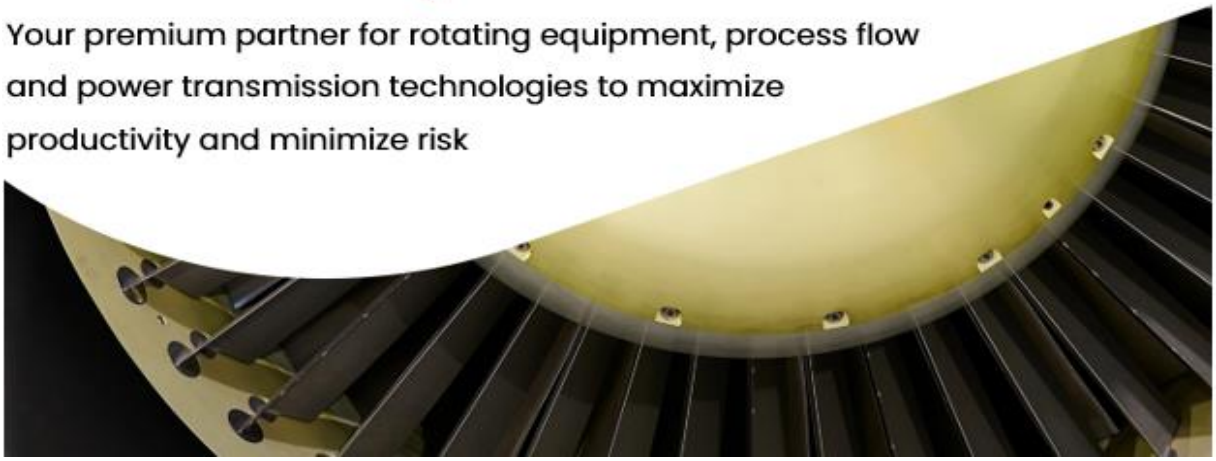
Baker Hughes

Turbomachinery & Process Solutions

Your premium partner for rotating equipment, process flow and power transmission technologies to maximize productivity and minimize risk



Technical Proposal - Budgetary

Customer: Rabigh Refining and Petrochemical

Proposal Reference Number: 1729271

Date issued: October 27, 2023

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1. Proposal Highlights

This section defines the basis of BAKER HUGHES technical offer for the supply of Mechanical Drive train(s) complete with relevant auxiliaries.

During the development of this technical offer, we have made the greatest effort to match your requirements, exploiting the experience that BAKER HUGHES has gained in the Electrical Motor Mechanical Drive market studying the best technical solutions to:

- Ensure delivery time for the plant.;
- Optimize the operating conditions of the plant regarding both its reliability and performances;
- Maximize the overall efficiency;
- Minimize the life cycle costs;
- Ensure the greatest operating flexibility.

Our proposal has been prepared in response to your application requirements and has selected the following BAKER HUGHES products to meet your needs:

No. 2 2HE/1 Reciprocating Compressors train(s)

Each of the proposed units consists of:

Reciprocating Compressor

Electric Motor

Auxiliaries and BoP equipment

The mechanical design of proposed units relies on several years of BH experience in providing reliable equipment, for continuous operation under their design prescriptions.

The Motocompressor package will be engineered, manufactured and tested at BAKER HUGHES workshops, under the supervision and the responsibility of one Project Manager, who will act as a single contact for the Client.

BAKER HUGHES engineers and QC specialists will monitor the whole production cycle of these items with scheduled inspections, to ensure that all the design, manufacturing, procedures specified, NDT controls and any other requirement of ISO 9001-2000 are met.

All testing activities supplied will be carried out in Florence or Massa workshops and Electric Motor sub-suppliers workshops, as applicable.

2. Scope of Supply & Exclusions

Main Item Description

2.1 Compressor

Reciprocating compressor 2HE/1 equipped with DOUBLE compartment distance piece and cylinders with lubrication system NO LUBE type. The compressor is suitable for installation On Skid

2.2 Driver

Electric motor Induction type with power of 1400 Kw, 20 poles, 355 rpm, suitable for installation On Skid

2.3 Lube Oil System

Frame lube oil system, one each unit, according to API Std. 618 including:

Oil reservoir in the compressor sump

The main oil pump is driven by the compressor shaft

The auxiliary oil pump is driven by an electric motor

Single shell & tube cooler

Duplex oil filter

Piping, valves, and instrumentation

The oil system is assembled on Separated Console Skid

2.4 Cylinder Lubrication System

Offered Reciprocating compressor is NO LUBE type

2.5 Cooling System

Open system for cylinder and packings (if any) suitable for external cooling water complete of a manifold to single Inlet/Outlet connections

