



ASPC Project



END CUSTOMER	: Arya Sasol Polymer Company
CONTRACTOR	: DYPNF Co., Ltd.
VENDOR NAME	: Airpack Netherlands BV
EQUIPMENT DESCRIPTION	: Screw Compressor & Roots Blower : Package
PURCHASE ORDER NUMBER	: PO-PC2312-08

Customer Document : 3944-VD-0171-DYP-RE-400-PRC-0012 **0137**
Number

Airpack Document Number : 23383-15

Document Title : ~~NDE procedure~~ **FAT Procedure**






We have separated the comments by compressor type.
Kindly reflect the respective comments accordingly.
(Page. 2~19 & Page.20~37)

Review Code and Status		Contractor Initials/Signature	Date signed
<input checked="" type="checkbox"/>	Code 1 REJECTED - Vendor to revise and Resubmit. Work cannot proceed		10 Jul 2025
<input type="checkbox"/>	Code 2 Comments As Noted - Work May proceed, subject to compliance with and incorporation of comments		
<input type="checkbox"/>	Code 3 No Comments - Work may proceed.		
<input type="checkbox"/>	Code 4 Information only - Review not required.		

00	Issued for Approval	07-03-2025	SC	KP	JJ
Rev. No.	Description	Date	Prepared by	Checked by	Approved by

Nitrogen Compressor

44C-40001A,B

CONTRACTOR:  	300 KT POLYETHYLENE PLANT ARYA SASOL POLYMER COMPANY (ASPC)	OWNER:  شرکت پلیمیر آریا ساسول ARYA SASOL POLYMER COMPANY آریا ساسول پلیمر																				
VENDOR LOGO: 	FAT PROCEDURE	MC:  شرکت ایزدکو ISED CO گروه مهندسی و مشاوره																				
Owner Document Number :	<table border="1"> <tr> <th>OWNER Project No.</th> <th>Vendor DOC.</th> <th>MR No.</th> <th>Vendor Code</th> <th>Discipline</th> <th>Unit</th> <th>Type</th> <th>Seq. No</th> <th>Rev.:</th> <th>Page</th> </tr> <tr> <td>3944</td> <td>VD</td> <td>0171</td> <td>DYP</td> <td>RE</td> <td>400</td> <td>PRC</td> <td>0137</td> <td>00</td> <td>1 of 24</td> </tr> </table>	OWNER Project No.	Vendor DOC.	MR No.	Vendor Code	Discipline	Unit	Type	Seq. No	Rev.:	Page	3944	VD	0171	DYP	RE	400	PRC	0137	00	1 of 24	
OWNER Project No.	Vendor DOC.	MR No.	Vendor Code	Discipline	Unit	Type	Seq. No	Rev.:	Page													
3944	VD	0171	DYP	RE	400	PRC	0137	00	1 of 24													

MC/Client:

- 1- According to the ITP document, the relevant reports should be available.
- 2- Before coupling the motor, free-run tests should be performed and compared with the provided reports.
- 3- Items related to motor tests should be performed after coupling and while under load.

SazehFSD:

1. Compressor/fan actual operating curves shall be checked based on curves which should be mentioned in DAS.
2. Function test of transmitters and LCP shall be checked.
3. Mechanical run and function test of all rotary valves shall be performed.
4. Functional test and leak test of diverter valves shall be performed.
5. Function test of filters shall be performed

These comments are applicable to Pellet conveying system also.

FAT PROCEDURE

MC/Client:

1. Insulation Resistance Test (IR Test)
2. Winding Resistance Measurement
3. Phase Rotation and Continuity Check
4. High Voltage (Hi-Pot) Test
5. No-Load Running Test
6. Full Load or Simulated Load Test (If possible)
7. Temperature Rise Test(Type Test Document)
8. Vibration Measurement
9. Noise Level Measurement
10. Protection & Control Functionality Test

P.O. No.:	SHAU23-006-DYPNF-ASS	RESULT CODE : <input type="checkbox"/> AP <input type="checkbox"/> AN <input checked="" type="checkbox"/> CO <input type="checkbox"/> RE
MR. No.:	3944-SZP-RE-400-MRQ-0171	NEXT STATUS : <input type="checkbox"/> IFI <input checked="" type="checkbox"/> IFA <input type="checkbox"/> AFC <input type="checkbox"/> ASB or FIN
Item No. (Equipment No.):	Common	RESUBMISSION DATE :
Vendor Job No.:	PC2312	Approval or review hereunder shall not be considered to relieve Vendor/ Subcontractor of his responsibilities and liability under the Contract.

