PROJECT: PP-PE PILOT PLANT	client:
Title: DATA SHEET FOR 1ST GAS PHASE REACTOR CENTRIFUGAL COMPRESSOR (CF-411)	شرکت ملی صنایع پتروشیمی شرکت پژوهش و فناوری پتروشیمی

DATA SHEET FOR 1ST GAS PHASE REACTOR CENTRIFUGAL COMPRESSOR (CF-411)

	Document No.: 400-DAS-A4-RE-0037	**Rev.: 03**
	Owner Job No.:	**Type: DAS**
		Page 1

PROJECT: PP-PE PILOT PLANT

client:

شرکت ملی صنایع پتروشیمی
شرکت پژوهش و فناوری پتروشیمی

Title: DATA SHEET FOR 1ST GAS PHASE REACTOR CENTRIFUGAL COMPRESSOR (CF-411)

REV. / PAGE	0	1	2	3	4	5	REV. / PAGE	0	1	2	3	4	5	REV. / PAGE	0	1	2	3	4	5
A	X	X	X	X																
B	X	X	X	X																
1	X	X	X	X																
2	X	X	X	X																
3	X	X	X	X																
4	X	X	X	X																
5	X	X	X	X																
6	X	X	X	X																
7	X	X																		
8	X	X																		

Rev	Date	Prepareed By	Checked BY	Approved by	Status
5					
4					
3	12/6/2021	K.A/ V.V	M.N	AA.SH	IFA
2	**10/10/2021**	**K.A/ V.V**	**M.N**	**M.A**	**IFA**
1	**2/18/2009**	**H.R**	**A.A**	**H.R**	**IFA**
0	**1/31/2009**	**A.SH**	**R.S**	**A.KI**	**IFA**

Document Revision

	Document No.: 400-DAS-A4-RE-0037	**Rev.: 03**
	Owner Job No.:	**Type: DAS**
		Page 2

Process Data Sheet

CENTRIFUGAL COMPRESSOR

DATE: October 10, 2021

PLANT: **PE-PP R&T Arak Center** | AREA: **400** | Sheet: **3** OF **6**

SERVICE: **1st GAS PHASE REACTOR COMPRESSOR** | ITEM: **CF-411**

TYPE AND MODEL: CENTRIFUGAL | Quantity: **2**

LOCATION: ☐ OUTDOOR ☑ UNDER ROOF ☐ MEZZANINE ☑ GROUND FLOOR

SERVICE DATA

CONDITIONS		NORMAL	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	
POSITION							
COMPRESSOR CASING							
COMPRESSED GAS (SEE ANALYSIS)							
BAROMETRIC PRESSURE:	bar a						
CAPACITY	kg/h						
	std m^3/h						
	m^3/h AT INTAKE CONDITIONS	**509**	**509**	**509**			
INTAKE CONDITIONS							
PRESSURE	bar a	**25**	**25**	**19**			
TEMPERATURE	°C	**75**	**75**	**80**			
RELATIVE HUMIDITY	%						
MOLAR MASS	Kg/Kmol	**35.7**	**41.5**	**37.6**			
Cp/Cv (K1)		**1.27**	**1.38**	**1.25**			
DENSITY	Kg/m^3	**37.5**	**49.5**	**27.4**			
Z_1 - COMPRESSIBILITY FACTOR		**0.82**	**0.72**	**0.86**			
DISCHARGE CONDITIONS							
PRESSURE	bar a	**25.5**	**25.6**	**19.5**			
TEMPERATURE EXPECTED/ACTUAL	°C						
Cp/Cv (K2)							
Z_2 - COMPRESSIBILITY FACTOR							
SURGE LIMIT AT DES. COND.	%						
COMPRESSION RATIO							
POLYTROPIC HEAD	m	**112**	**104**	**123**			
POWER REQUIRED	KW	22					
COMPRESSOR SPEED	RPM						
DRIVER (1&4)		☑ ELECTRIC MOTOR		☐ STEAM TURBINE		☐	

GAS ANALYSIS (2)

COMPOSITION	MOLAR MASS	% MOLAR	% MOLAR	% MOLAR	% MOLAR	% MOLAR	% MOLAR
1 Hydrogen	2.0	**18.00**	**2.40**	**0.50**			
2 Ethylene	28.1	**5.00**	**11.80**	**40.00**			
3 Propylene	42.1			**44.50**			
4 Propane	44.1	**77.00**	**83.10**	**15.00**			
5 Butene-1	56.1		**2.70**				
6							
7							
8							
Total		**100.00**	**100.00**	**100.00**			

NOTES ON GASES: **10 gr/m3 of polymer dust in process gas (max particle size 500µm)**

CORROSION CAUSED BY:

COMPRESSOR SKETCH

NOTES:

(1) THE ELECTRICAL MOTOR SHALL BE IN ACCORDANCE WITH "TECHNICAL SPECIFICATION FOR LV MOTORS" DOC.No.900-SPC-A4-EE-0005 BY VENDOR, MOTOR ENCLOSURES SHALL BE OF TOTALLY ENCLOSED FAN-COOLED (TEFC)

(2) ALL INSPECTIONS & TEST PLANS SHALL BE DONE IN ACCORDANCE WITH 'Inspection & Test Plan for Centrifugal Compressors' DOC.No.900-ITP-A4-RE-0004.

