



SHIRAZ OIL REFINING COMPANY

TECHNICAL
SERVICES
DEPARTMENT

PROJECT DOCUMENT No.

SHIRAZ Oil
Refining Co.

PROJECT	FACILITY	UNIT	DOCUMENT	DECIPLINE	SEQUENCE	REVISION
SHIRAZ	01	600	DSH	ME		D0

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DOCUMENT TITLE: ENGINEERING STANDARD SPECIFICATION FOR FP-623 A/B

ENGINEERING STANDARD SPECIFICATION
FOR
FP-623 A/B



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INTRODUCTION

Shiraz Oil Refining Company, Intends to purchase two set of centrifugal pumps and their drivers as per attached data sheets.

REFERENCES

- 1) Project specification
- 2) API STD. 610 , Latest Edition
- 3) IPS-M-PM-105(Centrifugal Pumps For Process Services)
- 4) IPS- M-EL-131(low voltage induction motors)

DESIGN & SITE CONDITIONS

Pumps and drivers shall be designed, fabricated and tested in accordance with the above references, and to be suitable for the following site conditions:

Wind Velocity	120 km/hr.
Elevation	1555 m
Minimum temperature (metallurgical design)	-16 °C
Maximum ambient temperature	44°C
Average relative humidity of the year	43%
Maximum air dust concentration	1200 mg/m ³

EXTENT OF WORK

Vendor shall be responsible for the engineering and supply of the entire unit, consisting pump, base plate, coupling, electric motor and etc.

GENERAL NOTES FOR PUMP

- 1-Vendor should specify minimum flow rate at P.T.
- 2- The equipment will be installed outdoor.
- 3-All accessories (Motor, Base plate, Coupling, etc.)Shall be supplied by pump supplier.
- 4-Vented suction chambers to prevent vapor binding shall be provided.
- 5-Sealed gland or stuffing box to eliminate air intrusion shall be provided.
- 6- Provide 6 hand copies of instruction, maintenance and spare parts list in English and also electronic copy.
- 7- Supplier shall provide spare parts for 2 years of continuous operation.
- 8- Pump material shall be indicated in equivalent to ASTM specification.



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- 9- Coupling shall be considering safe, stainless steel multidisc, flexible coupling.
- 10-Shaft sleeve are required on pump, with standard mechanical seal Installation.

11- ELECTRICAL:

- 11-1 Electric Power: 230 V-1PH, 400 V-3PH - (50HZ)
- 11-2 The electric motors shall be selected , sized and supplied as per the project specification "Three Phase Squirrel Cage Induction Electric Motors" including IPS M-EL-131.
- 11-3 Vendor shall retain full responsibility for motor sizing, mounting and alignment and ensure compatibility with driven equipment. All inspection testing and data requirement, etc. Shall be the responsibility of the vendor, who shall ensure that the motor sub vendors meet all requirements as specified.
- 11-4 All motors shall be suitably sized so as to deliver required output under frequency variations of -5%, +5% of nominal value coincidental with voltage variation of ± 5% of the nominal value.
- 11-5 Motor terminal box shall be suitable for size and numbers of purchaser's cables (the cable entries shall be metric type).
- 11-6 Supply of cable glands which are mounted on motors terminal boxes are excluded from vendor's scope.
- 11-7 All electric motors shall be suitable for classified areas, EExd II T4 with certificate for 44°C ambient temperature.
- 11-8 The motor rating shall have at least the following percentage of pump design point brake kW as specified in relevant sheet.

Motor rating (kW)	Percent of pump BKW
19 and less	130%
22.5 to 56	120%
75 and above	115%

- 11-9 The electric motors are subject to test by Owner or third party inspector as specified in the attached "MOTOR DATA SHEET " document.



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- 11-10 The electric motors data sheets attached to IPS-M-EL-131 shall be completely filled - out for each motor and submitted to purchaser.
- 11-11 Each skid shall be provided with at Least two earthling points and one on right hand side of motor enclosure for connecting to earth grid. Earth continuity of all metallic parts of skid shall be guaranteed to be done by vendor.
- 11-12 Cable gland entries shall be iso metric with 1.5mm pitch and minimum thread length of 15mm. Vendor will be informed of number and size of entries during detail engineering stage. However vendor shall follow the size and numbers calculated by purchaser.
- 11-13 The insulation class of motors shall be "F" and their temperature rise shall be limited to class "B" for 44°C ambient temperature.
- 11-14 Drawing and documents of Motors shall be furnished in English.

GUARANTEE

Vendor shall guarantee that equipment is free from fault in design, workmanship and material to fulfill satisfactorily the operating conditions specified.

Should any defect in design, material, workmanship or operating characteristics developed after 12 months of operation or after 24 months following shipment from supplier’s plant, whichever occurs later, vendor guarantees to make all necessary or desirable alterations, repairs and replacements free of charge.

If the defect or failure to function cannot be corrected, vendor guarantees to replace promptly, free of charge, said equipment or to remove the equipment and refund the full purchase price.

DOCUMENTS

Pump supplier shall prepare and submit to Shiraz Oil Refining Co. The following documents:

6 copies of technical manual including technical data, drawing and maintenance catalogue spare parts list, two copies of the final approved drawings.



