



شرکت مهندسين مشاور کاوشگران

250 KTPY Iron Ore Concentrate Plant



راهبران فولاد اصفهان

Tender Document

For

Rotary Vacuum Drum Filter & Rotary Vacuum Disk Filter

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راهبران فولاد اصفهان

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250 KTPY Iron Ore Concentrate
Plant of Rahbaran Foolad Isfahan

Specification For Rotary Vacuum
Drum Filter & Rotary Vacuum
Disk Filter

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1. General Characteristics

Location	Indoor
Concentrate Material	Magnetite Iron Ore
Operation Time	24 h/day
Temperature	Ambient
Material Temperature	Ambient
Feed Rate (Dry)	41 t/hr

2. Site conditions

Elevation	1495 m.a.s.l Max
Ambient temperature	+ 52 °C
Min ambient temperature	- 10 °C Relative
Humidity	Average: 10-50 % Max. 69 %
Latitude and longitude	24.36 degrees North and 27.46 degrees East



3. General Technical Description (process and main equipment data)

3.1. Basic Process Data:

A – Pulp Properties:	Iron Ore Magnetite Concentrate
Temp:	-10~43 °C
PH:	7.5 - 9 Max.10
DS %:	50 – 55 55
Size D80(micron):	70
Capacity (ton/hr):	40
Magnetite Density	4.5~4.8 t/m ³
Homogenized pulp is very important	Yes

4. Rotary Vacuum Drum Filter

4.1. Concept

The objective of this document is to present required information, specification and tender document for Rotary Vacuum Drum Filter.

4.2. Scope of supply

Each Rotary Vacuum Drum Filter will be delivered with all components necessary for its operation, which includes the items described below:

Drum, screen, pipes under vacuum (Drainage Pipes), body, VAT Tank, The main separator, drainage, separating valves, vacuum gauges, site glass, Vacuum pump system, Solids discharge system, filtering liquid discharge sys., Electro motor gearboxes, Automatic rotary valve, Vacuum sealing, Paddle and bearings, Vapor collection system, cloth system, Closed circuit cooling system, vacuum sealing water circuit equipped with hardener and all cooling tower systems with accessories Completely (if ordered), Induction transmitter, Control box, Cog wheel on drum drive shaft, Sector at cake discharge point, Solenoid valve and connection to vacuum valve and etc.



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4.3. Main Equipment Data

Type	Rotary Vacuum Drum Filter
Model
Capacity
Qty.	1
Description	Φ m x L=..... m
Used Filter Area	..... m ²
Assumed Drum Used Width	..... m
Drum Rotation Velocity RPM	..... Assumed Max.
Vacuum at main Filtrate & Drying Zone	..... Degree
Snap Blowing Zone for One Segment	..... Degree
Filter Cloths(By Vendor)	.....

4.4. Compressed Air

Compressed air quality	.....
Compressed air pressure	.....

4.5. Electrical power

Type of current	Three phase current
Frequency	..... Hz
Low voltage	..... V

The equipment will be designed and manufactured according to the present standards supplemented by in-house work standards.

4.6. TECHNICAL SPECIFICATION

4.6.1. Basic specifications of drum filter

Input solids capacity	
Input solids percentage	
Input material type	



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Actual density of input materials	
Granulation of input materials	
The maximum moisture content in the cake	
The maximum solids allowed in purified water	

4.6.2. Technical specifications of the vacuum drum filter device

- Drum:

Drum with a filtration surface	.....square meters
diameter	.....mm
length	.....mm
screen Anti-wear on PP material with a thk.	.....mm rubber liner cover on drum
Material of Drum	.....
Material of Drainage Pipes	Stainless steel

-VAT Tank:

body of tank	made with section and profiles
material	.....
thick drum tank anti-wear hot cooking rubber liner cover	Min =6mm

-The main separator:

material	.....
equipped with	the necessary inlets and outlets for vacuum, water and drainage, as well as separating valves, vacuum gauges and site glass in the appropriate number



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4.6.3. Vacuum pump system (LIQUID RING VACUUM PUMP) :

Power of electric motorkilowatt
Made by:	..... with all belonging
Number of 6-inch outlets for draining the device with a suitable valve	
system of BAROMETRIC LEG	is not approved
Solids discharge system for Blowing Cake condition Equipped with Heavy duty Blower	..... kilowatts

-filtering liquid discharge sys. With separator tank and eliminator within valves with different elevation .

