

<b>Consultant</b>   ASYN STEEL ENGINEERING	IRANIAN GHADIR IRON & STEEL COMPANY  DIRECT REDUCTION PLANT					<b>Client</b>   شرکت آهن و فولاد غدیر ایرانیان Iranian Ghadir Iron & Steel Co.
<i>Client Code</i>				Rev	01	<i>Date:</i> 12/31/2025
<i>Designer code</i>		<i>Document name:</i>	<i>Enquiry Document For Ultra Filtration</i>			

## ENQUIRY DOCUMENT FOR ULTRAFILTRATION

FOR

IRANIAN GHADIR IRON & STEEL COMPANY

01	IFA	12/31/2025	ASE	ASE	ASE
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<b>Rev.</b>	<b>Purpose of Issue</b>	<b>DATE</b>	<b>Prepare</b>	<b>Check</b>	<b>Approve</b>

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## **INTRODUCTION**

In order to advance the iron and steel industry of Iran and in line with the twenty-year plan for economic and social development, Iranian Ghadir Iron and Steel Co. established in 2006, which was made possible with cooperation of Iranian mines and mining Industries Development and renovation organization (IMIDRO) and with the share of Ghadir Investment company, Chador Malu Mining & Industrial Co. (CMIC) and Iran Alloy Steel Co.

Ghadir DRI plant with annual capacity of 800,000 tons sponge iron with the aim to fulfill the needs of melting and casting units of the Yazd province and other steel producers of the country established. It is located in an area of 86 hectares, with a distance of 25 kilometers from the city of Ardakan, Yazd Province and beside the Chador Malu Pelletizing Complex and Arfa Iron and Steel Co.

Due to problems with the RO system, due to high SDI, Ghadir Iron and Steel Co intended to establish a UF system as pretreatment for the existing water treatment plant with a capacity of 2000 cubic meter per day.

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## 2. SITE CONDITIONS

### 2.1. GEOGRAPHICAL CONDITION

☒ Location	(25 kilometers from the city of Ardakan)
☒ Altitude from sea level	1142 m
☒ Longitude	32° 22' N
☒ Latitude	53° 47'

### 2.2. METEOROLOGICAL CONDITION

☒ Atmospheric temperature	866 mbar
○ Dry-Bulb Temperature	-16°C Winter (minimum) -10°C Winter (Design) +45°C Summer (Maximum) +37°C Summer (Design)
☒ Wet bulb temperature	+20°C Summer (Design)
☒ Relative humidity	
○ Maximum mean	66 %
○ Minimum mean	11 %
☒ Maximum rainfall intensity	
○ per day	28 mm
○ precipitation	60 mm/year
☒ Seismic Condition	
○ Seismic zone factor	Z = 0.3
○ Soil classification type	Sc

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### 3. FEED WATER QUALITY

Feed water quality			
Item	Parameter	Unit	Amount
1	PH	---	8.1
2	EC	μmhos/cm	<2000
3	TDS	mg/l	<1100
4	TSS	mg/l	<5
5	Turbidity	NTU	<10
6	COD	mg/l	<5
7	BOD	mg/l	<3
8	TOC	mg/l	<1
9	Total hardness	mg/l as CaCO <sub>3</sub>	<100
10	Alkalinity	mg/l as CaCO <sub>3</sub>	<100
11	Ca	mg/l as CaCO <sub>3</sub>	<90
12	mg	mg/l as CaCO <sub>3</sub>	<10
13	Cl <sup>-</sup>	mg/l	<350
14	SO <sub>4</sub> <sup>2-</sup>	mg/l	<10
15	SiO <sub>2</sub>	mg/l	<0.1
16	Temperature		21.3
17	SDI <sub>15</sub> MIN	-	>5

### 4. PRODUCT WATER QUALITY

Feed water quality			
Item	Parameter	Unit	Amount
1	SDI <sub>15</sub>		<2
2	TSS	mg/l	<1
3	TURBIDITY	NTU	<1

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## 5. Scope of Supply Table

Supplier is responsible to provide all material and equipment for UF system including:

- UF SKIDs in 304 stainless steel material.
- 1x UF module.
- All cables including power and instrument cables from MCC and MCP panel to equipment and instruments.
- MCC panels including all components like main circuit breaker, VFDs, MCBs and etc.
- All junction boxes for instruments.
- All local control boxes for pumps (all pumps should be equipped by LCBs).
- Backwash pumps 1+1 including SKIDs, Piping, Valves and Instruments. (Pumps to be Operate by VFD optionally).
- Cleaning Pumps 1+1 including SKIDs, Piping, Valves and Instruments. (Pumps to be Operate by VFD optionally).
- Air Blowers 1+1 including SKIDs, Piping, Valves and Instruments. (Blowers to be Operate by VFD optionally).
- CIP Cartridge Filter (SS316 or FRP material)
- CIP tank in FRP material
- Supplying instrument of whole Plant.
- Supplying all required Steel structure or Steel Supports for installing piping.
- Supplying all required Steel structure or Steel Supports for installing cable trays.
- Supplying whole interconnecting piping between packages (Backwash, CIP, Dosing Packages and etc.)- The material of all transmission lines must be UPVC or low carbon ss316.
- Supplying dosing packages with below scope as minimum:
  - Dosing pumps 1+1, motor driven diaphragm type
  - PE or FRP tank
  - Mixer (If needed)
  - Pulsation dampener for all dosing packages
  - Pressure Safety Valve for each pump

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- O Level Switch for Tank
- O Diaphragm pressure gauge for each dosing line
- O Separate line for each package
- O Level gauge or side glass for dosing tanks
- O On/off valve for each dosing line
  - Inspection
  - Shop testing
  - Engineering of whole package

#### **6. INSTRUMENT THAT THE SUPPLIER MUST PROVIDE:**

- Turbidimeter (Online)
- one sensor in the inlet of UF systems
- one sensor in the outlet of UF Train or SKID
- Flow Control Valve
- One valve in the inlet of UF Train or SKID
- PH meter (Online)
- one sensor In the Inlet of UF Packages
- one sensor In the Outlet of CIP Pump
- one sensor in the backwash collector
- ORP meter (Online)
- one sensor In the Inlet of UF Packages

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- ② Pressure Transmitter
- ② Two sensors in the inlet and outlet of each UF SKIDs or Trains
- ② one sensor in the discharge of Backwash Pump
- ② one sensor in the Discharge of Cleaning Pump
  
- ② Temperature Transmitter
- ② one sensor on the CIP Tank
- ② one sensor In the Inlet of UF system
  
- ② Flow Transmitter
- ② one sensor in the outlet of each UF SKID or Train (Flange Magnetic Type)
- ② one sensor on the Backwash water line
- ② one sensor on the CIP line
  
- ② Pressure Gauge According to Vendor Design

#### **7. Pumps and Dosing Packages that the supplier must provide:**

- ② Pumps:
- ② All Pumps should be in 1+1 quantity
- ② All Pumps to be operated by VFD optionally
- ② All Pumps Should be in 316 Stainless Steel Material
- ② The brand of all motors should be WEG
  
- ② Dosing Pumps and packages:
- ② Pumps Should be in 1+1 quantity

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- ☒ Pumps should be motor driven diaphragm type
- ☒ PE or FRP tank
- ☒ Mixer (If needed)
- ☒ Pulsation dampener for all dosing packages
- ☒ Pressure Safety Valve for each pump
- ☒ Level Switch for Tank
- ☒ Diaphragm pressure gauge for each dosing line
- ☒ Level gauge or side glass for dosing tanks
- ☒ On/off shut of valve in dosing line

#### **8. Scope of Work and Supply:**

Engineering, Procurement, Assembly, Delivery, Installation, Pre-commissioning and commissioning of full package of UF system including:

- UF SKID (Racks) with the capacity of 2000 M3/DAY
- UF SKIDs in 304 stainless steel material.
- UF module.
- All cables including power and instrument cables from MCC and MCP panel to equipment and instruments.
- MCC panels including all components like main circuit breaker, VFDs, MCBs and etc.
- All junction boxes for instruments.
- All local control boxes for pumps (all pumps should be equipped by LCBs).
- Backwash pumps (1+1) including SKIDs, Piping, Valves and Instruments. (Pumps to be Operated by VFD optionally).