M.Shakiba 2025-Jul-05

00	04.Jun,2025	Issue for Approval	H.J Kim	S.M Han	C.K Choi	
Rev.	Date	Purpose of Issue	Prepared	Checked	Approved	AC Code

Airpack Netherlands BV 	<h1>ASPC Project</h1>		
DATE: 07-03-2025	DOC NO. 23383-14 FAT Procedure	Rev. No. 00	Page 2 of 17

1.	Purpose.....	3
2.	Reference documents	3
2.1.	Vendor documents	3
2.2.	Manufacturing data book.....	3
3.	Scope	4
4.	HSE.....	4
5.	FAT Kick off meeting	4
6.	Roles and responsibilities.....	5
6.1.	Problem resolution	5
7.	Test Instruments	5
8.	Utilities.....	5
9.	Test procedure	6
9.1.	Mechanical checks.....	6
9.2.	Functional test control system.....	6
9.3.	Performance test (two hours).....	7
9.4.	Noise level measurement.....	8

Airpack Netherlands BV 	<h1>ASPC Project</h1>		
DATE: 07-03-2025	DOC NO. 23383-14 FAT Procedure	Rev. No. 00	Page 3 of 17

1. Purpose

Checking the performance and functioning of the package against the approved documents and specifications.

Separate test reports for each test will be generated; however, this FAT procedure covers only the procedure to be performed on all skids.

2. Reference documents

RED: Bellow references name and doc no to be corrected based on latest revision of VPIS.

2.1. Vendor documents

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

3944-VD-0171-DYP-RE-400-PID-0016	23383-03	P&ID
3944-VD-0171-DYP-RE-400-DWG-0020	23383-04	GA DRAWING FOR CONVEYING NITROGEN COMPRESSOR WITH PART LIST(44C-40001A/B)
3944-VD-0171-DYP-RE-400-DWG- 0162	23383-05	COMPRESSOR WIRING DIAGRAM
3944-VD-0171-DYP-RE-400-DWG- 0161	23383-07	COMPRESSOR PANEL DRAWING LAYOUT
3944-VD-0171-DYP-RE-400-ITP-0120	23383-08	Inspection & Test Plan (ITP)
3944-VD-0171-DYP-RE-400-PRC-0081	23383-21	CONTROL NARRATIVE
3944-VD-0171-DYP-RE-400-DIA-0082	23383-27	CAUSE AND EFFECT DIAGRAM

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.

RED: Bellow references to be added to List:

- NOISE TEST PROCEDURE FOR COMPRESSOR/ROTARY VALVE; doc no: 3944-VD-0171-DYP-RE-400-PRC- 0123
- BALANCE TEST PROCEDURE FOR COMPRESSOR ; doc no: 3944-VD-0171-DYP-RE-400-PRC- 0124
- MECHANICAL RUNNING TEST PROCEDURE FOR ROTARY EQUIPMENT AND VALVES ; doc no: 3944-VD-0171-DYP-RE-400-PRC-0125
- PERFORMANCE TEST PROCEDURE FOR EQUIPMENT; doc no: 3944-VD-0171-DYP-RE-400-PRC-0126

Airpack Netherlands BV 	<h1>ASPC Project</h1>		
DATE: 07-03-2025	DOC NO. 23383-14 FAT Procedure	Rev. No. 00	Page 4 of 17

RED: Flow and Discharge pressure to be modified based in Final Status of documents.

3. Scope

- 2** Screw compressors ~~and 2 root blowers~~, divided in the following way:
- ~~44C-40001A/B: Nitrogen screw compressors, discharge 6255 Nm³/h / 2.903 bar(a)~~
 - ~~44C-80001A/B: Air screw compressors, discharge 4175 Nm³/h / 2.473 bar(a)~~
 - ~~44C-80002A/B: Air root blowers, discharge 4257 Nm³/h / 1.983 bar(a)~~
 - ~~44C-80004A/B: Air screw compressors, discharge 7185 Nm³/h / 3.213 bar(a)~~
 - ~~44C-80005A/B/C: Air screw compressors, discharge 4095 Nm³/h / 2.423 bar(a)~~

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 mov **RED:** Please add a Abbreviation part to procedure for example: **PPE**
- All visitors will be asked 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.

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.

Airpack Netherlands BV 	<h1>ASPC Project</h1>		
DATE: 07-03-2025	DOC NO. 23383-14 FAT Procedure	Rev. No. 00	Page 5 of 17

6. Roles and responsibilities

RED: AIRPACK

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.

