







OWNER:  شرکت سست و سویی تومر ایران (سهامی خاص)	BUSHEHR PETROCHEMICAL COMPANY MEG PLANT						EPC CONTRACTOR:  Chagalesh-Enerchimi-Steam Joint Venture BUPC-MEG PLANT PROJECT		
	COMPRESSOR FAT TEST PROCEDURE							 Netherlands	
MC :  شرکت سست و سویی تومر ایران (سهامی خاص)	Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No : 52-98/445	
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 		BUSHEHR PETROCHEMICAL COMPANY MEG PLANT
Document Review		
Issue Purpose:	IFA	
Result Code: AP,AN,CM,RE,NC	CM	
Next Status : IFC,IFA,IFI,AFC,AB,IFR	IFA	
Responsible Department	INSPECTION	
Commented Date	12/14/2021	
Approval or review hereunder shall not be construed to relieve Vendor / Subcontractor of his responsibilities and liability under the contract.		

COMPRESSOR FAT TEST PROCEDURE

Comments:

1. Lube oil filters shall be checked and replaced to new filters for shipment after Mechanical Running Test is completed.
2. The combined performance of the compressor and its driver under all operating conditions shall be the responsibility of the Vendor. The combined unit (or complete package, if applicable) shall perform as well on its permanent foundation as it did on the Manufacturer's test stand.
3. All requirements of API 618 standard for mechanical running test and performance test shall be added.
4. Monitoring system conditions included gauges, Trans meters and etc shall be added.
5. How to calculate power and efficiency shall be added. The efficiency value shall not be less than specified value. The power consumption also shall be checked not to be more than 3% of rated value.
6. The API 618, requires that the reciprocating compressor manufacturer makes necessary calculations and provide the vibration limits. The vibration testing is done in 4 hour mechanical running test.
7. All job and shop equipments condition during FAT shall be cleared.

00	12/11/2021	For approval		KP	KP	PW	
Rev.	Date	Purpose of Issue		Prepared	Checked	Approved	AC Code
						Class: 1	Phase: p

OWNER:



شرکت ست و سوس آرمس ایرانیاں
(سهامی ناس)

**BUSHEHR PETROCHEMICAL COMPANY
MEG PLANT**

EPC CONTRACTOR:



Chagalesh-Enerchimi-Steam
Joint Venture
BUPC-MEG PLANT PROJECT

MC :



شرکت ست و سوس آرمس ایرانیاں
(سهامی ناس)

COMPRESSOR FAT TEST PROCEDURE








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1. Purpose

Checking the performance and functioning of the process documents and specifications.

Separate test reports for each test will be generated. This document covers only the procedure to be performed on all skids.

Project document number shall be added.

Reference documents

Following document shall be added to reference list:

- 1- Trip and alarm set point list
- 2- IO list
- 3- JB/UCP/LCP wiring diagram
- 4- JB/UCP/LCP drawing
- 4- Power distribution panel drawing
- 5- Power distribution panel wiring diagram
- 6- Modbus list

2.1. Vendor documents






Please find below the reference vendor documents that will be used during this FAT.

17811-03	P&ID
17811-04	General Arrangement Drawing
17811-05	Wiring Diagram
17811-06	Panel lay-out
17811-08	Inspection & Test Plan (ITP)
17811-21	Control Philosophy
17811-27	Cause and Effect chart

2.2. Manufacturing data book

The manufacturing data book will also be available for review during the FAT. The MDB will be checked according to the approved MDB index and ITP.

The client or client TPI will sign the relevant pages as well as all relevant point of the ITP.

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3. Scope

The scope of supply is as follows

1. One (1) Nitrogen Compressor (outlet capacity 9 and local MCC panel) reciprocating with motor driver.
2. One (1) Air Compressor (outlet capacity 43 Nm³/hr), oil free reciprocating with motor driver.

The compressor packages are equipped with LCP and local Junction Boxes. The control for the compressors will be done with by Airpack. The UCP will be connected through Modbus.

The compressor cooling will be cooled by an open cooling water system.





4. HSE

Standard safety precautions have to be taken since we are working with pressurised air.

- Proper PPE has to be worn when working / testing the package
- All visitors for the FAT will be instructed before the FAT, about Airpack safety precautions, by Airpack Safety movie.
- All visitors will be asked to sign a disclaimer to be able to enter the hazardous area during the test.
- The test area is cordoned off to make sure non-authorized personnel does not enter this area.

5. FAT Kick off meeting

Before starting the FAT there will be a short kick off meeting, where Airpack will explain the safety rules and regulations as well as what activities and planning will be performed during the FAT.