(3) UTILITY CONDITIONS MUST BE CONSIDERED BASED ON DOC.No.900-SPC-A4-PR-0006.

(4) ALL ELECTRICAL MOTORS SHOULD BE ACCORDANCE EXPLOSION PROOF STANDARD **EXIICT3**.

(5) THE APPROPIATE STANDARD FOR COMPRESSORS IS BASED ON API-617

(6) TYPE OF COMPRESSOR IS ASSUMED TO BE SINGLE SHAFT TYPE.

(7) TURNDOWN RATIO FOR THESE TYPE OF COMPRESSORS IS TO BE 60%.

(8) ALL PRINCIPLES OF LUBICATION, VIBRATION MONITORING, CAPACITY CONTROL, COOLING, PROTECTION AND INSTRUMENTATION ARE VITAL AND S BE CONSIDERED ACCORDING TO DOCUMENTS ATTACHED AS APENDIXES; INSTRUMENTATION GENERAL SPECIFICATION, TECHNICAL SPECIFICAT LV MOTORS, UTILITY CONDITION.

REV. 03

Process Data Sheet

CENTRIFUGAL COMPRESSOR

DATE: October 10, 2021

PLANT: **PE-PP R&T Arak Center** | AREA: **400** | SHEET: 4 OF 6

SERVICE	**1st GAS PHASE REACTOR COMPRESSOR**					ITEM	**CF-411**		
TYPE AND MODEL				Quantity: **2**					
LOCATION	☐ OUTDOOR	☑ UNDER ROOF		☐ MEZZANINE		☑ GROUND FLOOR			
	ENGINEERING DATA								
COMPRESSOR SPEED	**3000 RPM shall be preferred**	RPM	CRITICAL SPEEDS 1st			RPM			
MAX CONTINUOUS SPEED		RPM	CRITICAL SPEEDS 2nd			RPM			
SURGE LIMIT	m3/h	AT DESIGN CONDITIONS			% OF DESIGN CAPACITY				
DIRECTION OF ROTATION (COMPRESSOR VIEWED FROM MOTOR									
	MATERIALS AND CONSTRUCTION								
COMPRESSOR CASING	SPLIT	☑ HORIZONTAL	☐ VERTICAL	MATERIAL	**S.S 304**				
	THICKNESS		mm	CORROSION ALLOWANCE			mm		
	MAX ALLOWABLE TEMP.	**180** °C		MAX ALLOW.PRESS/HYDR.TEST	**30**	bar g			
IMPELLERS	TYPE	☐ ENCLOSED	☑ OPEN	MATERIAL	**Stainless steel S.S 304**				
	CONSTRUCTION	☐ CAST	☑ WELDED	☐ RIVETED	☑ MILLED	☐			
	No.	DIAMETERS		MAX					
DIAPHRAGMS	COOLED	☐ YES	☐ NO	MATERIAL					
LABYRINTHS	RADIAL CLEARANCES		mm	MATERIAL					
SHAFT	DIAMETERS (IMPELLER FIT)		mm	MATERIAL					
RADIAL BEARINGS	HOUSING	☐ INTEGRAL	☐ SEPARATE						
	TYPE	☐ BABBIT METAL PLATED SHELLS		☐					
	LUBRICATION	☑ RING	☐ FORCED	☐	OIL PRESS.	bar g			
	SPAN mm	DIAMETER mm	LENGTH mm	CLEARANCE	mm				
THRUST BEARINGS	TYPE	☐ KINGSBURY SINGLE	☐ KINGSBURY DOUBLE	☐ BALL	☐ ROLLER				
SHAFT SEAL **(NOTE 1)**	LUBRICATION	☐ FORCED	☑ RING	☐	OIL PRESS.	bar g			
BASEPLATE	TYPE	☐ LABYRINTH	☐ LIQUID FILM	☑ MECHANICAL	☐ RING				
	TYPE	☐ WELDED STEEL	☐ CAST STEEL	☐					
	COMMON WITH COMPRESSOR AND MOTOR		☐ YES	☑ NO					
	SUPPLIED BY	☑ COMPRESSOR MANUFACTURER							

COUPLING	POSITION	GEAR MOTOR	COMPR. MOTOR	COMPR. TURBINE	
	MANUFACTURER				
	TYPE				
	LUBRICATION				

COUPLING GUARD	TYPE	☐ SHEET STEEL	☐ NONSPARKING	☐
	SUPPLIED BY	☐ COMPRESSOR MANUFACTURER		

OTHER PARTS:

MASS: COMPRESSOR WITHOUT BASE PLATE	Kg	MAX FOR MAINTENANCE	Kg
MASS: MAX TO MOUNTING	Kg	COMPRESSOR WITH BASE PLATE	Kg

CONNECTIONS

CONNECTION (a)	SIZE	RATING	FACING	UPWARDS	DOWNWARDS	RIGHT (b)	LEFT (b)
INTAKE PIPING	**5**	**#300**	**RF**	☐	☐	☐	☐
DELIVERY PIPING	**4**	**#300**	**RF**	☐	☐	☐	☐
				☐	☐	☐	☐
				☐	☐	☐	☐
				☐	☐	☐	☐
				☐	☐	☐	☐

PURGE CONNECTIONS LIQUID USED	SIZE	RATING AND FACING	No.	
DRAIN CONNECTIONS	SIZE	RATING AND FACING	No.	
VENT CONNECTIONS	SIZE	RATING AND FACING	No.	