MC/Client:
 Following items to be added:
 -Instrument Dimensional and visual check
 -Instrument Order code checking
 -Instrument Certificate review
 (Calibration, material, Eex, SIL, Certificate of Origin,...)
 - Other test based on project specification

8. Utilities

The utilities that are available during FAT are:

- Power: [voltage 6kV, 50Hz, 3ph / 400V, 50Hz, 3ph and/or 230V, 50Hz, 1ph]

Airpack Netherlands BV 	<h1>ASPC Project</h1>		
DATE: 07-03-2025	DOC NO. 23383-14 FAT Procedure	Rev. No. 00	Page 6 of 17

9. Test procedure

RED: Not Accepted. Fat Test shall be done

~~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 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
- 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.

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 pushbutton stations.

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

Airpack Netherlands BV 	<h1>ASPC Project</h1>		
DATE: 07-03-2025	DOC NO. 23383-14 FAT Procedure	Rev. No. 00	Page 7 of 17

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.)

ASPC Rotary :
if this section refer to MRT, then the time should be changed to 4 hours

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
- 6kV / 50Hz / 3ph and 230V / 50Hz / 1ph
- Power is ON
- One performance test will be done per type of compressor/blower

ASPC Rotary :
MRT and performance test should be performed for each compressor/ blower seperatly

The following measurements will be taken during the performance test.

- Sound level at 1 metre distance from skid (max. 85 dB(A))
- Refer to Attachment 4 for an example of the performance test results sheet, which will be filled in during FAT.
- Data is extracted from all the transmitters to check the performance. Gauges can be checked during running and will not be listed in the performance test sheet.

ASPC Rotary:
Vibration measurement should be added

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

MC/Client:
Please specify the ambient temperature range during the performance test to ensure clarity on test conditions.

ASPC Rotary:
Test should be performed with job motor at airpack shop.

ASPC Rotary :
At the end of performance test, the performance curve should be delivered to

ASPC Rotary:
For checking the vibration of compressor, data capturing device (data analyser) with capability of taking FFT spectrum should be available at test shop.(airpack shop)

Airpack Netherlands BV 	<h1>ASPC Project</h1>		
DATE: 07-03-2025	DOC NO. 23383-14 FAT Procedure	Rev. No. 00	Page 8 of 17

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.



300 KT polyethylene project (ASPC)



DATE: 07-03-2025

DOC NO.: 23383-14 ATTACHMENT 1 PUNCH LIST

REV. 00

PAGE: 1

CAUSE:		DATE PUNCH LIST FILLED:	SIGNATURE:	SIGNATURE:
FAT		DD-MM-YYYY	T.B.D.	T.B.D.

Item	Description	Point raised by	Action by	Completion before	Closed [date] [name]
001					
002					
003					
004					
005					
006					
007					
008					
009					
010					
011					
012					
013					
014					
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016					
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038					
039					
040					



300 KT Polyethylene project (ASPC)



DATE: DD-MM-YYYY

DOC NO.: 23383-14 ATTACHMENT 2 EQUIPMENT CHECK LIST

REV. 00

PAGE: 1 of 1

TEST DATE DD-MM-YYYY	SIGNATURE AIRPACK TEST ENGINEER T.B.D.	SIGNATURE CLIENT INSPECTOR T.B.D.	NOTES
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INSPECTION	DOCUMENT	COMPLETED	REMARKS
Quality			
1. Installation of main equipment	GAD / PID		
2. Visual inspection of overall quality	GAD / PID		
3. piping, tubing location / orientation	GAD / PID		
P&ID review			
1. Component check	P&ID		
2. Tagging of all components	P&ID		
3. Component location	P&ID		
Dimensions			
1. Overall skid dimensions	GAD		
2. Tie-in point dimensions	GAD		
3. Foundation bolt holes	GAD		
Painting			
1. Overall Paint quality	Paint procedure		
2. Paint DFT measurement	Paint procedure		
3. Paint color	Paint procedure		
Control Panel			
1. Loose connections	Wiring diagram / Panel lay-out		
2. BOM	Wiring diagram / Panel lay-out		
3. Cable glands	Wiring diagram / Panel lay-out		
4. Cable trays	Wiring diagram / Panel lay-out		
5. Cable type	Wiring diagram / Panel lay-out		
Instruments			
1. Loose connections	Wiring diagram		
2. Installation	P&ID		
3. Tagging	P&ID		
4. quantity	P&ID		



300 KT polyethylene plant project (ASPC)



DATE: 07-03-2025

DOC NO.: 23383-14 ATTACHMENT 4 Performance test

REV. 00

PAGE:

1

Performance Test Results - 44C-40001A

	00:00	00:15	00:30	00:45	01:00	01:15	01:30	01:45	02:00	UNIT	OPERATING VALUES
44PT-4001003 Compressor inlet pressure	START									Bar	
44TT-4001056 Compressor oil temperature										°C	
44PT-4001054 Compressor oil pressure										Bar	
44PT-4001011 Compressor discharge pressure										Bar	
44TT-4001057 Compressor discharge temperature										°C	
44TT-4001001 Compressor enclosure temperature										°C	

Running test starting time:	
Humidity:	R.H.%
Ambient temperature:	°C
Ambient pressure:	hPa

SIGNATURE:	
Airpack Test Engineer:	
Client inspector:	

NOTES;



300 KT polyethylene plant project (ASPC)



DATE: 07-03-2025

DOC NO.: 23383-14 ATTACHMENT 4 Performance test

REV. 00

PAGE:

2

ASPC Rotary :
The below note should be considered for all compressors and blowers.
MRT Time should be 4 hours

Performance Test Results - 44C-80001A

	00:00	00:15	00:30	00:45	01:00	01:15	01:30	01:45	02:00	UNIT	OPERATING VALUES
44PDT-8001001A Compressor inlet filter diff. pressure	START									Bar	
44PT-8004001 Compressor inlet pressure										Bar	
44TT-8001056A Compressor oil temperature										°C	
44PT-8001054A Compressor oil pressure										Bar	
44PT-8004002 Compressor discharge pressure										Bar	
44TT-8004001 Compressor discharge temperature										°C	

ASPC Rotary:
The below note should be considered for all compressors and blowers.
Compressor and motor vibration should be added.
Motor De and NDE side vibration should be measured, for compressor at least 6 points consist of DE and NDE side of each shafts (driver shaft, male and female screws) should be measured.

Running test starting time:	
Humidity:	R.H.%
Ambient temperature:	°C
Ambient pressure:	hPa

SIGNATURE:	
Airpack Test Engineer:	
Client inspector:	

NOTES;



300 KT polyethylene plant project (ASPC)



DATE: 07-03-2025

DOC NO.: 23383-14 ATTACHMENT 4 Performance test

REV. 00

PAGE:

3

Performance Test Results - 44C-80002A

	00:00	00:15	00:30	00:45	01:00	01:15	01:30	01:45	02:00	UNIT	OPERATING VALUES
44PDT-8002001A Blower inlet filter diff. pressure	START									Bar	
44PT-8004005 Blower inlet pressure										Bar	
44PT-8004006 Blower discharge pressure										Bar	
44TT-8004005 Blower discharge temperature										°C	

Running test starting time:	
Humidity:	R.H.%
Ambient temperature:	°C
Ambient pressure:	hPa

SIGNATURE:	
Airpack Test Engineer:	
Client inspector:	

NOTES;



300 KT polyethylene plant project (ASPC)



DATE: 07-03-2025

DOC NO.: 23383-14 ATTACHMENT 4 Performance test

REV. 00

PAGE:

4

Performance Test Results - 44C-80004A

	00:00	00:15	00:30	00:45	01:00	01:15	01:30	01:45	02:00	UNIT	OPERATING VALUES
44PDT-8004001A Compressor inlet filter diff. pressure	START									Bar	
44PT-8004101 Compressor inlet pressure										Bar	
44TT-8004056A Compressor oil temperature										°C	
44PT-8004054A Compressor oil pressure										Bar	
44PT-8004102 Compressor discharge pressure										Bar	
44TT-8004101 Compressor discharge temperature										°C	

Running test starting time:	
Humidity:	R.H.%
Ambient temperature:	°C
Ambient pressure:	hPa

SIGNATURE:	
Airpack Test Engineer:	
Client inspector:	

NOTES;



300 KT polyethylene plant project (ASPC)



DATE: 07-03-2025

DOC NO.: 23383-14 ATTACHMENT 4 Performance test

REV. 00

PAGE:

5

Performance Test Results - 44C-80005A

	00:00	00:15	00:30	00:45	01:00	01:15	01:30	01:45	02:00	UNIT	OPERATING VALUES
44PDT-8005001A Compressor inlet filter diff. pressure	START									Bar	
44PT-8004107 Compressor inlet pressure										Bar	
44TT-8005056A Compressor oil temperature										°C	
44PT-8005054A Compressor oil pressure										Bar	
44PT-8004108 Compressor discharge pressure										Bar	
44TT-8004105 Compressor discharge temperature										°C	

Running test starting time:	
Humidity:	R.H.%
Ambient temperature:	°C
Ambient pressure:	hPa