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Kick-Off Meeting (KOM) Agenda.

- i. Introduction/Sign in (along with the name, role/designation)
- ii. HSE Induction
- iii. FAT organization, roles and responsibilities of the personnel involved.
- iv. Briefing on duration and sequence of tests planned, timing etc.

Also proper PPE will be distributed as required.

6. Roles and responsibilities

The project manager is responsible for the complete FAT. The project manager will arrange the persons who are required for each part of the FAT.

A qualified AIRPACK Technician who is familiar with the operational parameters of the Package will perform all FAT tasks

6.1. Problem resolution






If there are any problems during the FAT, they will be rectified immediately if possible, if not possible they will be recorded in the FAT punch list and resolved before shipment /commissioning of the package.

Please find attachment 1: Punch list format.

7. Test Instruments

The following test instruments will be used during the FAT, all instruments will have a valid calibration certificate which will be supplied as part of the FAT test results for checking and signing.

- Paint thickness meter
- Sound level meter
- Ambient pressure / temperature meter
- Multi meter (voltage check)
- Etc.

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8. Utilities

The utilities that are available during FAT are:

- Power: 400V / 50Hz / 3ph and 230V / 50Hz / 1ph
- Instrument Air: 43 - 90 Nm³/hr, 7.0 - 9.0 bar(g), 5 °C - 55 °C

9. Test procedure

Test may not be done in below order; it is subject to availability of personnel and equipment.

9.1. Mechanical checks

The following will be tested / checked and recorded as part of the FAT:

Quality

- 1 Verify all equipment are installed in accordance with approved P & ID and GAD.
- 2 Visual inspection of the complete package for quality.
- 3 Verify piping, tubing location, orientation in accordance with approved GA Drawing.

P&ID review






- 1 Verify all components are installed as per the GA Drawing.
- 2 Check that all components are tagged according to the P&ID.
- 3 Check that the location is of the components is as per the GAD.

Dimensions

- 1 Dimensional check of the complete package for compliance to approved GA Drawing.
- 2 Verification and dimensional check of Tie-in Point, lifting points (If any).
- 3 Verification and dimensional check of foundation holes.

Painting

- 1 Check the overall paint for damages and overall quality.
- 2 Randomly check the thickness as per the approved paint procedure.
- 3 Check the paint color as per the paint procedure.

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Control Panel

- 1 Check for any loose connection in the control panel.
- 2 Verify all control panel BOM, GA, wiring, I/O etc., matches approved drawings.
- 3 Check the installation and type of cable glands.
- 4 Check the installation of the cable trays.
- 5 Check the cable type.

Instruments

- 1 Check for any loose connection of cables or wires in the instruments.
- 2 Check the installation of the instruments as per approved drawings.
- 3 Check if all instruments are tagged.
- 4 Check the quantity of the instruments.

All checks are mentioned in attachment 2: Equipment checklist

9.2. Functional test control system

A functional test will be executed on local control panels.

The functional test will be performed as per attachment 3: Functional test results






Following items are functionally tested / checked:

- Power up checks
- Grounding check (instruments will be earthed externally)
- I/O checks
- Alarms (10% random alarms are individually dry tested)
- Trips (10% random trips are individually dry tested)
- Check functionality of panel displays (HMI)
- Cause and effect test of the package
- Operation check (start, stop, etc.)

9.3. Performance test (two hours)

Test set-up for the package is as follows:

- The power from the package will come from internal power supply
- 400V / 50Hz / 3ph and 230V / 50Hz / 1ph
- Program is on.

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The following measurements will be taken during the performance test.

- Sound level at 1 metre distance from skid (max. 85 dB(A)).
- Instruments will be monitored.
- Refer to Attachment 1 for an example of the performance test results sheet, which will be filled in during FAT.

All in house instruments required / used during the test will have recent calibration certificated, which will be attached to the FAT test report.

The FAT recordings can be found in attachment 4: Performance test results

9.4. Noise level measurement

Noise test will be done during the performance test. Measuring points will be defined by a distance of 1 metre from the package and measured round the package. Final measuring point will be the same as start measure point. This is for checking correct functioning of the noise level meter.

Noise level shall not exceed 85 dB(A) for complete package at 1 metre distance (with package test blow off muffler closed).

The measurement will be recorded in attachment 5: Noise test results.

9.5. Vibration measurement

Vibration measurement will be done with job vibration transmitter.

The vibration level should not exceed 8 mm/s.

Acceptance criteria should be based on the 618 API standard

vibration is measured in X, Y, and Z axes (Horizontal, Vertical, and Axial)