PLEXOR® Features and benefits

Safe:
The system meets the ATEX 95 and IEXEx equipment directive (zone 1). Only high quality materials and components are used, connection hoses have dual locking and cannot be interchanged. Gas trapped in the connection hoses and the inspection system is automatically vented to a safe location outside at the end of the inspection.

Paperless:
Generated measurements are automatically stored on the laptop or tablet of the inspector. From there the data is automatically transferred to the host system. None of these steps require any paperwork, eliminating human error and duplication.

Cost saving:
PLEXOR® enables fast, highly efficient, standardized and objective inspection of the gas pressure regulator stations. Many users have been able to significantly reduce the number of inspections required. Furthermore, significant savings on repairs and maintenance expenditures are possible, especially when switching to condition based maintenance. Experience has shown that the system can typically pay for itself within 4 years. Wigersma & Sikkema can help you to calculate a customer specific business case in which the savings using the PLEXOR® system are compared with the investment which is required to implement it.

Operator independent:
The PLEXOR® inspection system leads the inspector step-by-step through the test procedure. It is therefore not possible to forget or skip any part of the test. Pressure increases or decreases are standardized and therefore generate operator independent and reproducible results.

Condition Based Maintenance:
Comprehensive and accurate test data is generated during the test procedure. This data can be used for detailed analysis and gives a clear insight in the static and dynamic performance of the various components in the gas control line. The inspection data can immediately be compared with the test results from previous inspections. This allows for Condition Based Maintenance, giving you the opportunity to optimize and further save on maintenance costs.

Easy operation:
PLEXOR® is very easy to work with. The connection hoses are connected manually via a double secure “click” system and designed so that they cannot be mixed up. Operation of PLEXOR® is simple, and the inspectors are guided step-by-step through the inspection procedure, by the INSPECTOR PC.

Environmental friendly:
The PLEXOR® inspection system isolates the gas control line which eliminates the need to increase the pressure in the outlet section. Therefore, there is no need for (multiple) releases of gas in the outlet section. Methane, the main component of natural gas, is 25 times more potent in terms of climate change than carbon dioxide.

Reporting:
Upon completion of the test procedure a PDF report can be generated representing the actual measurement results and the rejection boundaries. The lay-out of the report can be easily tailored to your needs, and printed on your letterhead. This provides an independent and auditable proof of the inspection results.

Example inspection protocol

Functional test protocol

PRS	GPRS Station		
GCL	Working Line		
Identification	1502	Date	17.03.16

Signature

Date — Name of 1st Technician

Regulator	Ref. value (Min.):	Ref. value (Max.):	Actual value:
Net pressure:	36 mbar	44 mbar	38,1mbar
Actual flow over ventilation:	36 mbar	44 mbar	39,1mbar
Lockup pressure 1:	40 mbar	48 mbar	47,5mbar
Lockup pressure 2:	40 mbar	48 mbar	47,3mbar
Leakage:	-0,5 mbar/min	0,5 mbar/min	0,3mbar/min
Safety Relief Valve SRV	Ref. value (Min.):	Ref. value (Max.):	Actual value:
Maximum set point:	60 mbar	66 mbar	70,4mbar
Lockup pressure:	54 mbar	60 mbar	55,3mbar
Leakage:	-0,3 mbar/min	0,3 mbar/min	-0,3mbar/min
Safety valve SSV 1	Ref. value (Min.):	Ref. value (Max.):	Actual value:
Maximum set point 1:	80 mbar	88 mbar	85,1mbar
Maximum set point 2:	80 mbar	88 mbar	84,8mbar
Maximum set point 3:	80 mbar	88 mbar	83,2mbar
Tightness Membrane:	-0,3 mbar/min	0,3 mbar/min	0mbar/min
Leakage:	-0,3 mbar/min	0,3 mbar/min	0mbar/min
Pressure range of the GCL:	DP5		
Remarks:			