NOTES:

NOTE 1: It is recommended to be Face to Face Type of Gas Seal

REV. 03

	Process Data Sheet **CENTRIFUGAL COMPRESSOR**		DATE October 10, 2021
PLANT: **PE-PP R&T Arak Center**		AREA **400**	SHEET 5 OF 6

1	SERVICE **1st GAS PHASE REACTOR COMPRESSOR**							ITEM		
2	TYPE AND MODEL			Quantity: **2**						
3	LOCATION	☐ OUTDOOR		☑ UNDER ROOF		☐ MEZZANINE		☑ GROUND FLOOR		
4	LUBRICATION AND SEALING SYSTEM									
5	COMPRESSOR MANUFACTURER WILL SUPPLY A FORCED OIL LUBRICATION SYSTEM									
6	COMMON WITH	☐ COMPRESSOR		☑ GEAR		☐ DRIVER		☐		
7	☐ COMBINED WITH SEAL OIL SYSTEM			☐ SEPARATE FROM SEAL OIL SYSTEM				☐ WITHOUT SEAL OIL UNIT		
8	SYSTEM ACCORDING TO DIAGRAM FIG.			OF API STANDARD No. 617						
9	OIL SYSTEM			LUBRICATION				SEAL		
10	TYPE OF OIL USED									
11	WORKING PRESSURE	bar g								
12	MAX ALLOWABLE PRESSURE	bar g								
13	REQUIRED OIL FLOW RATE	m^3/h								
14	RESERVOIR: MOUNTED ON			☐ BASE PLATE		☐ CONSOLE		☐ BASE PLATE	☐ CONSOLE	
15	CAPACITY	m^3								
16	RETENTION TIME	min								
17	PROVIDED WITH HEATER			☐ ELECTRIC		☐ STEAM		☐ ELECTRIC	☐ STEAM	
18	MATERIAL									
19	MAIN PUMP; MANUFACTURER									
20	TYPE-MODEL									
21	CASING MATERIAL									
22	CAPACITY-SPEED-POWER			m^3/h	RPM	KW		m^3/h	RPM	KW
23	MOUNTED ON			☐ BASE PLATE		☐ CONSOLE		☐ BASE PLATE	☐ CONSOLE	
24	DRIVEN BY			☐ SHAFT	☑ MOTOR	☐ TURBINE		☐ SHAFT	☑ MOTOR	☐ TURBINE
25	STAND-BY PUMP; MANUFACTURER									
26	TYPE-MODEL									
27	CASING MATERIAL									
28	CAPACITY-SPEED-POWER			m^3/h	RPM	KW		m^3/h	RPM	KW
29	MOUNTED ON			☐ BASE PLATE		☐ CONSOLE		☐ BASE PLATE	☐ CONSOLE	
30	DRIVEN BY			☐ SHAFT	☐ MOTOR	☐ TURBINE		☐ SHAFT	☐ MOTOR	☐ TURBINE
31	AUTOMATIC START			☐ YES	☐ NO					
32	ACTUATED ON							☐ YES	☐ NO	
33	PUMP SAFETY VALVES; SET PRESS.	bar g								
34	TYPE			☐ INTEGRAL		☐ SEPARATE		☐ INTEGRAL	☐ SEPARATE	
35	OIL COOLER			☐ DUAL		☐ SINGLE		☐ DUAL	☐ SINGLE	
36	MOUNTED ON			☐ BASE PLATE		☐ CONSOLE		☐ BASE PLATE	☐ CONSOLE	
37	COOLING MEDIUM									
38	CONSTRUCTION CODE			☐ TEMA C		☐		☐ TEMA C	☐	
39	SHELL MATERIAL									
40	PIPE MATERIAL									
41	EXCHANGING HEAT	KW								
42	FILTERS			☐ SINGLE		☐ DUAL		☐ SINGLE	☐ DUAL	
43	MANUFACTURER -TYPE									
44	FILTERING DEGREE									
45	FILTERING ELEMENT			☐ REPLACEABLE		☐ CLEANING TYPE		☐ REPLACEABLE	☐ CLEANING TYPE	
46	BODY MATERIAL									
47	VALVES: BODY MATERIAL									
48	OIL DRAINS: REQUIRED			☐ YES		☐ NO		SUPPLIED BY		
49	MOUNTED ON			☐ BASE PLATE		☐ CONSOLE		☐		
50	MAX SEAL OIL LEAK							LITERS/DAY		
51	OVERHEAD SEAL OIL TANK: REQUIRED			☐ YES		☐ NO				
52	SUPPLIED BY			☐ COMPRESSOR MANUFACTURER		☐				
53	PLACED			METERS ABOVE COMPRESSOR CENTERLINE						
54	CLARIFIER: REQUIRED			☐ YES		☐ NO				
55	SUPPLIED BY			☐ COMPRESSOR MANUFACTURER		☐				
56	CAPACITY			☐ 100% DAY		☐ 50% DAY		☐		
57	OIL PIPING MATERIAL			☐ C-STEEL, CLEAN AND PICKLED						
58				☐ STAINLESS STEEL		☐				
59	DRAIN OIL PIPING MATERIAL			☐ STAINLESS STEEL		☐				
60	OTHER DATA									
61	NOTES:									
62										
63										
64										
65										
66										
67										
68										
69	REV. 03									

