Everllence

PrimeServ

Multi Fluid Monitor for lube oil

Multibrand solution

An intelligent constant monitoring device for degradation and pollution of lube oil.

Lube oil, constantly monitored

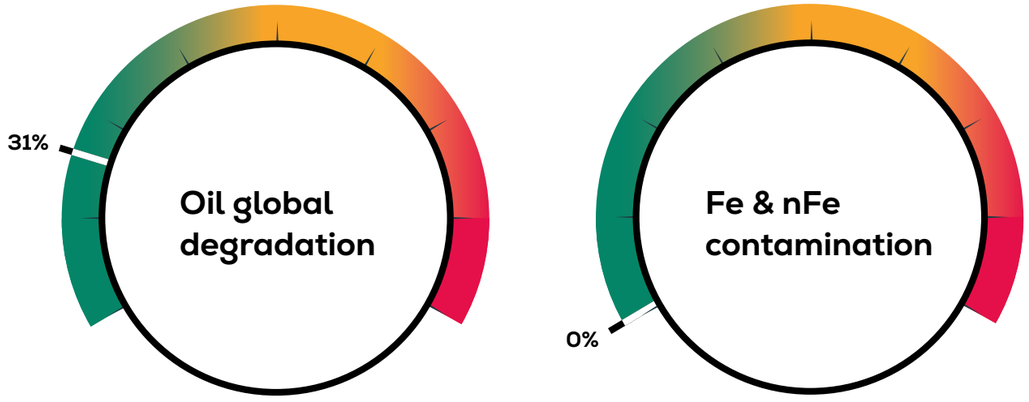
Alarms and recommendations

Multi Fluid Monitor for lube oil constantly monitors the lube oil. Using truly autonomous intelligence, it analyses the lube oil, detects anomalies and alerts the operator of any deviations. It provides a global view of all the operational lube oil parameters.

Both an operational tool and a real component of conditional preventive maintenance, Multi Fluid Monitor for lube oil gives a new dimension to your maintenance policy.

An Everllence product
Multi Fluid Monitor for lube oil forms part of the all industrial applications range, for new constructions or retrofits. It combines perfectly with automation systems, and complements spot lube oil analyses.

Other engine solutions
- PrimeServ Assist
- Multifonction Monitoring System
- PrimeServLab



Description
Multi Fluid Monitor for lube oil continuously detects slow or rapid lube oil degradation, pollution and contamination.

Integration
The solution is integrated into the main lube oil system of the equipment.

Constant diagnostics
Thanks to its innovative technology and state-of-the-art components, the autonomous and intelligent system is equipped with specially developed software programming, which establishes a lube oil degradation index and diagnostics, or in detail, pollution, contamination and lube oil degradation.

Alarms
The system handles alarms that immediately inform the operator of any deviation. This allows the operator to take the operational actions necessary to avoid major damage.

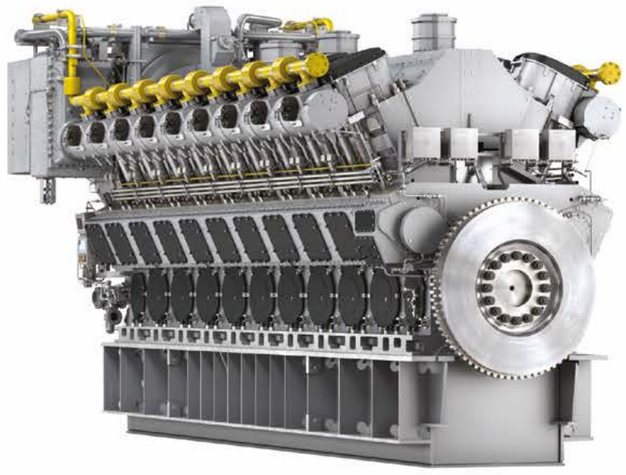
Data recording
The solution remains at disposal the 2 years data history, for expertise's realization. This allows the operator to optimize the engine settings, its auxiliary equipment and any other equipment.

Lube oils
All types of engine and industrial lube oil.

Equipements
All types of 4-stroke engines and could be applied globally to other industrial equipment.

Committed to the future
Everllence is working on research to develop new features for the Multi Fluid Monitor. Everllence engineering, know-how and expertise, based on high technology, ensure OEM quality.

Engine applications



4-stroke engines

Continuous monitoring of the lube oil degradation and pollution of the engine and its auxiliaries

A robust system
The operation of an engine puts all its mechanical components to the test: combustion, explosion, pressure, mechanical movements, etc.