4.6.4. Power transmission systems (POWER TRANSMISSION):

Electro motor gearboxes with heavy-duty for main drive and mixing paddle	Helical Bevel
made by	.....
Material of Automatic rotary valve for the outer shell	.....
Material of Automatic rotary valve for the system	.....
Material of Vacuum sealing equipped with a set of relevant springs	.....
Material of Bush Agitator fittings - Paddle and bearings and electromotor gearbox rubbered by liner or hot galvanized coating.
Vapor collection system Moisture trap & eliminator	Yes



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Material of Heavy-duty drum bearings and roller bearing and shell
Closed circuit cooling system, vacuum sealing water circuit equipped with hardener and all cooling tower systems with accessories Completely	(if ordered)
Material of vacuum cloth system	.....

4.6.5. Power and control and automation panel:

Manufacturer of This panel is made by	Siemens, Delta Or reliable Korean, Japanese or European brands.
Manufacturer of All contactors and thermal switches	.....
Manufacturer of All terminals and necessary items of IP55 panel	.....
Body of panel made by	..... with IP55

4.6.6. Panel body Design :

Manufacturer of Operation Relays	.....
Manufacturer of PLC	.....
Vacuum pump is started with
soft starter and drum drive is started with	inverter



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- The automation system is completely designed and implemented based on the process, and all the required data is displayed in the monitoring and can be adjusted and changed by the operator.

Information and errors can be recorded and tracked as separate files.

4.6.7. Consumption of water, gas and compressed air :

Water consumption	..... liters per day for circulating water in the vacuum pump, including the circulating water cooling system.
Gas consumption	..... m ³
Air consumption	..... m ³ and pressure .....bar

4.6.8. Electricity consumption :

Electricity consumption	..... kilowatts
Area the required	..... square meters of space on one floor
height	..... meters.
The emergency on and off switch next to the device	is required.

4.7. The obligations that the seller is responsible for are:

- Supplying all mechanical and electrical equipment and accessories and equipment for control and automation panels.

- Construction of industrial equipment with safe and appropriate materials.

The use of stainless steel pipes in the connection area of suction and exhaust to the collector and body.

Working liner of all the parts exposed to the passage of slurry with a 6 mm thick liner and sure of A60.

Installing a scrubber in the discharge area of the filter surface.

Using a blower as a blowing (using a vacuum air outlet for blowing is not acceptable).

If possible, the use of a momentary blower system is preferred.



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Personnel training, beneficiary personnel and installation supervision.

Providing a load list of the required electricity of the device/equipment weight/required amount and type of water/required volume of compressed air, instrumentation.

Equipment delivery time	.....
Conditions of loading, transportation, delivery of the device and insurance	.....
The building of the plant	..... square meters
high according to the initial plan and all works of buildings, such as, caving, etc.	at least m

- Providing document for driving and repairs and maintenance.
- Equipment and system performance guaranty for one year from the commissioning date.
- Obligations that are the responsibility of the buyer and their implementation are necessary include:
 - Providing system utilities such as water, electricity and compressed air for the process and instruments and their piping to the consumption points for each of the equipment.
 - Supplying the cooling or heating system of the building if necessary.
 - All required piping between equipment's
 - Delivery of slurry at the entry point of the system.
 - Delivery of solid materials from the exit point of the device according to the provided drawings.
 - All required cabling between equipment's such as:
 - Electrical cabling and instruments along with cable trays and working conduits from the panel to all equipment's.
 - Crane to install the equipment
 - Transportation and insurance costs from the purchasing factory to the installation site
 - Provision of water-cooling system with vacuum pump if needed.