Process Data Sheet

CENTRIFUGAL COMPRESSOR

DATE: October 10, 2021

PLANT: **PE-PP R&T Arak Center** | AREA: **400** | SHEET: 6 OF 6

SERVICE: **1st GAS PHASE REACTOR COMPRESSOR** | ITEM:

TYPE AND MODEL | Quantity: **2**

LOCATION: ☐ OUTDOOR ☑ UNDER ROOF ☐ MEZZANINE ☑ GROUND FLOOR

INSTRUMENT AND PROTECTIONS

INSTRUMENT READ OUT: ☐ METRIC UNITS ☐ ENGLISH UNITS

LOCAL PANEL FOR COMPRESSOR SUPPLIED BY: ☑ COMPR.MANUF. ☐ PURCHASER ☐ NOT REQUIRED ☐ NOT NEEDED

ELECTRICAL AND INSTRUMENT CONNECTIONS SHALL BE BROUGHT OUT TO TERMINAL BOXES BY:

☐ COMPR.MANUFACTURER ☐ PURCHASER

METERS AND INDICATORS	MANUFACTURER	TYPE AND SIZE
PRESSURE GAUGES		
THERMOMETERS		
LEVEL INDICATORS		
SIGHT FLOW INDICATORS		
TACHOMETERS		
PRESSURE SWITCHES		
TEMPERATURE SWITCHES		
AXIAL DISPLACEMENT INDICATORS		
SAFETY AND/OR RELIEF VALVES		
POWER INDICATOR & RECORDER		

INSTRUMENTS COMPRESSOR MANUFACTURER SHALL SUPPLY AS A MINIMUM ◇1

PRESSURE GAUGES	LOCAL MOUNTED	PANEL MOUNTED	PROTECTIONS	ALARM	LOCK
OIL PUMP DISCHARGE	☑	☑	LUBE OIL LOW PRESSURE	☑	☐
LUBE OIL EACH LEVEL	☑	☑	SEAL OIL LOW PRESSURE	☑	☐
SEAL OIL EACH LEVEL	☑	☑	RESERVOIR OIL LOW LEVEL	☑	☐
DIFFERENTIAL, SEAL OIL	☑	☑	GOV. CONTROL OIL LOW PRESSURE	☑	☐
DIFF. BEFORE/AFTER FILTERS	☑	☑	OIL FILTERS DIFF. HIGH PRESSURE	☑	☐
GOV. CONTROL OIL	☑	☑	COMPR. DISCHARGE HIGH TEMP.	☑	☐
COMPRESSOR DISCHARGE	☑	☑	ROTOR AXIAL POSITION	☑	☐
COMPRESSOR SUCTION	☑	☑	STARTING OF AUXILIARY/SPARE PUMPS	☑	☐
INTERMEDIATE STAGES	☑	☑	HIGH VIBRATIONS ON EACH BEARING	☑	☐
			HIGH TEMP. LUBE OIL	☑	☐
THERMOMETERS:			HIGH TEMP EACH BEARING	☑	☐
OUTLET, EACH BEARING	☑	☑		☐	☐
OUTLET, EACH SEAL	☑	☑			
COOLER INLET/OUTLET	☑	☑			
COMPR. SUCTION/DISCHARGE	☑	☑			

☐ REMOTE LOCKING ☐ ELECTRIC ☐ PNEUMATIC ☐ HYDRAULIC

☐ AXIAL POSITION CONTINUOUS INDICATOR

☐ VISUAL FLOW INDICATOR ON EACH OIL OUTLET LINE FOR BEARINGS-SEAL-COUPLINGS

☐ LEVEL GAUGES LUBE

TO ACTUATE ALARMS AND LOCKS THE CONTACT WILL:

☐ OPEN ☐ CLOSE TO SOUND ALARM

☐ OPEN ☐ CLOSE TO LOCK

ALARM AND LOCK CONTACTS WILL BE SEPARATE AND:

☐ ONE-POLE DOUBLE-THROW TYPE

☐ TWO-POLE DOUBLE-THROW TYPE

CONTROL

METHOD: ☐ SPEED VARIATION FROM ____ TO ____ RPM ON ☐ SUCTION ☐ DISCHARGE

☐ BY-PASS FROM ____ TO ____ % ☐ AUTOMATIC ☐ MANUAL

CONTROL DEVICE: ☐ WITH PRESSURE SWITCH ☐ WITH THERMOSTAT

SIGNAL FROM ____ TYPE ____ RANGE ____

EFFECT ON VARIATION ____

ANTISURGE CONTROL

NOTES:

REV. 03

PROJECT: PP-PE PILOT PLANT	client:
Title: DATA SHEET FOR 2nd GAS PHASE REACTOR CENTRIFUGAL COMPRESSOR (CF-421)	شرکت ملی صنایع پتروشیمی شرکت پژوهش و فناوری پتروشیمی

DATA SHEET FOR 2nd GAS PHASE REACTOR CENTRIFUGAL COMPRESSOR (CF-421)

	Document No.: 400-DAS-A4-RE-0037	**Rev.: 03**
	Owner Job No.:	**Type: DAS**
		Page 1

PROJECT: PP-PE PILOT PLANT

client:

شرکت ملی صنایع پتروشیمی
شرکت پژوهش و فناوری پتروشیمی

Title: DATA SHEET FOR 2nd GAS PHASE REACTOR CENTRIFUGAL COMPRESSOR (CF-421)

REV. / PAGE	0	1	2	3	4	5	REV. / PAGE	0	1	2	3	4	5	REV. / PAGE	0	1	2	3	4	5
A	X	X	X	X																
B	X	X	X	X																
1	X	X	X	X																
2	X	X	X	X																
3	X	X	X	X																
4	X	X	X	X																
5	X	X	X	X																
6	X	X	X	X																
7	X	X																		
8	X	X																		

Rev	Date	Prepareed By	Checked BY	Approved by	Status
5					
4					
3	12/6/2021	K.A	M.N	AA.SH	IFA
2	**10/10/2021**	**K.A/ V.V**	**M.N**	**M.A**	**IFA**
1	**2/18/2009**	**H.R**	**A.A**	**H.R**	**IFA**
0	**1/31/2009**	**A.SH**	**R.S**	**A.KI**	**IFA**

Document Revision

	Document No.: 400-DAS-A4-RE-0037	**Rev.: 03**
	Owner Job No.:	**Type: DAS**
		Page 2

Process Data Sheet

CENTRIFUGAL COMPRESSOR

DATE: October 10, 2021

PLANT: **PE-PP R&T Arak Center** | AREA: **400** | **3** OF **6**

SERVICE: **2nd GAS PHASE REACTOR COMPRESSOR** | ITEM: **CF-421**

TYPE AND MODEL: CENTRIFUGAL | Quantity: **1**

LOCATION: ☐ OUTDOOR ☑ UNDER ROOF ☐ MEZZANINE ☑ GROUND FLOOR

SERVICE DATA

CONDITIONS		NORMAL	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	
POSITION							
COMPRESSOR CASING							
COMPRESSED GAS (SEE ANALYSIS)							
BAROMETRIC PRESSURE:	bar a						
CAPACITY	kg/h						
	std m^3/h						
	m^3/h AT INTAKE CONDITIONS	**1031**	**1145**	**1145**			
INTAKE CONDITIONS							
PRESSURE	bar a	**25**	**25**	**25**			
TEMPERATURE	°C	**75**	**80**	**75**			
RELATIVE HUMIDITY	%						
MOLAR MASS	Kg/Kmol	**28.1**	**39.27**	**42.35**			
Cp/Cv (K1)		**1.25**	**1.31**	**1.41**			
DENSITY	Kg/m^3	**26.8**	**42.8**	**51.8**			
Z_1 - COMPRESSIBILITY FACTOR		**0.90**	**0.78**	**0.71**			
DISCHARGE CONDITIONS							
PRESSURE	bar a	**25.4**	**25.7**	**25.8**			
TEMPERATURE EXPECTED/ACTUAL	°C						
Cp/Cv (K2)							
Z_2 - COMPRESSIBILITY FACTOR							
SURGE LIMIT AT DES. COND.	%						
COMPRESSION RATIO							
POLYTROPIC HEAD	m	**150.34**	**164.93**	**156.84**			
POWER REQUIRED	KW	55					
COMPRESSOR SPEED	RPM						
DRIVER (1&4)		☑ ELECTRIC MOTOR	☐ STEAM TURBINE		☐		

GAS ANALYSIS

COMPOSITION	MOLAR MASS	% MOLAR	% MOLAR	% MOLAR	% MOLAR	% MOLAR	% MOLAR
1 Hydrogen	2.0	**28.50**	**4.70**	**0.70**			
2 Ethylene	28.1	**25.00**	**23.40**	**10.00**			
3 Propylene	42.1						
4 Propane	44.1	**46.50**	**64.40**	**88.00**			
5 Butene-1	56.1		**7.50**	**1.30**			
6							
7							
8							
Total		**100.00**	**100.00**	**100.00**			

NOTES ON GASES:

CORROSION CAUSED BY:

COMPRESSOR SKETCH

NOTES:

(1) THE ELECTRICAL MOTOR SHALL BE IN ACCORDANCE WITH "TECHNICAL SPECIFICATION FOR LV MOTORS " DOC.No.900-SPC-A4-EE-0005 "
BY VENDOR, MOTOR ENCLOSURES SHALL BE OF TOTALLY ENCLOSED FAN-COOLED (TEFC)

(2) ALL INSPECTIONS & TEST PLANS SHALL BE DONE IN ACCORDANCE WITH 'Inspection & Test Plan for Centrifugal Compressors'
DOC.No.900-ITP-A4-RE-0004.

