Application
Real-time monitoring and verification of compressed breathing air quality

Goal
Ensuring safety and reliability of breathing air used by firefighters

Sector
Fire and Rescue Services

Customer
Fire squadron equipment maintenance center

Ensuring Reliable Breathing Air Quality

In Fire Equipment Maintenance

Overview
The maintenance center services firefighting vehicles and manages the safe filling of breathing air cylinders. The process involves three stages: compression, storage, and distribution.

Traditionally, air quality was managed by routine filter changes, but this did not ensure purity due to changing environmental conditions and filter aging.

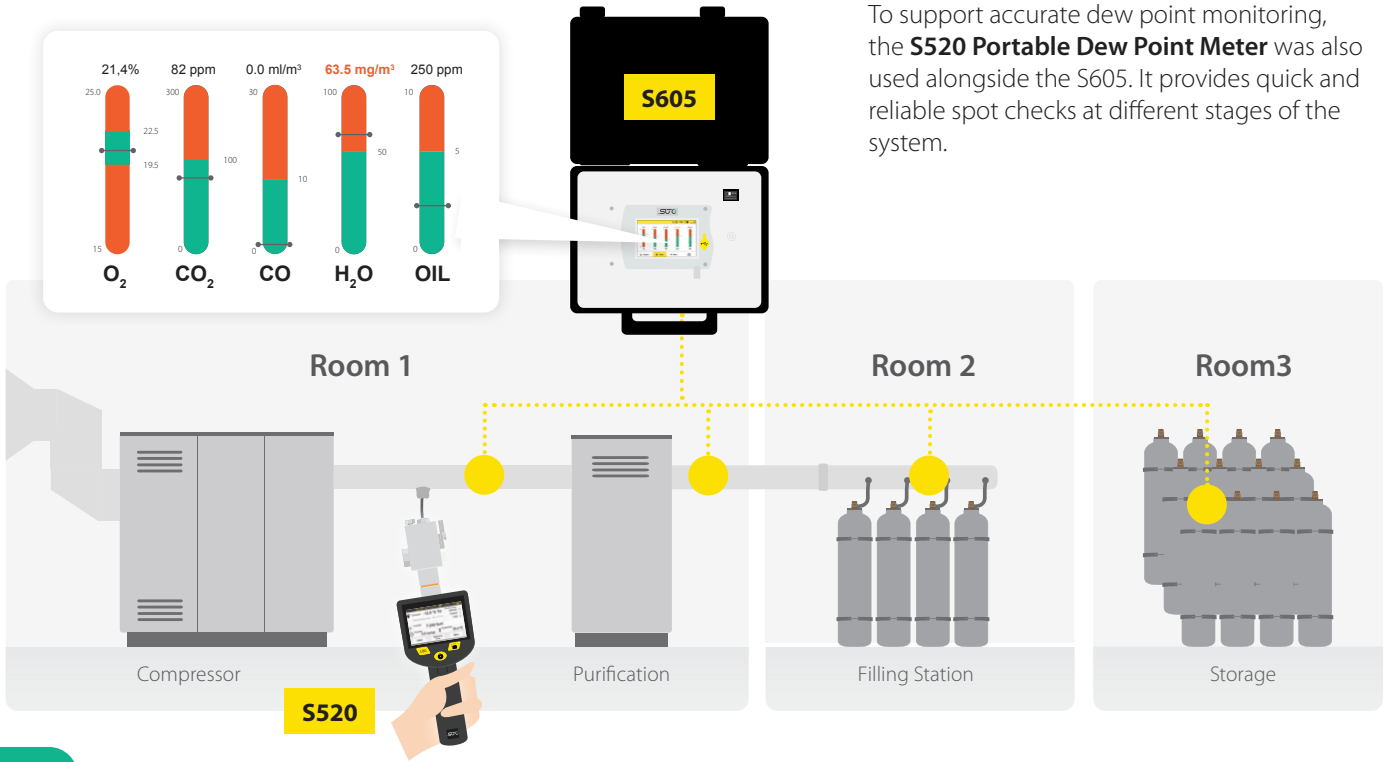
Objective
The maintenance center needed a reliable solution to monitor breathing air quality in real time and detect contaminants like carbon monoxide, carbon dioxide, oil vapor and moisture.

Meeting safety standards was essential to protect firefighters during operations.

Approach
To get real-time data of the breathing air quality, SUTO ITEC provided the **S605 Portable Breathing Air Analyzer**.