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4.8. Documents

-The manufacturing company must send the following documents and mechanical and electrical drawings along with the equipment:

- Equipment assembly drawing with part list(PDF file and physics drawing in four copies).

–Equipment foundation drawing with part list(PDF and physics drawing in four copies).

Equipment installation and maintenance manual (four copies).

Equipment spare parts list.

Specify the list of Sub – Vendor.

Drawing of P & ID and set BATTERY LIMITS in it. + PFD + Installation Drawing Map

Technical specifications related to electric motors and gearboxes.

Specifications related to vacuum pump and general drawings and suction pump with part list.

Preparing the final book (four copies).

4.9. System Guaranty:

..... months from the date of installation ormonths from the date of delivery vacuum filter devices, excluding electrical items, whichever occurs first, except for shocks and external forces, It is under Guaranty.

4.10. Detail Technical Data

Item	Unit	Technical Specification
Designation	-	
Equipment No.	-	
Manufacturer	-	-----
Model	-	-----
Equipment Location	-	Indoor



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No. Required	No. off	1
Tank Configuration	-	-
Stage of Processing	Concentrate Dewatering	-
Mounted on, or suspended from	Concrete floor	-
	Steel structure	....

4.11. Detail Machine data

Item	Unit	Technical Specification
Mounting Method	-	.....
Drum Angular speed	rpm	.....
Drum Peripheral velocity	m/s	.....
Drum diameter	mm	.....
Drum length	mm	-----
Drum Shell Material/ Thickness	-	.....
Drum head Material	-	.....
Shield Drum Shell Material	-	.....
Shaft Material/ Diameter	-/mm	.....
Drum Rotating Direction	-	CR
Tank design	-	.....
Discharge Material/ Thickness	-/mm	.....
Shield Discharge Shell Material	-	.....
Base plate	-	Yes
Special tools	-	-
Lifting lugs	-	Yes
Spare and wear parts	-	Yes -if required



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Lubricants	-	Yes
Inspection Door	-	Yes

4.12. Design Data-Drive System

Item	Unit	Technical Specification
Lifting lugs	-	Yes
Spare and wear parts	-	Yes -if required
Lubricants	-	Yes
Inspection Door	-	Yes

4.13. Vendor

Item	Unit	Technical Specification
Bearing	-	SKF /FAG /KOYO /NACHI
Motor Gearbox	-	SEW/Yilmaz/SIEMENS/other available brands
Painting material	-	Rangin zereh Co. /Negin zereh Co. / Pars shamin Co (RAL: 5010)

- The indicated magnetic fields are on the drum surface and the values are obtained under the operating temperature range max 80°C. The test temperature of magnetic field would be conducted in room temperature of 25°C.
- Shell and flange are bolted together and sealed by sealing glue. Bearings are designed to withstand the operation temperatures. Lubrication of bearing is done by periodic manual greasing.

4.14. Manufacturer's Technical & Financial Proposal

Item	Unit	Technical Specification
Price	Rials	



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Paymen Methode	-	
Equipment Delivery Time	-	
Technical Offer		Yes / No

- The Manufacturer can attach its technical proposals to this document as a separate file



5. Rotary Vacuum Disk Filter

The objective of this document is to present required information, specification and tender document for Rotary Vacuum Disk Filter.

5.1. Scope of supply

Each Rotary Vacuum Disk Filter will be delivered with all components necessary for its operation, which includes the items described below:

Disk Filter, pipes under vacuum (Drainage Pipes), body, VAT Tank, The main separator, drainage, separating valves, vacuum gauges, site glass, Vacuum pump system, Solids discharge system, filtering liquid discharge sys., Electro motor gearboxes, Automatic rotary valve, Vacuum sealing, Paddle and bearings, Vapor collection system, cloth system, Closed circuit cooling system, vacuum sealing water circuit equipped with hardener and all cooling tower systems with accessories Completely (if ordered), Induction transmitter, Control box, Cog wheel on disk drive shaft, Sector at cake discharge point, Solenoid valve and connection to vacuum valve and etc..