(3) UTILITY CONDITIONS MUST BE CONSIDERED BASED ON DOC.No.900-SPC-A4-PR-0006.

(4) ALL ELECTRICAL MOTORS SHOULD BE ACCORDANCE EXPLOSION PROOF STANDARD **EXIICT3.**

(5) THE APPROPIATE STANDARD FOR COMPRESSORS IS BASED ON API-617

(6) TYPE OF COMPRESSOR IS ASSUMED TO BE SINGLE SHAFT TYPE.

(7) TURNDOWN RATIO FOR THESE TYPE OF COMPRESSORS IS TO BE 60%.

(8) ALL PRINCIPLES OF LUBICATION, VIBRATION MONITORING, CAPACITY CONTROL, COOLING, PROTECTION AND INSTRUMENTATION ARE VITAL
AND SHALL BE CONSIDERED ACCORDING TO DOCUMENTS ATTACHED AS APENDIXES; INSTRUMENTATION GENERAL SPECIFICATION,
TECHNICAL SPECIFICATION FOR LV MOTORS, UTILITY CONDITION.

REV. 03

Process Data Sheet

CENTRIFUGAL COMPRESSOR

DATE: October 10, 2021

PLANT: **PE-PP R&T Arak Center** | AREA: **400** | SHEET: 4 OF 6

SERVICE	**2nd GAS PHASE REACTOR COMPRESSOR**					ITEM	**CF-421**	
TYPE AND MODEL			Quantity: **1**					
LOCATION	☐ OUTDOOR	☑ UNDER ROOF		☐ MEZZANINE		☑ GROUND FLOOR		
	ENGINEERING DATA							
COMPRESSOR SPEED	**3000 RPM Shall be preffered**	RPM	CRITICAL SPEEDS 1st			RPM		
MAX CONTINUOUS SPEED		RPM	CRITICAL SPEEDS 2nd			RPM		
SURGE LIMIT	m3/h	AT DESIGN CONDITIONS		% OF DESIGN CAPACITY				
DIRECTION OF ROTATION (COMPRESSOR VIEWED FROM MOTOR								
	MATERIALS AND CONSTRUCTION							
COMPRESSOR CASING	SPLIT	☑ HORIZONTAL	☐ VERTICAL	MATERIAL	**SS.304**			
	THICKNESS		mm	CORROSION ALLOWANCE			mm	
	MAX ALLOWABLE TEMP.	**180** °C		MAX ALLOW.PRESS/HYDR.TEST	**30**	bar g		
IMPELLERS	TYPE	☐ ENCLOSED	☑ OPEN	MATERIAL	**Stainless steel**			
	CONSTRUCTION	☐ CAST	☑ WELDED	☐ RIVETED	☑ MILLED	☐		
	No.	DIAMETERS		MAX				
DIAPHRAGMS	COOLED	☐ YES	☐ NO	MATERIAL				
LABYRINTHS	RADIAL CLEARANCES		mm	MATERIAL				
SHAFT	DIAMETERS (IMPELLER FIT)		mm	MATERIAL				
RADIAL BEARINGS	HOUSING	☐ INTEGRAL	☐ SEPARATE					
	TYPE	☐ BABBIT METAL PLATED SHELLS		☐				
	LUBRICATION	☑ RING	☐ FORCED	☐	OIL PRESS.	bar g		
	SPAN mm	DIAMETER mm	LENGTH mm	CLEARANCE	mm			
THRUST BEARINGS	TYPE	☐ KINGSBURY SINGLE	☐ KINGSBURY DOUBLE	☐ BALL	☐ ROLLER			
SHAFT SEAL **(NOTE 1)**	LUBRICATION	☐ FORCED	☑ RING	☐	OIL PRESS.	bar g		
BASEPLATE	TYPE	☐ LABYRINTH	☐ LIQUID FILM	☑ MECHANICAL	☐ RING			
	TYPE	☐ WELDED STEEL	☐ CAST STEEL	☐				
	COMMON WITH COMPRESSOR AND MOTOR		☐ YES	☑ NO				
	SUPPLIED BY	☑ COMPRESSOR MANUFACTURER						

COUPLING	POSITION	GEAR MOTOR	COMPR. MOTOR	COMPR. TURBINE	
	MANUFACTURER				
	TYPE				
	LUBRICATION				

COUPLING GUARD	TYPE	☐ SHEET STEEL	☐ NONSPARKING ☐
	SUPPLIED BY	☐ COMPRESSOR MANUFACTURER	

OTHER PARTS:

