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DOCUMENT TITLE:

Design Data

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3	Dec-2021	MMTE	SHAGHAGHI	M.MOHAMMADZADEH	GISD	-	Issue For Construction
2	Oct-2021	MMTE	SHAGHAGHI	M.MOHAMMADZADEH	GISD	-	Issue For Construction
1	Jan-2021	MMTE	SHAGHAGHI	M.MOHAMMADZADEH	GISD	-	Issue For Construction
REV.	DATE	PRE.	CHK.	APP.	Client	Description	Purpose of Issue
CONTRACTOR							

PROJECT TITLE :

TOOBA GISD MEGA MODULE PROJECT

Client :



شرکت توسعه آهن و فولاد گل گهر
G.I.S.D.Co.

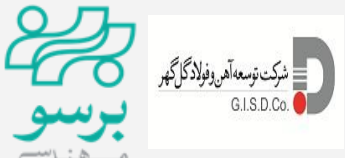

contractor:

MINES & METALS TECHNOLOGICAL
ENGINEERING CO.



Client 'S Project	Project Code	Main Contractor	Area Code	Plant Group	Equipment Code	Document Type	Eng. Discipline	Serial No.	
GISD	7-3	119	1002	7	AA	05	P	200	
	NAME		DATE		MMTE No.			SHEET	REV.
PREPARED	MMTE		JAN-2021		TGMMPG00P1200			08	04
CHECKED	SHAGHAGHI		JAN-2021						
APPROVED	M.MOHAMMADZADEH		JAN-2021						

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REVISION RECORD SHEET

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1. Design Data

1.1. Plant Location

The site is located in Sirjan city in Kerman province of Iran, near the Gol e Gohar iron ore site (60th Km of Sirjan to Shiraz road).

1.2. Meteorological

Average max. Dry bulb temperature:	25.2 °C
Average min. Dry bulb temperature:	9.3 °C
Average max. Relative humidity:	at 6:30 AM – 54 %
Average min. Relative humidity:	at 2:30 PM – 21 %
Maximum precipitation per day:	58 mm
Average precipitation per year:	141.5 mm
Maximum absolute temperature:	42 °C (for design 50 °C considered)
Minimum absolute temperature:	-14.8 °C
Prevailing wind direction:	South to North
Atmospheric pressure:	831.4 mbar
Wet bulb design temperature (worse condition):	25°C

1.3. Wind Load



Wind Load shall be considered in according to the Iranian National Code of Construction, part 6-6. Design basis for wind velocity will be 110 Km /h.

1.4. Earthquake Force

For supplied plant, all calculations referring to seismic conditions will be based on Iranian code for seismic resistant design of building, standard 2800 -84, version-3-2005.

For this project following factor shall be applied:

Design base acceleration	0.30 G
Importance factor:	
Industrial building	i=2
Stores & auxiliary building	i=1

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2. Plant Design Parameters

The following project data are considered for design of CDRI/HDRI plant:




- Type of product Cold DRI and Hot DRI
- Product specification 92% average metallization,
2% carbon for CDRI and
93% average metallization,
1.5% carbon for HDRI
- Hourly production capacity 231.25 tons with O₂ Injection and
lime coating
- Hourly production capacity 204 tons without O₂ Injection
- Schedule annual operating time 8000 hours
- Production annual capacity 1,850,000 tones
- Average natural gas consumption 2.35 net Gcal/t / HDRI /CDRI
- Average electricity consumption 120 kwh/t_{CDRI}

2.1. Iron Oxide Feed Material

Indurate pellets as international standard quality for CDRI/HDRI plant will be delivered from takeover points, which have the following minimum specification:

Chemical Analysis:

Fe _{total}	Min.	67.0%
SiO ₂ +AL ₂ O ₃	Max.	2.62%
P	Max.	0.05%
S	Max.	0.008%
Basicity (CaO + MgO / SiO ₂ + AL ₂ O ₃)	Max.	0.69

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Physical and metallurgical characteristics:



- 6.3 mm	Max.	5%
9-16 mm	Min.	85%
Compression (Kg/P)	Min.	250

Tumble index:

+6.3 mm	Min.	96%
-1.0 mm	Max.	4%
Porosity	Min.	22 %
Bulk Density (t/m ³)		2.3

Linder Test (760 °C)

Metallization	Min.	92	%
Tumble Index (+ 6.3 mm)	Min.	90	%
Fragmentation(- 3.3 mm)	Max.	3	%
Compression (Kg/P)	Min.	50	

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2.2. Product Specification

CDRI and HDRI as finished product of the proposed metalizing plant will have the following basic characteristics when produced from the oxide pellets:

Metallization	92.0% for CDRI and 93% for HDRI
Carbon	2% for CDRI and 1.5% for HDRI

2.3. Utility Requirement

Natural gas

The natural gas will be supplied through pipeline at the battery limit of CDRI/HDRI plant. The gas will have following analysis:



Gas analyses	Mole %
CH ₄	88.0
C ₂ H ₆	3.20
C ₃ H ₈	1.30
C ₄ H ₁₀	Max.0.4
C ₅ ⁺	Max. 0.2
C ₆ ⁺	Max.0.11
N ₂	6.0
CO ₂	0.33
H ₂ S	3.5 ppm

Design conditions

Service	uninterrupted
Pressure	6 bar G
Net calorific heat value (NCV)	8,200 kcal/Nm ³

Water

Makeup water will be supplied by client at take over point.

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2.4. Potable Water

Potable water will be supplied by client at take over point.

2.5. Fire Water

Fire water reservation, pump station and network inside the plant battery limit are in the scope of contractor.

2.6. Electricity

The electricity will be supplied by client. The HDRI/CDRI plant will receive electrical power at the incoming terminals 33 kv in DRP substation.

2.7. Sewer System

Contractor will be responsible for the provision of sewage collection system inside the battery limit up to the relevant TOP in plant battery limit.

2.8. Compressed Air

Instrument and plant air will be produced in compressor station with an absolute pressure of 6.5-8 bar and distributed to the various consumer points at plant area.

2.9. Emergency System

Emergency power generation is provided to allow operation of enough equipment to keep the plant safe during a power failure, to prevent hot reduced product in the furnace from re oxidizing, and to allow a quick start-up of the plant when electrical power is restored. To accomplish this, one diesel generator for module, is provided.