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- o CIP Pumps (1+1) including SKIDs, Piping, Valves and Instruments. (Pumps to be Operated by VFD optionally).
- o Air Blowers (1+1) including SKIDs, Piping, Valves and Instruments. (Blowers to be Operated by VFD optionally).
- o Cartridge Filter for CIP (SS316 or FRP)
- o CIP tank in FRP material
- o instrument of whole system.
- o all required Steel structure or Steel Supports for installing pipe, equipment and instruments.
- o all required Steel structure or Steel Supports for installing cable trays.
- o whole interconnecting piping between packages (Backwash, Cleaning, Dosing Packages and etc.)
- o Touch panel
- o SLD (single line diagram)

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**9. Vendor list:**

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Item	Description	Supplier	Origin
1	Centrifugal Pumps	Grundfos	Denmark
		Lowara	Italy
		KSB	Germany
2	Dosing pump. Digital	SEKO	Italy
		Grundfos	Denmark
		Prominent	Germany
		ITC	Spain
		Alldos	Germany
3	UF Modules	DUPONT	-
		SUEZ	
4	Air Blower	Aerzen	Germany
5	Electric motors	WEG	Brazil
<b>Instrument</b>			
6	Flow Transmitter	E&H	Germany
		Mecon	
		Krone	
7	EC, ORP, PH, Turbidity Analyzer	E&H	Germany
		Krone	Germany
		GF	Switzerland
		Emerson	France
8	Pressure / Temperature Transmitter	E&H	Germany
		Wika-S20	
		Danfoss	
9	Monometer	Wika	Germany
10	Level Transmitter	E&H	Germany
11	Level Switch	E&H	Germany
12	Pressure Gauge	Wika	Germany
<b>Piping</b>			
13	FCV(Flow Control Valve) (Body, disc ,.... SS316)	Festo	Germany
		Fisher	
		Samson	
14	SOV(ON/OFF Valve) Body: cast iron	Festo	Germany
		Fisher	

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	Disc : SS316	Samson	
15	Manual valve Body: cast iron Disc : SS316	Mirab	Iran
16	Check valve Body: SS316 Disc: SS316	Mirab	Iran
17	Pipe and fittings	SS316-LOW CARBON-SCH10	
18	UPVC Pipe, connection, fitting, branch saddle		
19	FRP storage tank		
<b>Electrical</b>			
20	Frequency drive (VFD)	ABB	Finland
		Siemens	Germany
21	Switches	Moller	Germany
		Siemens	Germany
		Telemecanique	France
		Schneider electric	France
		Siemens	Germany
22	Contactors	Schneider electric	France
		ABB	Switzerland
		Moller	Germany
		Schneider electric	France
23	Control relays	Siemens	Germany
		Moeller	Germany
24			
25	Cables		
	Cable Trays and Conduit		
<b>Control System</b>			
26	PLC	Siemens-1500	Germany
27	HMI		
28	Amperemeter, voltmeter, Power Analyzer multi-function / Power meter	Schneider electric	France
		Siemens	Germany
		Moeller	Germany

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10. Documents that should be submitted with offer:

- ☒ Technical offer
- ☒ Complete Design Report of UF system, including all detail.
- ☒ Specification of all equipment in detail including data sheets or catalogues
- ☒ Main electrical data
- ☒ Single Line Diagram
- ☒ Load List
- ☒ Piping and instrument diagrams (P&ID).
- ☒ Process Flow Diagram (PFD).
- ☒ 3D model
- ☒ List of recommended spare parts.
- ☒ List of special tools (if any).
- ☒ Timetable for design, manufacturing, inspection and delivery.
- ☒ Validity date of the quotation.
- ☒ Sub-supplier list.
- ☒ Instrument List

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- ☒ Equipment list
- ☒ Control system configuration (Control System Architecture).