MASS: COMPRESSOR WITHOUT BASE PLATE	Kg	MAX FOR MAINTENANCE	Kg
MASS: MAX TO MOUNTING	Kg	COMPRESSOR WITH BASE PLATE	Kg

CONNECTIONS

CONNECTION (a)	SIZE	RATING	FACING	UPWARDS	DOWNWARDS	RIGHT (b)	LEFT (b)
INTAKE PIPING	**8"**	**#300**	**RF**	☐	☐	☐	☐
DELIVERY PIPING	**6"**	**#300**	**RF**	☐	☐	☐	☐
				☐	☐	☐	☐
				☐	☐	☐	☐
				☐	☐	☐	☐
				☐	☐	☐	☐

PURGE CONNECTIONS LIQUID USED	SIZE	RATING AND FACING	No.	
DRAIN CONNECTIONS	SIZE	RATING AND FACING	No.	
VENT CONNECTIONS	SIZE	RATING AND FACING	No.	

NOTES:

NOTE 1: It is recommended to be Face to Face Type of Gas Seal

REV. 03

Process Data Sheet

CENTRIFUGAL COMPRESSOR

DATE: October 10, 2021

PLANT: **PE-PP R&T Arak Center** | AREA | SHEET 5 OF 6

SERVICE **2nd GAS PHASE REACTOR COMPRESSOR** | ITEM

TYPE AND MODEL | Quantity: **1**

LOCATION ☐ OUTDOOR ☑ UNDER ROOF ☐ MEZZANINE ☑ GROUND FLOOR

LUBRICATION AND SEALING SYSTEM

COMPRESSOR MANUFACTURER WILL SUPPLY A FORCED OIL LUBRICATION SYSTEM

COMMON WITH ☐ COMPRESSOR ☑ GEAR ☐ DRIVER ☐

☐ COMBINED WITH SEAL OIL SYSTEM ☐ SEPARATE FROM SEAL OIL SYSTEM ☐ WITHOUT SEAL OIL UNIT

SYSTEM ACCORDING TO DIAGRAM FIG. OF API STANDARD No. 617

OIL SYSTEM		LUBRICATION		SEAL	
TYPE OF OIL USED					
WORKING PRESSURE	bar g				
MAX ALLOWABLE PRESSURE	bar g				
REQUIRED OIL FLOW RATE	m^3/h				
RESERVOIR: MOUNTED ON		☐ BASE PLATE	☐ CONSOLE	☐ BASE PLATE	☐ CONSOLE
CAPACITY	m^3				
RETENTION TIME	min				
PROVIDED WITH HEATER		☐ ELECTRIC	☐ STEAM	☐ ELECTRIC	☐ STEAM
MATERIAL					
MAIN PUMP; MANUFACTURER					
TYPE-MODEL					
CASING MATERIAL					
CAPACITY-SPEED-POWER		m^3/h RPM KW		m^3/h RPM KW	
MOUNTED ON		☐ BASE PLATE	☐ CONSOLE	☐ BASE PLATE	☐ CONSOLE
DRIVEN BY		☐ SHAFT ☐ MOTOR ☐ TURBINE		☐ SHAFT ☐ MOTOR ☐ TURBINE	
STAND-BY PUMP; MANUFACTURER					
TYPE-MODEL					
CASING MATERIAL					
CAPACITY-SPEED-POWER		m^3/h RPM KW		m^3/h RPM KW	
MOUNTED ON		☐ BASE PLATE	☐ CONSOLE	☐ BASE PLATE	☐ CONSOLE
DRIVEN BY		☐ SHAFT ☐ MOTOR ☐ TURBINE		☐ SHAFT ☐ MOTOR ☐ TURBINE	
AUTOMATIC START		☐ YES	☐ NO		
ACTUATED ON				☐ YES	☐ NO
PUMP SAFETY VALVES; SET PRESS.	bar g				
TYPE		☐ INTEGRAL	☐ SEPARATE	☐ INTEGRAL	☐ SEPARATE
OIL COOLER		☐ DUAL	☐ SINGLE	☐ DUAL	☐ SINGLE
MOUNTED ON		☐ BASE PLATE	☐ CONSOLE	☐ BASE PLATE	☐ CONSOLE
COOLING MEDIUM					
CONSTRUCTION CODE		☐ TEMA C	☐	☐ TEMA C	☐
SHELL MATERIAL					
PIPE MATERIAL					
EXCHANGING HEAT	KW				
FILTERS		☐ SINGLE	☐ DUAL	☐ SINGLE	☐ DUAL
MANUFACTURER -TYPE					
FILTERING DEGREE					
FILTERING ELEMENT		☐ REPLACEABLE	☐ CLEANING TYPE	☐ REPLACEABLE	☐ CLEANING TYPE
BODY MATERIAL					
VALVES: BODY MATERIAL					