Performed by

Is the GCL in the original working po ☑ Yes ☐ No

1st Technician: Bartl

Name of 2nd Technician: Jan

Example of inspection protocol

Specifications

Specifications PLEXOR PN100:

Working pressure	20 mbar - 100 bar / 8 inH2O - 1450 PSI
Designed according to	EN14382
IP classification	IP67
Explosionproof	AtEx II 2 G Eex ia IIC T3/4 IECEx
Wireless interface	AtEx II 2 G EEx ia IIB T3 IECEx
Zone division	Zone 1
Stainless Steel connection hoses (standard)	2* 3 m / 10 ft (outlet and SSV) 1* 5 m / 16 ft (inlet)
Nylon vent hose (standard)	1* 10 m / 33 ft
Accuracy manometers	0.1% of reading
Weight	15,5 kg / 34 lbs
Software requirement	Windows 10 or higher
Cable magnetic sensor SSV (optional)	5 m / 16 ft

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product video:

PLEXOR®

Inspection system for pressure regulating stations

Safe operation · Paperless · Cost saving · Operator independent · Condition Based Maintenance · Easy operation · Environmental friendly · Reporting

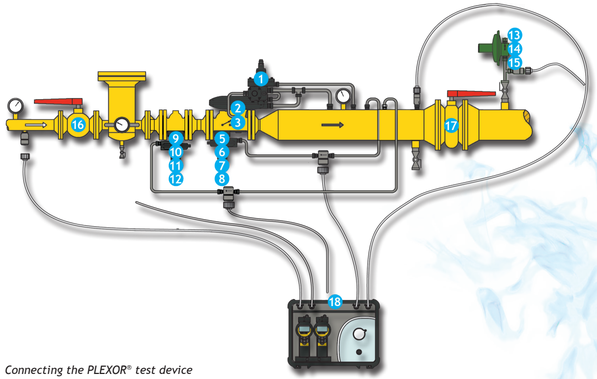
The PLEXOR® inspection system

With the PLEXOR® inspection system Wigersma & Sikkema has set a new standard to inspect gas pressure regulating stations. The PLEXOR® inspection system for gas pressure stations consists of three main parts:

1. **PLEXOR®, the mobile test device**
2. **CONNEXION software suite**
3. **System couplings**

The PLEXOR® mobile test device is connected to a gas control line by means of safe system couplings and connection hoses. It can be used for inlet pressures up to 100 bar/1450 PSI. No gas can escape when the PLEXOR® device is being connected or disconnected, and the system couplings automatically revert to their original operating position when disconnected. The system couplings each have their own specific diameter and thread, so it is impossible to make connection mistakes. The PLEXOR® inspection system is therefore fully safe and fool-proof.

BDA 06 system coupling



Connecting the PLEXOR® test device

What can be tested?

With the PLEXOR® system the main components of a gas pressure regulating station can be tested separately and dynamically. Because of the measurement frequency of 10 Hz a detailed, dynamic and complete overview of the components is obtained, enabling Condition Based Maintenance.

Functional inspection

1. The set point of the gas pressure regulator
2. The lock-up pressure of the gas pressure regulator
3. The leak-tightness of the gas pressure regulator at the lock-up pressure
4. The set points of gas pressure regulators in monitor set-up (not shown)
5. The trip pressure (maximum value) of the main safety device
6. The trip pressure (minimum value) of the main safety device
7. The internal leak-tightness of the main safety device
8. The leak-tightness of the diaphragm of the main safety device
9. The trip pressure (maximum value) of the second safety device
10. The trip pressure (minimum value) of the second safety device
11. The internal leak-tightness of the second safety device
12. The leak-tightness of the diaphragm of the second safety device
13. The trip pressure of the pressure relief valve
14. The lock-up pressure of the pressure relief valve
15. The leak-tightness of the pressure relief valve
16. The leak-tightness of the inlet valve
17. The leak-tightness of the outlet valve
18. The leak-tightness of the PLEXOR® test device itself

Visual inspection

Next to a full functional test of the main gas components the PLEXOR® system can also be used to carry out a customized visual inspection procedure of the gas pressure regulating station. The PLEXOR® system works independent of the make or model of the gas components.