Lube oil plays a major role. Without it, the mechanics seize up and fail.

Travelling through its circuits, lining its mobile components, it follows the rythm of the engine operating conditions, however harsh.

The components of the Multi Fluid Monitor are state-of-the-art. They are designed to operate continuously in the most demanding operating conditions.

Availability
- 4-stroke: available
- MFM for lube oil can expand from being a specialized solution for four-stroke engines to one that could be applied globally to other industrial equipment.

70%

of major damages reveals a lube oil pollution.

Lube oil, the blood of the engine

Lube oil, a major setting that must be monitored

The action of the lube in the engine is multiple. It mainly ensures the proper functioning of the moving components of the engine (bearings, rods, cam shaft, etc.).

Apart from its lubrication action, it also acts on heat dispersion, cooling, engine cleanliness, corrosion protection, etc. The formulation of the lube oil and its in-service degradation therefore determine the quality of its action and affect the reliability of the engine first and foremost.

The lube oil consists of a base oil, essentially paraffin, obtained by raw refining, and added substances: additives, detergents, dispersants, demulsifiers, anti-wear and anti-foam agents, friction and viscosity modifiers, oxidation and corrosion inhibitors, etc., to improve the characteristics of the base oil.

Engine operation systematically degrades and pollutes the lube oil circuit: combustion soot, fuel mixture and wear particles appear in the engine lube oil.

Early detection of any deviation is essential to prevent the engine and its auxiliaries equipments from damages.

This is exactly where Multi Fluid Monitor for lube oil comes in.

Engine lube oil, over the time

50%

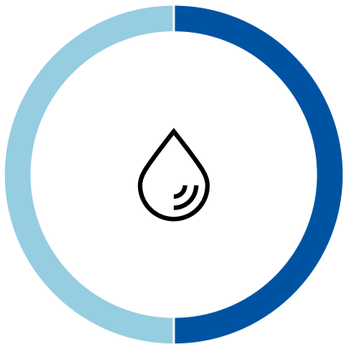
of damages occur while an engine re start.

70%

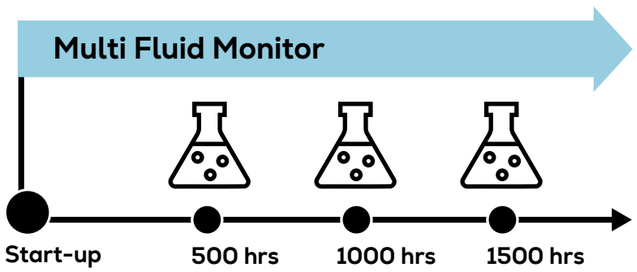
of anomalies can be seen in the lube oil