SIGNATURE:	
Airpack Test Engineer:	
Client inspector:	

NOTES;



300 KT polyethylene plant project (ASPC)



DATE: 07-03-2025

DOC NO.: 23383-14 ATTACHMENT 5 noise test

REV. 00

PAGE: 01 of 01

NOISE LEVEL

Supplier to Complete Expected Noise Level Data

1

2

3

8

INSERT GAD TOP VIEW (LATER)

4

7

6

5

Noise test has been performed during performance test:

Procedure:
Measure point will be defined by a distance of 1 metre from the package and 1,5 metre above the ground level to measured round the package. Final measure points will be the same as start measure points. This is for checking correct functioning of the noise level meter. Noise shall not exceed 85 dB(A) for complete package. Noise meter calibration certificate is available during test

Points	Unit	Noise Estimated	Noise measured	Average of anti logs	Noise level (Logarithmic Avg)	Noise level (Arithmetic Avg)	Test Result: <div style="text-align: center; font-size: 24px; font-weight: bold;">-2</div>
P1	dB(A)	85		1	0	0	
P2	dB(A)	84					
P3	dB(A)	83					
P4	dB(A)	83					
P5	dB(A)	83					
P6	dB(A)	84					
P7	dB(A)	85					
P8	dB(A)	85					
Surrounding Noise measured (dB(A)) : 75 Noise level (After correction (if required) as per 5.3 of ISO 2151):							Tested By : Date: NOTE:
Correction Factor							
Level increase due to	Value to be subtracted from measured						
5	2						
6 to 9	1						
Test Condition : Noise level test as per ISO 2151							

Air Compressor






44C-80001A,B

44C-80004A,B

44C-80005A~C

Roots Blower

44C-80002A,B

CONTRACTOR:  	300 KT POLYETHYLENE PLANT ARYA SASOL POLYMER COMPANY (ASPC)	OWNER: 																				
VENDOR LOGO: 	FAT PROCEDURE	MC: 																				
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SazehFSD:
 - compressor /Fan actual operating curves shall be checked based on curves which should be mentioned in DAS.
 - function test of transmitters and LCP shall be checked.

MC/Client:
 - According to the ITP document, the relevant reports should be available.
 - Before coupling the motor, free-run tests should be performed and compared with the provided reports.
 - Items related to motor tests should be performed after coupling and while under load.

FAT PROCEDURE

MC/Client:
 Insulation Resistance Test (IR Test)
 Winding Resistance Measurement
 Phase Rotation and Continuity Check
 High Voltage (Hi-Pot) Test
 No-Load Running Test
 Full Load or Simulated Load Test (If possible)
 Temperature Rise Test (Type Test Document)
 Vibration Measurement
 Noise Level Measurement
 Protection & Control Functionality Test

P.O. No.:	SHA/23-006 DYPNF-ASS	RESULT CODE : <input type="checkbox"/> IAP <input type="checkbox"/> IAN <input checked="" type="checkbox"/> CO <input type="checkbox"/> RE
MR. No.:	3944-SZP-RE-800-MRQ-0180	NEXT STATUS : <input type="checkbox"/> IFI <input checked="" type="checkbox"/> IFA <input type="checkbox"/> AFC <input type="checkbox"/> ASB or FIN
Item No. (Equipment No.):	Common	RESUBMISSION DATE :
Vendor Job No.:	PC2312	Approval or review hereunder shall not be considered to relieve Vendor/ Subcontractor of his responsibilities and liability under the Contract.

M.Shakiba 2025-Jul-05

Rev.	Date	Purpose of Issue	Prepared	Checked	Approved	AC Code
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DATE: 07-03-2025	DOC NO. 23383-14 FAT Procedure	Rev. No. 00	Page 2 of 17

1.	Purpose.....	3
2.	Reference documents	3
2.1.	Vendor documents	3
2.2.	Manufacturing data book.....	3
3.	Scope	4
4.	HSE.....	4
5.	FAT Kick off meeting	4
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9.3.	Performance test (two hours).....	7
9.4.	Noise level measurement.....	8

1. Purpose

Checking the performance and functioning of the package against the approved documents and specifications.

Separate test reports for each test to be corrected based on latest revision of T procedure covers only the procedure to be performed on a VPIS in Unit 800

RED: Bellow references name and doc no to be corrected based on latest revision of T procedure covers only the procedure to be performed on a VPIS in Unit 800

2. Reference documents

SazehFSD:
 - All documents NO. shall be modified as per approved VPIS.
 - All vendor documents for compressor of unit 800 also to be added for reference.

