at Refinery MCC</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>(ii) 250 KVA, at Converter Hall</td>
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</table>

Details of Utility Plant/Equipment

Electrical & Power System
### Detail of PLC/DCS Systems:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Area</th>
<th>PLC/DCS</th>
<th>Make</th>
<th>Version</th>
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<tr>
<td>1</td>
<td>Casting wheel</td>
<td>PLC</td>
<td>Siemens</td>
<td>S7-300</td>
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<tr>
<td>2</td>
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<td>PLC</td>
<td>Siemens</td>
<td>S7-300</td>
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<tr>
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<td>CSM</td>
<td>PLC</td>
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<td>S7-300</td>
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<td>PLC</td>
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<td>S7-300</td>
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<td>DDU</td>
<td>PLC</td>
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<tr>
<td>6</td>
<td>Rectifier - Electrolysis</td>
<td>PLC</td>
<td>Siemens</td>
<td>S7-300</td>
</tr>
<tr>
<td>7</td>
<td>Rectifier - Purification</td>
<td>PLC</td>
<td>Siemens</td>
<td>S7-300</td>
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<td>Kuenz Crane</td>
<td>PLC</td>
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<td>11</td>
<td>Refinery-Purification</td>
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<td>Kaldo</td>
<td>DCS</td>
<td>ABB</td>
<td>AC800N</td>
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