50%

of damages are caused by a lube oil contamination or deterioration



Example of recommended monitoring for an engine

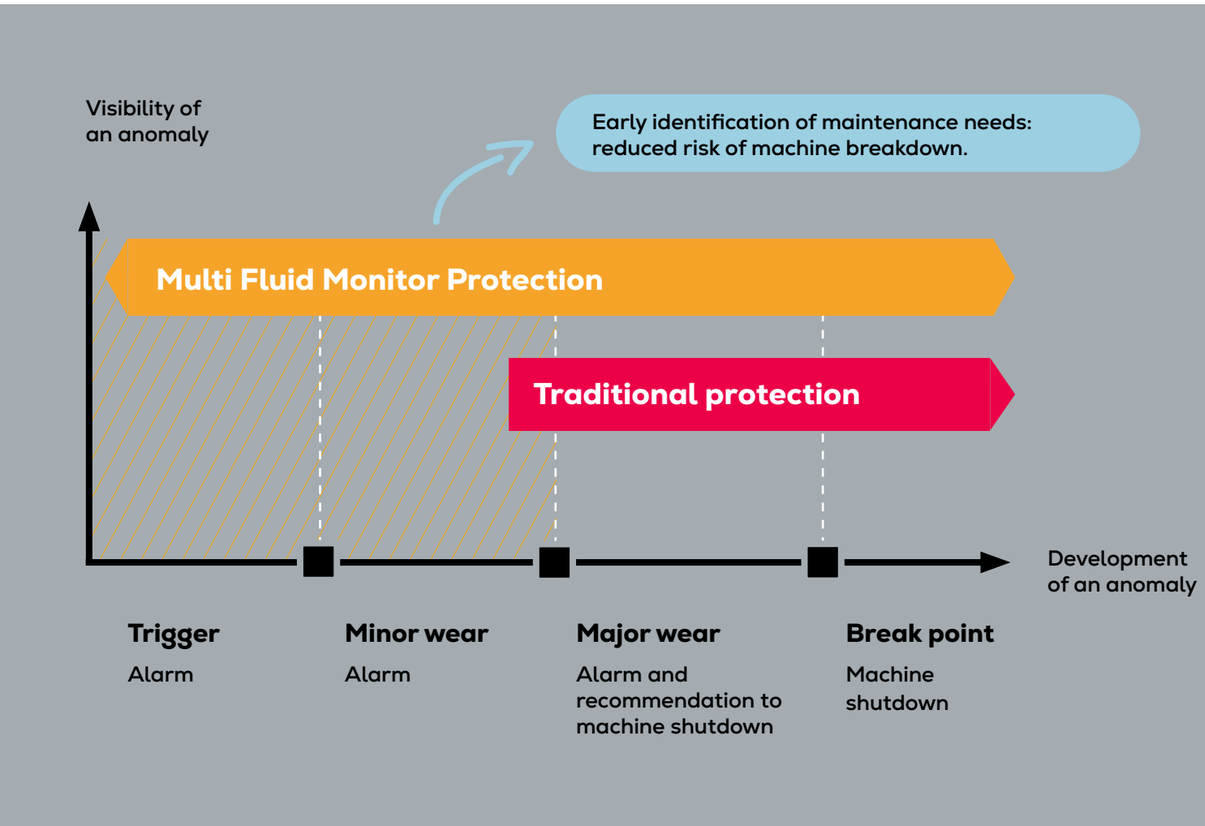


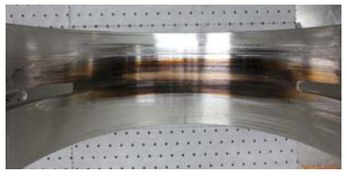
- Constant monitoring
- Rapid anomaly detection
- Special laboratory analysis
- Expert anomaly reports

This data comes from our OEM (Original Equipment Manufacturer) feedback, incorporating aspects of reliability, durability, performance, safety, field feedback helps to resolve failures experienced in service through their systematic analysis. Data from over 30,000 events has therefore been compiled.

Anticipation of maintenance needs

Detection of risk of damage as close as possible to when it occurred





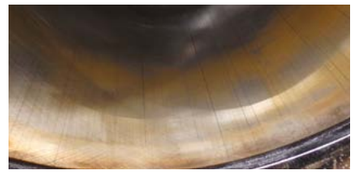
Bearing shell seizure

Engine stop realized
- Particles presence

Maintenance team diagnosis
- Detection of a rapid rise of the metal particulate rate

Maintenance action
- Bearing shell replacement
- Filtration of the lube oil capacity

Benefits
- The crankshaft has been preserved
- Reduced engine unavailability



Cylinder scuffing

Engine stop realized
- Particles presence while the engine re start phase

Maintenance team diagnosis
- Scuffing observation: identification of a matter of cylinder honing

Maintenance action
- Recovery of the cylinder honing
- Filtration of the lube oil capacity

Benefits
- All the major components (piston, rings, liner) have been preserved
- Reduced engine unavailability

Pump wear

Maintenance alarm
- Abnormal rise of the particles quantity

Maintenance team diagnosis
- Wear of some pump components

Maintenance action
- Replacement of pump wear parts

Benefits
- No pump replacement
- No major deterioration of the lube oil capacity

Water pollution

Engine stop realized
- Water presence

Maintenance team diagnosis
- Water passage through o-rings

Maintenance action
- Replacement of o-rings
- Treatment of the lub oil capacity by centrifugal filter

Benefits
- No major deterioration of the lube oil capacity
- No major damage as bearing seizure, crank pins, bearing shells
- Reduced engine unavailability

Fuel pollution

Maintenance alarm
- Fuel presence

Maintenance team diagnosis
- Issue on the injection pump: deficient oil seal

Maintenance action
- Replacement of the injection pump wear parts
- Partial renewal of the lube oil capacity

Benefits
- Anticipation of the maintenance,
- No major deterioration of the lube oil capacity
- No major damage as bearing seizure, crank pins, bearing shells
- Reduced engine unavailability