Software

The PLEXOR® inspection system comes complete with the CONNEXION software suite which consists of the following four modules:

1. MANAGER

This module is used (by management) to manage the gas station data, rejection boundaries and test procedures. Customized inspection procedures can be established for each type of pressure regulator station and can be completely tailored to incorporate the existing inspection procedures (incl. visual inspection of the pressure regulating station).

By using the open XML interface the PLEXOR® inspection system can be easily linked to any data management system such as SAP, Maximo, K3V or MainT.

2. INSPECTOR PC

This module is used by the inspector in the field and is available either on a laptop/tablet. It leads the inspector step-by-step through all the actions, in the sequence established for the gas station. The results of the functional inspection of the pressure regulating station are stored in a laptop or tablet for further processing. The data is transmitted wirelessly via BlueTooth, without the intervention of the inspector, thereby preventing any key-in errors, and eliminating the need to manually enter/write test results.

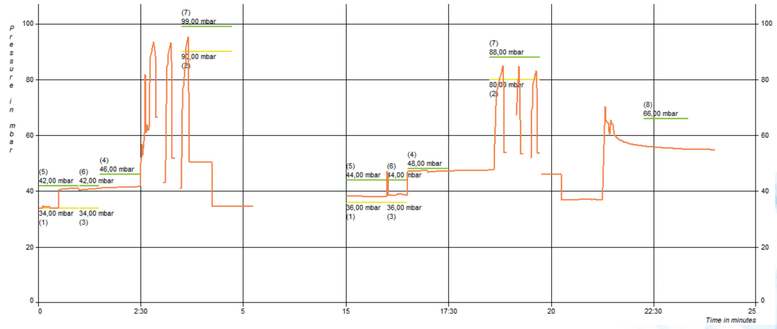
Easy operation with tablet or laptop

3. RESULTS

The RESULTS module allows for direct selection of a specific gas pressure regulating station and easy access to all relevant functional- and visual inspection results. The module also enables storage and printing capability of these results. RESULTS is supplied with standard reports which can be tailored to customer specific requirements, e.g. adding the company logo. Next to the functional inspection results also the rejection limits per measurement are shown. Measured values that are outside the rejection limits are marked and indicated with a different color. Moreover, RESULTS allows for simple selection of all GPRS's which have rendered one or more measured values outside the rejection limits.

4. DIAGNOSTICS

This module is used by the maintenance manager. It provides accurate graphical representation of the measurement data. This gives insight into the condition of the various components of the pressure regulating station. With such data an accurate inspections and maintenance plan can be made based on condition based maintenance: "If it aint broke, don't fix it!"
Using the many years of experience Wigersma & Sikkema also offer the service of analyzing your inspection results and providing you with expert advice with regards to maintenance and repair.

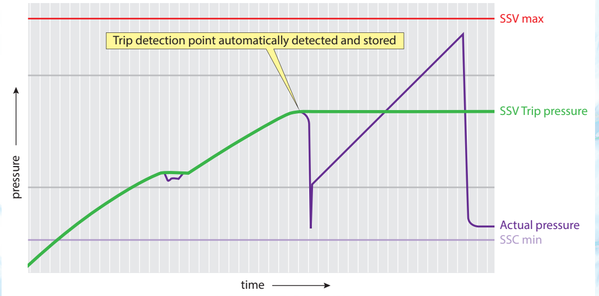


graphical representation of the measurement data

Optional: automated trip detection of the slam shut device

With a specially designed sensor that is magnetically connected to or near the slam shut device it is now possible to automatically detect the tripping point. When the sensor is activated the pressure increase to the slam shut device is stopped automatically and the measurement results are stored. In this way, it is prevented that the correct value is lost. The sensor is connected to the PLEXOR® test device by means of a wired connection.

Magnetic sensor



Automated trip detection