2.1. Vendor documents

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

3944-VD-0171-DYP-RE-400-PID-0016	23383-03	P&ID
3944-VD-0171-DYP-RE-400-DWG-0020	23383-04	General Arrangement Drawing
3944-VD-0171-DYP-RE-400-DIA-0002	23383-05	Wiring Diagram
3944-VD-0171-DYP-RE-400-DWG-0003	23383-07	Panel lay-out
3944-VD-0171-DYP-RE-400-ITP-0120	23383-08	Inspection & Test Plan (ITP)
3944-VD-0171-DYP-RE-400-PRC-0081	23383-21	Control Philosophy
3944-VD-0171-DYP-RE-400-DIA-0082	23383-27	Cause and Effect chart



2.2.

RED: Bellow references to be added to List:

- NOISE TEST PROCEDURE FOR COMPRESSOR/ROTARY VALVE
- BALANCE TEST PROCEDURE FOR COMPRESSOR
- MECHANICAL RUNNING TEST PROCEDURE FOR ROTARY EQUIPMENT AND VALVES
- PERFORMANCE TEST PROCEDURE FOR EQUIPMENT

The material checked DB will be

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

Airpack Netherlands BV 	ject		
DATE: 07-03-2025	DOC NO. 23383-14 FAT Procedure	Rev. No. 00	Page 4 of 17

RED: Flow and Discharge pressure to be modified based in Final Status of documents.

3. Scope

SazehFSD:
The flow rate and pressure of all compressors is not consistent with compressor data sheet. Vendor to recheck and clarify.

- 7** Screw compressors and 2 root blowers, divided in the following way:
- ~~44C-40001A/B: Nitrogen screw compressors, discharge 6255 Nm³/h / 2.903 bar(a)~~
 - 44C-80001A/B: Air screw compressors, discharge 4175 Nm³/h / 2.473 bar(a)
 - 44C-80002A/B: Air root blowers, discharge 4257 Nm³/h / 1.983 bar(a)
 - 44C-80004A/B: Air screw compressors, discharge 7185 Nm³/h / 3.213 bar(a)
 - 44C-80005A/B/C: Air screw compressors, discharge 4095 Nm³/h / 2.423 bar(a)

4. HSE

Standard safety precautions we are working with pressurised air.

- Proper PPE has to be used when 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.

RED: Please add a Abbreviation part to procedure for example: **PPE**

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.

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.

Airpack Netherlands BV 	<h1>ASPC Project</h1>		
DATE: 07-03-2025	DOC NO. 23383-14 FAT Procedure	Rev. No. 00	Page 5 of 17

6. Roles and responsibilities

RED: AIRPACK

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.

MC/Client:
 Following items to be added:
 -Instrument Dimensional and visual check
 -Instrument Order code checking
 -Instrument Certificate review(Calibration,material,Eex,SIL,Certificate of Origin,...)
 - Other test based on project specification

8. Utilities

The utilities that are available during FAT are:

- Power: [voltage 6kV, 50Hz, 3ph / 400V, 50Hz, 3ph and/or 230V, 50Hz, 1ph]

Airpack Netherlands BV 	<h1>ASPC Project</h1>	
DATE: 07-03-2025	DOC NO. 23383-14 FAT Procedure	Rev. No. 00 Page 6 of 17

RED: Not Accepted. Fat Test shall be done

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
- 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.

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 pushbutton stations.

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

Airpack Netherlands BV 	<h1>ASPC Project</h1>		
DATE: 07-03-2025	DOC NO. 23383-14 FAT Procedure	Rev. No. 00	Page 7 of 17

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.)

ASPC:
if this section refer to MRT,
then the time should be
changed to 4 hours

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
- 6kV / 50Hz / 3ph and 230V / 50Hz / 1ph
- Power is ON
- One performance test will be done per type of compressor/blower

ASPC Rotary :
MRT and performance test
should be performed for each
compressor/ blower separately

The following measurements will be taken during the performance test.

- Sound level at 1 metre distance from skid (max. 85 dB(A))
- Refer to Attachment 4 for an example of the performance test results sheet, which will be filled in during FAT.
- Data is extracted from a **ASPC Rotary: Vibration measurement should be added** to check the performance. Gauges can be checked during running and will not be listed in the performance test sheet.

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

MC/Client:
Please specify the **ambient temperature** range during the performance test to ensure clarity on test conditions.

ASPC Rotary:
Test should be performed with job motor at airpack shop.