2.6 Process Gas System

Process gas system is complete of the following equipment (vessel designed according to ASME VIII div.1):

Each stage, suction & Discharge Pulsation Suppression in Carbon Steel material

2.7 Instrumentation & Control

Local instrumentation, wired up to junction boxes

Local panel, rack type, without control logic, is suitable to be installed in a hazardous area

2.8 Spare Parts

Pre-commissioning and start-up spare parts

2.9 Miscellania

One set of special tools

Foundation bolts

Flywheel

Flexible Coupling

Pneumatic barring device

Standard BAKER HUGHES NP export shipment packing

Standard painting according to BAKER HUGHES NP painting specification

Instruction manual for maintenance and operation

Certifications, calculations and job documentation

2.10 Test

Factory tests, inspection and certification according to BAKER HUGHES Quality Control Books

Mechanical running test

Functional test of Lube oil system

2.11 Exclusions

Equipment and service not listed in the scope of supply are the responsibility of the Purchaser.

3. Budget Compressor Datasheet

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Item	R280-K-03 A-B
Date	27-Oct-23

No.				
0	rev	RECIPROCATING COMPRESSOR DATA SHEET		
1		CUSTOMER: **Rabigh Refining and Petrochem**	LOCATION **Rabigh, Kingdom of Saudi Arabia**	
2		SERVICE: **Sales Gas Compressor**		
3		MODEL: **2HE/1**	Q.TY: **2**	ITEM: **R280-K-03 A-B**
4		CYLINDER Construction: ❍ **LUBE**	● **NO LUBE**	
5		OPERATING CONDITIONS (FOR EACH MACHINE)		
6		-SERVICE No.		**1**
7		-CASE		DESIGN
8		-STAGE		**1**
9		-GAS HANDLED		xxx
10		-MOLECULAR WEIGHT		17.56
11		-SUCTION PRESSURE (at cyl.flange)	Bar A	15.65
12		-SUCTION TEMPERATURE	°C	40
13		-DISCHARGE PRESSURE (at cyl.flange)	Bar A	38.43
14		-EXPECT. DISCHARGE TEMP.	°C	116
15		-MFR CAPACITY (*)	Kg/h	25,826
16			Nm3/h	32,967
17		-SHAFT POWER	kW	1,264
18		-RATED SPEED	RPM	355
19		-RECOMM. DRIVER POWER	kW	1,450
20				
21		(*) MFR Capacity=Required Capacity/0,97 as per API 618 (on suction side dry basis)		
22				
23		CYLINDER DATA		
24		-SERVICE / STAGE		**1 / 1**
25		-N° OF CYL. PER STAGE		**2**
26		-SINGLE/DOUBLE ACTING		DA
27		-BORE	mm	380
28		-STROKE	mm	290
29		-PISTON ROD DIAMETER	mm	90
30		-PISTON DISPLACEMENT	m3/h	2,723.6
31		-VOL. EFFICIENCY	%	
32		-N° OF IN/OUT VALVE PER END		
33		-VALVE TYPE		RINGS
34		-PISTON SPEED	m/s	3.43
35		-ACTUAL OPER. PRESSURE (at cyl. flange)	Bar A	38.4
36		-RELIEF VALVE SETTING	Bar A	42.5
37		-MAX. ALLOW. WORK. PRESS.	Bar A	42.2
38		-MAX. ALLOW. WORK. TEMP.	°C	200
39		-HYDROSTATIC TEST PRESS.	Bar A	63.3
40		-MAX ALL. COMB.WRIST PIN LOAD COMPR.	daN	53,300
41		-MAX ALL. COMB.WRIST PIN LOAD TENSION	daN	49,000
42		-COMB.WRIST PIN LOAD, COMPR.	daN	27,341
43		-COMB.WRIST PIN LOAD, TENSION	daN	22,936
44				
45		MATERIALS (ASTM or EQUIVALENT)		
46		Cylinder		NCI
47		Liner		CI
48		Piston rings / wear bands / packing rings		Filled PTFE
49		Piston rod		SS
50				
51		KEY: CI= cast iron - NCI= nodular iron - CS= cast steel - FS= forged steel		
52		AS=alloy steel - SS= stainless steel		
53				
54		NOTES:		
55		This machine selection and above data are preliminary.		
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57				
58				
59				