OIL DRAINS: REQUIRED	☐ YES	☐ NO	SUPPLIED BY
MOUNTED ON	☐ BASE PLATE	☐ CONSOLE	☐
MAX SEAL OIL LEAK			LITERS/DAY
OVERHEAD SEAL OIL TANK: REQUIRED	☐ YES	☐ NO	
SUPPLIED BY	☐ COMPRESSOR MANUFACTURER	☐	
PLACED	METERS ABOVE COMPRESSOR CENTERLINE		
CLARIFIER: REQUIRED	☐ YES	☐ NO	
SUPPLIED BY	☐ COMPRESSOR MANUFACTURER	☐	
CAPACITY	☐ 100% DAY	☐ 50% DAY	☐
OIL PIPING MATERIAL	☐ C-STEEL, CLEAN AND PICKLED		
	☐ STAINLESS STEEL	☐	
DRAIN OIL PIPING MATERIAL	☐ STAINLESS STEEL	☐	

OTHER DATA

NOTES:

REV. 03

Process Data Sheet

CENTRIFUGAL COMPRESSOR

DATE: October 10, 2021

PLANT: **PE-PP R&T Arak Center** | AREA | SHEET 6 OF 6

SERVICE: **2nd GAS PHASE REACTOR COMPRESSOR** | ITEM

TYPE AND MODEL | Quantity: **1** 0

LOCATION: ☐ OUTDOOR ☑ UNDER ROOF ☐ MEZZANINE ☑ GROUND FLOOR

INSTRUMENT AND PROTECTIONS

INSTRUMENT READ OUT: ☐ METRIC UNITS ☐ ENGLISH UNITS

LOCAL PANEL FOR COMPRESSOR SUPPLIED BY: ☑ COMPR.MANUF. ☐ PURCHASER ☐ NOT REQUIRED ☐ NOT NEEDED

ELECTRICAL AND INSTRUMENT CONNECTIONS SHALL BE BROUGHT OUT TO TERMINAL BOXES BY:

☐ COMPR.MANUFACTURER ☐ PURCHASER

METERS AND INDICATORS	MANUFACTURER	TYPE AND SIZE
PRESSURE GAUGES		
THERMOMETERS		
LEVEL INDICATORS		
SIGHT FLOW INDICATORS		
TACHOMETERS		
PRESSURE SWITCHES		
TEMPERATURE SWITCHES		
AXIAL DISPLACEMENT INDICATORS		
SAFETY AND/OR RELIEF VALVES		
POWER INDICATOR & RECORDER		

INSTRUMENTS COMPRESSOR MANUFACTURER SHALL SUPPLY AS A MINIMUM ◇1

PRESSURE GAUGES	LOCAL MOUNTED	PANEL MOUNTED	PROTECTIONS	ALARM	LOCK
OIL PUMP DISCHARGE	☑	☑	LUBE OIL LOW PRESSURE	☑	☐
LUBE OIL EACH LEVEL	☑	☑	SEAL OIL LOW PRESSURE	☑	☐
SEAL OIL EACH LEVEL	☑	☑	RESERVOIR OIL LOW LEVEL	☑	☐
DIFFERENTIAL, SEAL OIL	☑	☑	GOV. CONTROL OIL LOW PRESSURE	☑	☐
DIFF. BEFORE/AFTER FILTERS	☑	☑	OIL FILTERS DIFF. HIGH PRESSURE	☑	☐
GOV. CONTROL OIL	☑	☑	COMPR. DISCHARGE HIGH TEMP.	☑	☐
COMPRESSOR DISCHARGE	☑	☑	ROTOR AXIAL POSITION	☑	☐
COMPRESSOR SUCTION	☑	☑	STARTING OF AUXILIARY/SPARE PUMPS	☑	☐
INTERMEDIATE STAGES	☑	☑	HIGH VIBRATIONS ON EACH BEARING	☑	☐
			HIGH TEMP. LUBE OIL	☑	☐
THERMOMETERS:			HIGH TEMP EACH BEARING	☑	☐
OUTLET, EACH BEARING	☑	☑		☐	☐
OUTLET, EACH SEAL	☑	☑			
COOLER INLET/OUTLET	☑	☑			
COMPR. SUCTION/DISCHARGE	☑	☑			

☐ REMOTE LOCKING ☐ ELECTRIC ☐ PNEUMATIC ☐ HYDRAULIC

☐ AXIAL POSITION CONTINUOUS INDICATOR

☐ VISUAL FLOW INDICATOR ON EACH OIL OUTLET LINE FOR BEARINGS-SEAL-COUPLINGS

☐ LEVEL GAUGES LUBE

TO ACTUATE ALARMS AND LOCKS THE CONTACT WILL:

☐ OPEN ☐ CLOSE TO SOUND ALARM

☐ OPEN ☐ CLOSE TO LOCK

ALARM AND LOCK CONTACTS WILL BE SEPARATE AND:

☐ ONE-POLE DOUBLE-THROW TYPE

☐ TWO-POLE DOUBLE-THROW TYPE

CONTROL

METHOD: ☐ SPEED VARIATION FROM TO RPM ON ☐ SUCTION ☐ DISCHARGE

☐ BY-PASS FROM TO % ☐ AUTOMATIC ☐ MANUAL

CONTROL DEVICE: ☐ WITH PRESSURE SWITCH ☐ WITH THERMOSTAT

SIGNAL FROM | TYPE | RANGE

EFFECT ON VARIATION

ANTISURGE CONTROL

NOTES:

REV. 03