ASPC Rotary :
At the end of performance test, the performance curve should be delivered to

ASPC Rotary:
For checking the vibration of compressor, data capturing device (data analyser) with capability of taking FFT spectrum should be available at test shop.(airpack shop)

Airpack Netherlands BV 	<h1>ASPC Project</h1>		
DATE: 07-03-2025	DOC NO. 23383-14 FAT Procedure	Rev. No. 00	Page 8 of 17

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.



300 KT polyethylene project (ASPC)



DATE: 07-03-2025

DOC NO.: 23383-14 ATTACHMENT 1 PUNCH LIST

REV. 00

PAGE: 1

CAUSE:		DATE PUNCH LIST FILLED:	SIGNATURE:	SIGNATURE:
FAT		DD-MM-YYYY	T.B.D.	T.B.D.

Item	Description	Point raised by	Action by	Completion before	Closed [date] [name]
001					
002					
003					
004					
005					
006					
007					
008					
009					
010					
011					
012					
013					
014					
015					
016					
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037					
038					
039					
040					



300 KT Polyethylene project (ASPC)



DATE: DD-MM-YYYY

DOC NO.: 23383-14 ATTACHMENT 2 EQUIPMENT CHECK LIST

REV. 00

PAGE: 1 of 1

TEST DATE DD-MM-YYYY	SIGNATURE AIRPACK TEST ENGINEER T.B.D.	SIGNATURE CLIENT INSPECTOR T.B.D.	NOTES
-------------------------	--	---	-------

INSPECTION	DOCUMENT	COMPLETED	REMARKS
Quality			
1. Installation of main equipment	GAD / PID		
2. Visual inspection of overall quality	GAD / PID		
3. piping, tubing location / orientation	GAD / PID		
P&ID review			
1. Component check	P&ID		
2. Tagging of all components	P&ID		
3. Component location	P&ID		
Dimensions			
1. Overall skid dimensions	GAD		
2. Tie-in point dimensions	GAD		
3. Foundation bolt holes	GAD		
Painting			
1. Overall Paint quality	Paint procedure		
2. Paint DFT measurement	Paint procedure		
3. Paint color	Paint procedure		
Control Panel			
1. Loose connections	Wiring diagram / Panel lay-out		
2. BOM	Wiring diagram / Panel lay-out		
3. Cable glands	Wiring diagram / Panel lay-out		
4. Cable trays	Wiring diagram / Panel lay-out		
5. Cable type	Wiring diagram / Panel lay-out		
Instruments			
1. Loose connections	Wiring diagram		
2. Installation	P&ID		
3. Tagging	P&ID		
4. quantity	P&ID		



300 KT polyethylene plant project (ASPC)



DATE: 07-03-2025

DOC NO.: 23383-14 ATTACHMENT 4 Performance test

REV. 00

PAGE:

1

ASPC Rotary :
The below note should be considered for all compressors and blowers.
MRT Time should be 4 hours

Performance Test Results - 44C-40001A

	00:00	00:15	00:30	00:45	01:00	01:15	01:30	01:45	02:00	UNIT	OPERATING VALUES
44PT-4001003 Compressor inlet pressure	START									Bar	
44TT-4001056 Compressor oil temperature										°C	
44PT-4001054 Compressor oil pressure										Bar	
44PT-4001011 Compressor discharge pressure										Bar	
44TT-4001057 Compressor discharge temperature										°C	
44TT-4001001 Compressor enclosure temperature										°C	

ASPC Rotary:
The below note should be considered for all compressors and blowers.
Compressor and motor vibration should added.
Motor De and NDE side vibration should be measured. for compressor at least 6 points consist of DE and NDE side of each shafts (driver shaft, male and female screws) should be measured.

Running test starting time:	
Humidity:	R.H.%
Ambient temperature:	°C
Ambient pressure:	hPa

SIGNATURE:	
Airpack Test Engineer:	
Client inspector:	

NOTES;



300 KT polyethylene plant project (ASPC)



DATE: 07-03-2025

DOC NO.: 23383-14 ATTACHMENT 4 Performance test

REV. 00

PAGE:

2

SazehFSD:
Tag No.s is not consistent with P&ID.
Vendor to modify.

Performance Test Results - 44C-80001A												
	00:00	00:15	00:30	00:45	01:00	01:15	01:30	01:45	02:00	UNIT	OPERATING VALUES	
44PDT-8001001A Compressor inlet filter diff. pressure	START									Bar		
44PT-8004001 Compressor inlet pressure										Bar		
44TT-8001056A Compressor oil temperature										°C		
44PT-8001054A Compressor oil pressure										Bar		
44PT-8004002 Compressor discharge pressure										Bar		
44TT-8004001 Compressor discharge temperature										°C		

Running test starting time:	
Humidity:	R.H.%
Ambient temperature:	°C
Ambient pressure:	hPa

SIGNATURE:	
Airpack Test Engineer:	
Client inspector:	

NOTES;



300 KT polyethylene plant project (ASPC)



DATE: 07-03-2025

DOC NO.: 23383-14 ATTACHMENT 4 Performance test

REV. 00

PAGE:

3

SazehFSD:
Tag No.s is not consistent with P&ID.
Vendor to modify.