The device measures key parameters such as oxygen, carbon dioxide, carbon monoxide, oil vapor, and water content. The customer uses the analyzer to check breathing air quality at various points in the system, including the cylinder, the filling point, and the outlet of the purifier.

To support accurate dew point monitoring, the **S520 Portable Dew Point Meter** was also used alongside the S605. It provides quick and reliable spot checks at different stages of the system.



Powerful Reporting and Documentation

The S605 generates automated reports, helping the maintenance team document compliance and monitor trends over time. Operators can create detailed PDF reports directly on site.

Reports are saved to a USB drive for immediate print-out, supporting quick audits and full traceability of breathing air quality checks.

Compressed/Breathing Air Analysis Report
S605 Portable Breathing Air Quality Analyzer

Measurement device

Model:	S605-I
Manufacturer:	SUTO iTEC
Last calibration:*A	19 April 2024
Serial number:	00001605

Location Information

Customer:	Maintenance Center
Tester name:	Leon
Measurement Location:	Before filling
Measurement Point:	Point 1

Service provider

Company:	SUTO iTEC GmbH
Phone:	0049 7634 504 88 00
Email:	info@suto-itec.com

Measurement results

System / Measurement conditions

Medium Temperature [°C]:	24.3
Line pressure [bar]:	200

Measurement information

Measurement started:	12:10:51 01 April 2025
Measurement stopped:	13:11:09 01 April 2025
Measurement duration:	01:00:19

Declared content of O2

Condition	Limit value (EN12021)	Measured value	Evaluation (EN12021)
20°C; 101.3kPa	20.0 % ... 22.0 %	20.2 %	Passed

Declared content of CO2

Condition	Limit value (EN12021)	Measured value	Evaluation (EN12021)
20°C; 101.3kPa	≤ 500 ml/m³	521 ml/m³	Failed

Declared content of CO

Condition	Limit value (EN12021)	Measured value	Evaluation (EN12021)
20°C; 101.3kPa	≤ 5.0 ml/m³	0.8 ml/m³	Passed

Declared content of H2O

Condition	Limit value (EN12021)	Measured value	Evaluation (EN12021)
20°C; 101.3kPa	≤ 25 mg/m³	97 mg/m³	Failed

Declared content of Oil vapour

Condition	Limit value (EN12021)	Measured value	Evaluation (EN12021)
20°C; 101.3kPa	≤ 5.000 mg/m³	0.161 mg/m³	Passed

Measurement equipment

O2:	Optical oxygen sensor	Accuracy: ±1% of reading ±0.05%	Range: 0 ... 25%
CO2:	NDIR sensor	Accuracy: ±1% of reading ±25 ppm	Range: 0 ... 1000 ppm
CO:	Electrochemical sensor	Accuracy: ±5% of reading ±1 ppm	Range: 0 ... 20 ppm
H2O:	Polymer + QCM sensor	Accuracy:±1 to ±3 °Ctd *A	Range: -100 ... +20°Ctd / 0 ... 17458.6 mg/m³
Oil vapour:	PID sensor	Accuracy: +/- 5% of measured value	Range: 0.001... 5.000 mg/m³

Approval:
Signature Tester: _____ Signature Customer: _____ Place / Date: _____

Notes / Comments:

*A: For further details, please check the calibration certificate.

Results

With the S605 operators now benefit from continuous, real-time monitoring of breathing air quality. This provides a safer working environment and removes uncertainty about air purity.

During initial testing, the unit detected high levels of moisture in the compressed air. As a result, the operators were able to immediately optimize its filtration system and avoid potential safety risks.

The operators gained clear improvements in air quality control:

- **Real-time monitoring:** Continuous insight into breathing air quality
- **Early issue detection:** Prompt identification and correction of excess moisture
- **Standards compliance:** Clear documentation and traceability of air quality standards
- **Operational confidence:** Increased trust in the safety and performance of equipment

Conclusion

By implementing the S605 and S520, the customer now benefits from continuous monitoring and reliable spot checks. This ensures full compliance with air quality standards and improves safety for firefighting personnel.

"We now have 100% assurance of our compressed breathing air quality."

— Maintenance Operator, Fire Equipment Center

Talk to an Expert

For more information on breathing air quality monitoring, compressor efficiency solutions, or details about the S605 and S520, please contact us.

Our team of experts is available to answer your questions, provide product demonstrations, and help you find the right solution for your specific application.

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www.suto-itec.com

Be smart. **Measure it.**