Soot pollution

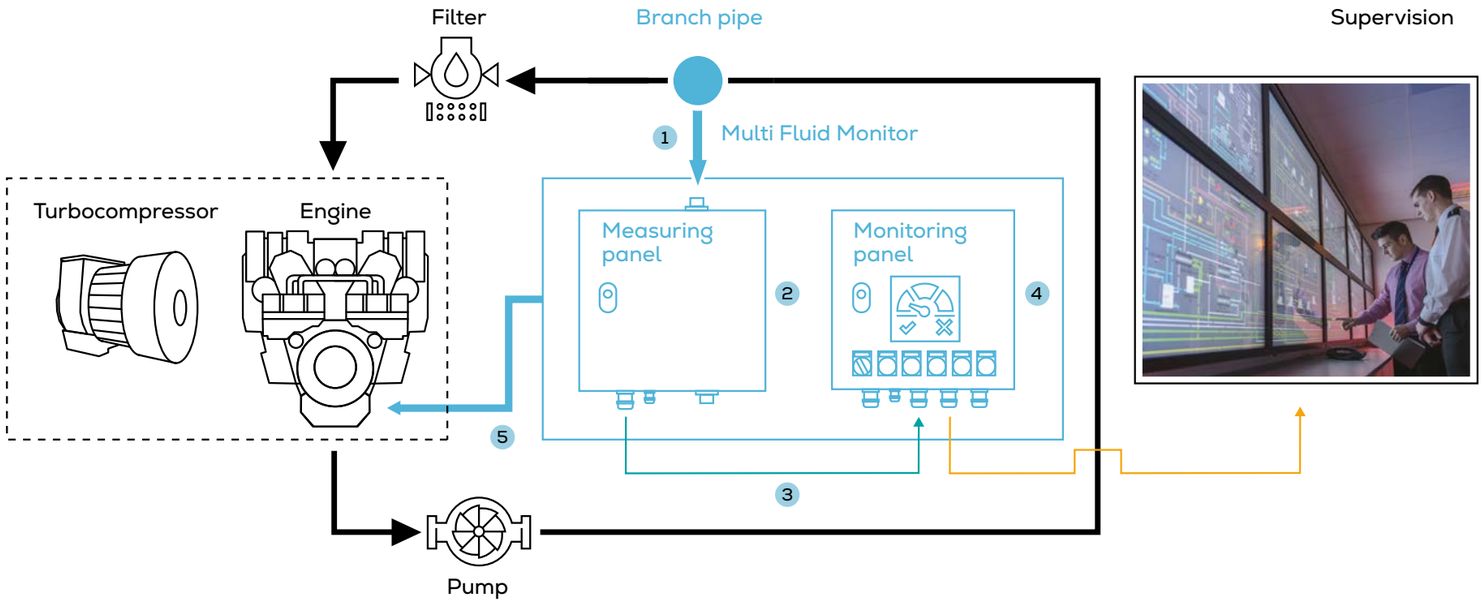
Maintenance alarm
- Important presence of combustion soot

Maintenance team diagnosis
- Issue of injection setting
- Rings wear

Maintenance action
- Replacement of wear parts
- Partial renewal of the lube oil capacity and treatment of the lube oil capacity by centrifugal filter

Benefits
- Anticipation of the maintenance
- No major deterioration of the lube oil capacity
- Minimum fouling of the engine
- No major damage as bearing seizure, crank pins, bearing shells
- Reduced engine unavailability

Simple & ergonomic



1. The lube oil is oriented, before filtration, to the measuring panel through a branch pipe.
2. The lube oil is measured permantly through sensors.
3. The data is instantly transferred to the monitoring panel.
4. The display screen constantly shows the levels of lube oil degradation and contamination and raises an alarm in the event of a deviation.
5. The lube oil is returned to the equipment's main lube oil system.

Compact
The system consists of two small cabinets (L300, l300, p200) to enable optimal integration, even in the smallest operational environments.

Rapid integration
The system installation requires little equipment, only two hydraulic connections, a 24V power supply and a communications cable.

Depending on the on-site configuration, the system can be installed with no requirement to shut down the engine or equipment.

Plug & play
Automatic calibration means the system can be started within a few hours.

Ease of use
Reading the indicators is easy. The touchscreen provides intuitive navigation between the display screens.