Test Results - 44C-80002A

	00:00	00:15	00:30	00:45	01:00	01:15	01:30	01:45	02:00	UNIT	OPERATING VALUES
44PDT-8002001A Blower inlet filter diff. pressure	START									Bar	
44PT-8004005 Blower inlet pressure										Bar	
44PT-8004006 Blower discharge pressure										Bar	
44TT-8004005 Blower discharge temperature										°C	

Running test starting time:	
Humidity:	R.H.%
Ambient temperature:	°C
Ambient pressure:	hPa

SIGNATURE:	
Airpack Test Engineer:	
Client inspector:	

NOTES;



300 KT polyethylene plant project (ASPC)



DATE: 07-03-2025

DOC NO.: 23383-14 ATTACHMENT 4 Performance test

REV. 00

PAGE:

4

SazehFSD:
Tag No.s is not consistent with P&ID.
Vendor to modify.

Test Results - 44C-80004A

	00:00	00:15	00:30	00:45	01:00	01:15	01:30	01:45	02:00	UNIT	OPERATING VALUES
44PDT-8004001A Compressor inlet filter diff. pressure	START									Bar	
44PT-8004101 Compressor inlet pressure										Bar	
44TT-8004056A Compressor oil temperature										°C	
44PT-8004054A Compressor oil pressure										Bar	
44PT-8004102 Compressor discharge pressure										Bar	
44TT-8004101 Compressor discharge temperature										°C	

Running test starting time:	
Humidity:	R.H.%
Ambient temperature:	°C
Ambient pressure:	hPa

SIGNATURE:	
Airpack Test Engineer:	
Client inspector:	

NOTES;



300 KT polyethylene plant project (ASPC)



DATE: 07-03-2025

DOC NO.: 23383-14 ATTACHMENT 4 Performance test

REV. 00

PAGE:

5

SazehFSD:
Tag No.s is not consistent with P&ID.
Vendor to modify.

Performance Test Results - 44C-80005A

	00:00	00:15	00:30	00:45	01:00	01:15	01:30	01:45	02:00	UNIT	OPERATING VALUES
44PDT-8005001A Compressor inlet filter diff. pressure	START									Bar	
44PT-8004107 Compressor inlet pressure										Bar	
44TT-8005056A Compressor oil temperature										°C	
44PT-8005054A Compressor oil pressure										Bar	
44PT-8004108 Compressor discharge pressure										Bar	
44TT-8004105 Compressor discharge temperature										°C	

Running test starting time:	
Humidity:	R.H.%
Ambient temperature:	°C
Ambient pressure:	hPa

SIGNATURE:	
Airpack Test Engineer:	
Client inspector:	

NOTES;



300 KT polyethylene plant project (ASPC)



DATE: 07-03-2025

DOC NO.: 23383-14 ATTACHMENT 5 noise test

REV. 00

PAGE: 01 of 01

NOISE LEVEL

Supplier to Complete Expected Noise Level Data

1

2

3

8

INSERT GAD TOP VIEW (LATER)

4

7

6

5

Noise test has been performed during performance test:

Procedure:
Measure point will be defined by a distance of 1 metre from the package and 1,5 metre above the ground level to measured round the package. Final measure points will be the same as start measure points. This is for checking correct functioning of the noise level meter. Noise shall not exceed 85 dB(A) for complete package. Noise meter calibration certificate is available during test

Points	Unit	Noise Estimated	Noise measured	Average of anti logs	Noise level (Logarithmic Avg)	Noise level (Arithmetic Avg)	Test Result: <p style="text-align: center; font-size: 24px;">-2</p>
P1	dB(A)	85		1	0	0	
P2	dB(A)	84					
P3	dB(A)	83					
P4	dB(A)	83					
P5	dB(A)	83					
P6	dB(A)	84					
P7	dB(A)	85					
P8	dB(A)	85					
Surrounding Noise measured (dB(A)) : 75 Noise level (After correction (if required) as per 5.3 of ISO 2151):							Tested By : Date: NOTE:
Correction Factor							
Level increase due to	Value to be subtracted from measured						
5	2						
6 to 9	1						
Test Condition : Noise level test as per ISO 2151							