



SC AIR-X : OIL AERATION MEASUREMENT

**Air-X, the right tool
to measure
air in oil**

Air-X equipment is designed for real-time measurement of lubricant aeration within running mechanical systems: I.C. engines, e-powertrains, transmissions, compressors and any industrial equipment equipped with a lubrication system. The operating principle is based on an accurate density measurement using X-ray transmission. Oil of the mechanical system is circulated in a measuring chamber where the density measurement is continuously performed.

Air-X technology allows performing on-line measurements using a very low activity X-ray source. The chamber is self-shielded so that no radiation at all comes out from the unit whatever the operating conditions.

The total volume of oil sampled in Air-X is less than 0.3L for a minimal impact on the operating mechanical system.

The sensor includes additional probes for automatic temperature and pressure compensation. Therefore, the air content is computed and displayed at standard conditions ($T = 25^{\circ}\text{C}$ and $P = 1 \text{ atm}$).



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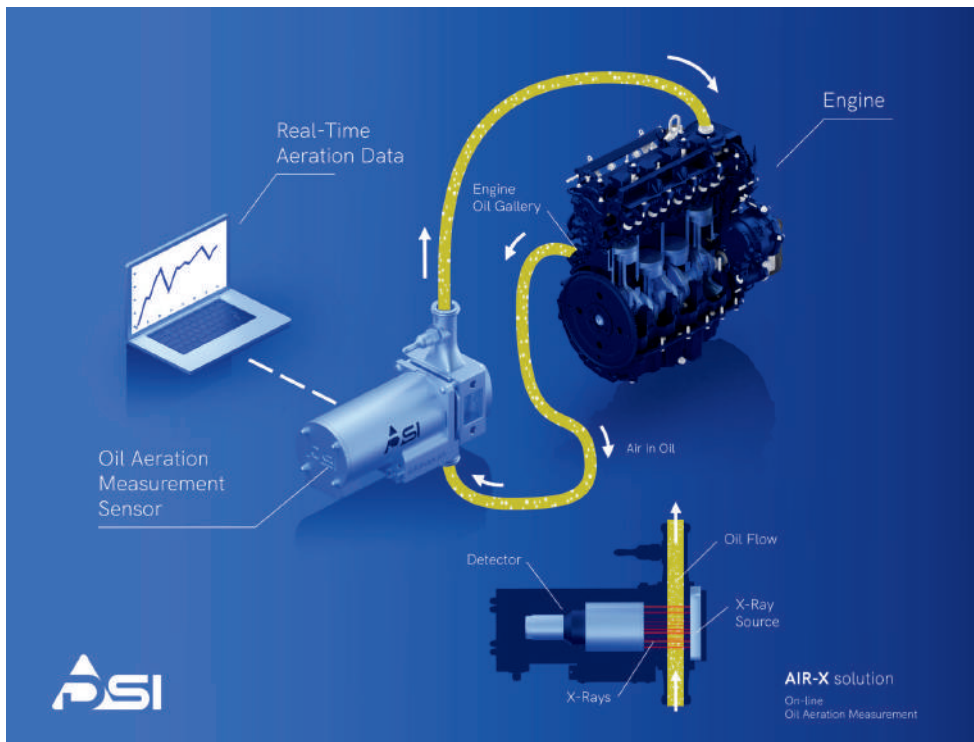


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IMPACT OF OIL AERATION

The presence of air in the fluid of a working hydraulic system can lead to severe consequences. Mixed air may be in an entrained or dissolved state and it can directly affect fluid parameters such as density, bulk modulus, etc.

Consequences can be the following:

- Loss of lubricity
- Higher oil temperatures
- Wasted horsepower
- Cavitation problems
- Noisy operation

On engines, high aeration rates can occur when:

- Under filling or overfilling of oil pans
- Ineffective design and positioning of oil intake and wash plate within oil pan
- Shorter rest time of lubricant within oil pan due to high flow rate
- High speed cornering

SC Air-X offers a wide range of applications where oil aeration is critical:



AEROSPACE

Wide operating range from 0% to 100% air-in-oil capabilities



AUTOMOTIVE

High accuracy and repeatability compared to conventional methods



MOTORSPORT INDUSTRY

Onboard measurement and scavenging applications



OFF-ROAD

Engine tilting limits and hydraulic circuit monitoring





AIR-X TECHNOLOGY

DSi team has acquired a strong expertise in assisting engineers to understand and solve oil aeration problems.

Air-X is able to sample and evaluate oil from atmospheric or pressurized lines in an operating hydraulic system.

Particularly suitable for stationary dyno, tilt test rigs and on-board applications, Air-X uses a lightweight and ruggedized measuring chamber to be fitted close to the mechanical system. The electronics is deputed to reduce the size at its best.

All measurement data (oil temperature, oil pressure and gas content) are recorded and displayed on graphics during operation of Air-X. A dedicated routine is also provided, which allows converting the results to a .csv format. Results are transferred in real-time to your test bed management system.

A software package is supplied with Air-X. It offers the following **functions**:

- Setting-up and calibration
- On-line measurement and data logging
- Data visualisation, real-time analysis and display

Our team of experts are at your **services**:

- On-site service measurement with Air-X equipment at your facility
- DSi also owns a test centre based in Belgium, equipped with Air-X devices
- Oil aeration problem solving, from failure analysis to solutions
- Training on the aeration process (theoretical and practice)
- Design and manufacturing of dedicated test rigs for benchmarking hydraulic devices (Air-Mix for air-in-oil production)



TECHNICAL SPECIFICATIONS

ACCURACY (VS ACQUISITION TIME)	0,5% : 10 SEC 0,2% : 100 SEC
MEASURING RANGE (GAS CONTENT)	0% TO 100% AIR IN FLUID
OPERATING T° RANGE	-40°C TO 140°C (HIGH TEMP. ON REQUEST)
ON-LINE RESULTS	RESPONSE TIME FROM 1 SEC TO SEVERAL MINUTES
OIL FLOW RATE RANGE IN AERATION MEASURING CHAMBER	0,5 L/MIN TO 20 L/MIN 20 L/MIN TO 80 L/MIN (HIGH FLOW ON REQUEST)
MEASUREMENT POSSIBILITY	ON-BOARD OR ON TEST BENCHES
PRESSURE RANGE	UP TO 4 BARS GAUGE (MORE ON REQUEST)
CALIBRATION	SELF CALIBRATION BY END-USER
POWER REQUIREMENTS	110-220VAC/60-50HZ (ON DEMAND)
POWER CONSUMPTION	< 1 KW

WEIGHT AND DIMENSIONS

Weight: 1,2kg