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Project specification CENTRIFUGAL PUMPS & DRIVERS		Shiraz oil Refining co. NO. Rev.0 Sheet 1 of 1 By: M.Homayouni Date : 1401/08/21	
Gas oil circulating pumps			
Service		ISOMAX fractionator Gas oil pump around	
Quantity		2	
Operating pumps –item		P-623A	
Spare pump-item		P-623B	
Driver , operating pump		Motor	
Driver , spate pump		Motor	
Driver furnished by			
Driver mounted by			
Fluid pumped		Gas oil	
Corrosive or Erosive		Total sulfur :10000ppm	
Sp.gr gravity of oil @ 15.5°c			
Pumping Temperature °c		290	
Sp. Gr . at pumping temperature		0.64	
Viscosity at P.T CST.			
Vapor pressure at P.T. Bara			
Flow rate@ P.T		Normal	m3/hr. 193
		Design	m3/hr. 230
Pump speed		RPM	Recommended
NPSH Available		M	6
Suction pressure		Barg	1.7
Process requirements			
Discharge pressure		Barg	6.3
Diff , pressure		Bar	4.6
Diff , head @ P.T		M	72
Developed by pump (Estimated)			
Diff head @ t P.T		M	
Diff pressure		Bar	
Discharge pressure		Barg	
Estimated efficiency @design		70%	
Est. BHP Required		KW	45
Est. BHP of motor		KW	
Est. BHP of Turbine		KW	



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**Project specification
CENTRIFUGAL PUMPS & DRIVERS**

Shiraz oil Refining co.
NO. Rev.0
Sheet 1 of 1
By: S.Shojaeian
Date : 1401/08/21

Gas oil circulating pumps

Item	FP-623 A/B	
Type Of Pump	Centrifugal	
Suction Type (Single) (Double)	Single	
Stages		
Shaft Arrangement	Horizontal	
Casing Split	Radial	
Pump Support(W/C) Water Cooled		
Coupling Type	Spacer (Metastream)	
Casing	ASTM A 278	
Suction: Size & ASA Rating	10", 300 #	
Facing & Location	R.F.	
Discharge : Size & ASA Rating	8", 300 #	
Facing & Location	R.F.	
Impeller	12 % CR	
Impeller Type	Closed	
Casing Wearing Rings		
Impeller Wearing Rings		
Diffuser Or Intermediate Cover		
Balancing Drum		
Balancing Sleeve		
Shaft	4140 alloy steel	
Shaft Sleeve	12% CR. hardened	
Stuffing Box		
Mechanical Seal	Yes (Note 1)	
Mechanical Seal Faces		
Mechanical Seal Metal Parts		
Seal Shaft Packing		
Gland(V) Vent(Q) Quench (D)Drain	V & D	
Gland Throttle Bushing		
Cage Ring		
Throat Bushing		
Stuffing Box Packing (100% Spare No)		
Packing Lubrication		
Bearings , Radial		
Bearings Lubrication		
Oil Cooler		
Gland Seal Piping		
Flushing Oil Piping		
Cooling Water Piping		
"API" Material Class	S6	
Mechanical Seal Code	API 682	

Note :
Accordance to API 682



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INDUCTION MOTOR SPECIFICATION SHEET

SHIRAZ OIL REFINING CO.

SHEET 1 OF 1

GENERAL DATA

<i>Document No.</i>	*	
<i>Tags</i>	FMP-623A/B	
<i>Duty</i>	S1	
<i>Installation</i>	Outdoor	
<i>Operating machine</i>	PUMP	
<i>Coupling type</i>	DIRECT OR*	
<i>Manufacturer</i>	Siemens(Germany)ABB(Finland)GEC(U.K.)Mitsubishi(Japan)	
<i>Ref. Code & Standard</i>	IEC, NIOEC spec 60-2,IPS	
<i>Test</i>	According to IEC and SPC/E2103	
<i>Site conditions</i>	<i>Climate</i>	Continental dusty
	<i>Altitude</i>	more than 1555m Above See Level
	<i>Min/Max ambient temperature</i>	-12 / +44 C
	<i>Hazardous atmosphere</i>	
	<i>Class</i>	1
	<i>Division</i>	2
	<i>Group</i>	D

RATING AND CHARACTERISTICS

<i>Rated power</i>	* Or 55 kW
<i>Frequency</i>	50 Hz
<i>Operation voltage</i>	400V Delta +5% / -5%
<i>Full load current</i>	*
<i>No. of poles</i>	*
<i>Full load speed</i>	*
<i>Power factor</i>	>=0.9
<i>Efficiency</i>	>=0.95
<i>Insulation class/Temp. Rise</i>	F/B
<i>Starting</i>	DOL
<i>Enclosure</i>	IP-55 EExdIIBT4
<i>Shape</i>	*
<i>Cooling method</i>	Self-ventilated, No sparking fan
<i>Lubrication method</i>	Self-lubricant

Notes:

- 1- "*" shall be modified and confirmed by vendor
- 2- Terminal box shall be located at right hand side when looking at D.E.
- 3- Motor test certificates shall be forwarded prior to shipment
- 4- Inspection: Motor test shall be witnessed by owner Inspector, at no extra cost.
- 5- All parts shall be according to standards that mentioned above.
- 6- The motor's cable box assembly shall withstand the effects of faults of 6.5 MVA s.c.p. for 0.15 second