5.2. Main Equipment Data

Model of Rotary Vacuum Disk Filter	.....
Nominal capacity	..... tons per hour of iron ore and cake
Humidity	..... with Snap Blowing Cake Discharge system includes the following equipment.

5.3. Technical specifications of vacuum disc filter :

Disc with a filtration surface	..... square meters
Diameter	..... mm
length	..... mm
Material	.....
The number of segments in each row	.....
The number of rows	.....
Material of pipes under vacuum (Drainage Pipes)	stainless steel seamless



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the body of the device made of sections and profiles made of thickmm
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- Disc with a filtration with longitudinal segments and a screen Anti-wear on PP material with a rubber liner cover on drum.

5.3.1. -VAT Tank:

body of tank	made with section and profiles
material	.....
thick drum tank anti-wear hot cooking rubber liner cover	Min =6mm

5.3.2. -The main separator:

material	.....
equipped with	the necessary inlets and outlets for vacuum, water and drainage, as well as separating valves, vacuum gauges and site glass in the appropriate number

5.3.3. Vacuum pump system (LIQUID RING VACUUM PUMP) :

Power of electric motor	.....kilowatt
Made by:	..... with all belonging
Number of 6-inch outlets for draining the device with a suitable valve	3
system of BAROMETRIC LEG	is not approved
Solids discharge system for Blowing Cake condition Equipped with Heavy duty Blower kilowatts



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-filtering liquid discharge sys. With separator tank and eliminator within valves with different elevation .

Installation of grease nipples for the housing of bearings on the two sides of shafts.

5.3.4. Power transmission systems (POWER TRANSMISSION):

Electro motor gearboxes with heavy-duty for main drive and mixing paddle	Helical Bevel
made by	.....
Material of Automatic rotary valve for the outer shell	.....
Material of Automatic rotary valve for the system	.....
Material of Vacuum sealing equipped with a set of relevant springs	.....
Material of Bush Agitator fittings - Paddle and bearings and electromotor gearbox	..... rubbered by liner or hot galvanized coating.
Vapor collection system Moisture trap & eliminator	Yes
Material of Heavy-duty drum bearings and roller bearing and shell	.....
Closed circuit cooling system, vacuum sealing water circuit equipped with hardener and all cooling tower systems with accessories Completely	(if ordered)
Material of vacuum cloth system	.....

5.3.5. Power and control and automation panel :

Manufacturer of This panel is made by	Siemens, Delta Or reliable Korean, Japanese or European brands.
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Manufacturer of All contactors and thermal switches
Manufacturer of All terminals and necessary items of IP55 panel
Body of panel made by	..... with IP55

5.3.6. Panel body Design :

Manufacturer of Operation Relays	.....
Manufacturer of PLC	.....
Vacuum pump is started with	.....
soft starter and drum drive is started with	inverter

- The automation system is completely designed and implemented based on the process, and all the required data is displayed in the monitoring and can be adjusted and changed by the operator.

Information and errors can be recorded and tracked as separate files.

5.3.7. Consumption of water, gas and compressed air :

Water consumption	..... liters per day for circulating water in the vacuum pump, including the circulating water cooling system.
Gas consumption	..... m ³
Air consumption m ³ and pressurebar

5.3.8. Electricity consumption :

Electricity consumption kilowatts
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Area the required square meters of space on one floor
height meters.
The emergency on and off switch next to the device	is required.

5.4. The obligations that the seller is responsible for are:

- Supplying all mechanical and electrical equipment and accessories and equipment for control and automation panels.
- Construction of industrial equipment with safe and appropriate materials.

The use of stainless steel pipes in the connection area of suction and exhaust to the collector and body.

Working liner of all the parts exposed to the passage of slurry with a 6 mm thick liner and sure of A60.

Installing a scrubber in the discharge area of the filter surface.

Using a blower as a blowing (using a vacuum air outlet for blowing is not acceptable).

If possible, the use of a momentary blower system is preferred.

Personnel training, beneficiary personnel and installation supervision.

Providing a load list of the required electricity of the device/equipment weight/required amount and type of water/required volume of compressed air, instrumentation.