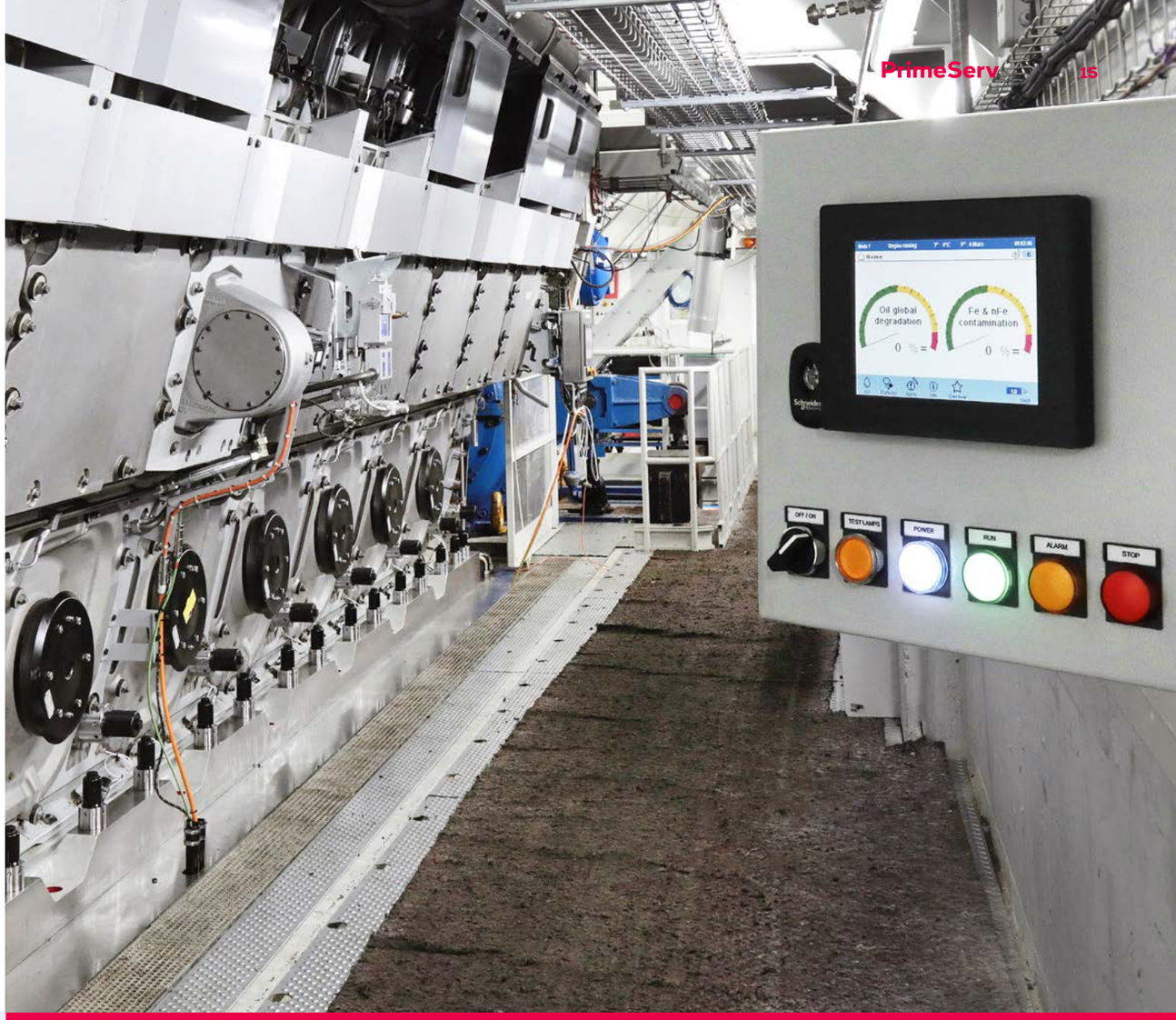
Simple maintenance
Maintenance work must be performed when the system indicates this. This work is explained in the user manual.

After-sales service
Spare parts, remote and on-site service.

- Main lube oil system
- Multi Fluid Monitor for lube oil system
- Electrical connection
- Ethernet connection

OEM quality

Tested, proven and certified



36

months of research and development

100 000

experience running hours (June 2024)

Multi Fluid Monitor for lube oil has been subjected to 3 years of research and the development of a specific software.

The system has been tested over more than 14,000 hours in all operational conditions, with different types of fuels: diesel, heavy fuel, dual fuel, gas.

Multi Fluid Monitor for lube oil meets CE standards, has the following certifications:

- Marine: BV, ABS
- Navy: NNO6630145997886, IEC shocks standars
- Cyber Security: BV IACS UR E27

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