Equipment delivery time	.....
Conditions of loading, transportation, delivery of the device and insurance	.....
The building of the plant	..... square meters
high according to the initial plan and all works of buildings, such as, caving, etc.	at least m

- Providing document for driving and repairs and maintenance.



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- Equipment and system performance guaranty for one year from the commissioning date.
- Obligations that are the responsibility of the buyer and their implementation are necessary include:
 - Providing system utilities such as water, electricity and compressed air for the process and instruments and their piping to the consumption points for each of the equipment.
 - Supplying the cooling or heating system of the building if necessary.
 - All required piping between equipment's
 - Delivery of slurry at the entry point of the system.
 - Delivery of solid materials from the exit point of the device according to the provided drawings.
 - All required cabling between equipment's such as:
 - Electrical cabling and instruments along with cable trays and working conduits from the panel to all equipment's.
 - Crane to install the equipment
 - Transportation and insurance costs from the purchasing factory to the installation site
 - Provision of water-cooling system with vacuum pump if needed.

5.5. Documents:

- The manufacturing company must send the following documents and mechanical and electrical drawings along with the equipment:
 - Equipment assembly drawing with part list (PDF file and physics drawing in four copies).
 - Equipment foundation drawing with part list (PDF and physics drawing in four copies).

Equipment installation and maintenance manual (four copies).

Equipment spare parts list.

Specify the list of Sub – Vendor.

Drawing of P & ID and set BATTERY LIMITS in it.

Technical specifications related to electric motors and gearboxes.

Specifications related to vacuum pump and general drawings and suction pump with part list.

Preparing the final book (four copies).



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5.6. System Guaranty:

..... months from the date of installation ormonths from the date of delivery vacuum filter devices, excluding electrical items, whichever occurs first, except for shocks and external forces, It is under Guaranty.

5.7. Detail Technical Data

Item	Unit	Technical Specification
Designation	-	
Equipment No.	-	
Manufacturer	-	-----
Model	-	-----
Equipment Location	-	Indoor
No. Required	No. off	1
Tank Configuration	-	-
Stage of Processing	Concentrate Dewatering	-
Mounted on, or suspended from	Concrete floor	-
	Steel structure	....

5.8. Detail Machine data

Item	Unit	Technical Specification
Mounting Method	-	.....
Drum Angular speed	rpm	.....
Drum Peripheral velocity	m/s	.....
Drum diameter	mm
Drum length	mm	-----
Drum Shell Material/ Thickness	-
Drum head Material	-



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Shield Drum Shell Material	-
Shaft Material/ Diameter	-/mm
Drum Rotating Direction	-	CR
Tank design	-	.....
Discharge Material/ Thickness	-/mm	.....
Shield Discharge Shell Material	-	.....
Base plate	-	Yes
Special tools	-	-
Lifting lugs	-	Yes
Spare and wear parts	-	Yes -if required
Lubricants	-	Yes
Inspection Door	-	Yes

5.9. Design Data-Drive System

Item	Unit	Technical Specification
Lifting lugs	-	Yes
Spare and wear parts	-	Yes -if required
Lubricants	-	Yes
Inspection Door	-	Yes

5.10. Vendor

Item	Unit	Technical Specification
Bearing	-	SKF /FAG /KOYO /NACHI
Motor Gearbox	-	SEW/Yilmaz/SIEMENS/other available brands
Painting material	-	Rangin zereh Co. /Negin zereh Co. / Pars shamin Co (RAL: 5010)



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- The indicated magnetic fields are on the drum surface and the values are obtained under the operating temperature range max 80°C. The test temperature of magnetic field would be conducted in room temperature of 25°C.
- Shell and flange are bolted together and sealed by sealing glue. Bearings are designed to withstand the operation temperatures. Lubrication of bearing is done by periodic manual greasing.

5.11. Manufacturer's Technical & Financial Proposal

Item	Unit	Technical Specification
Price	Rials	
Paymen Methode	-	
Equipment Delivery Time	-	
Technical Offer		Yes / No

- The Manufacturer can attach its technical proposals to this document as a separate file