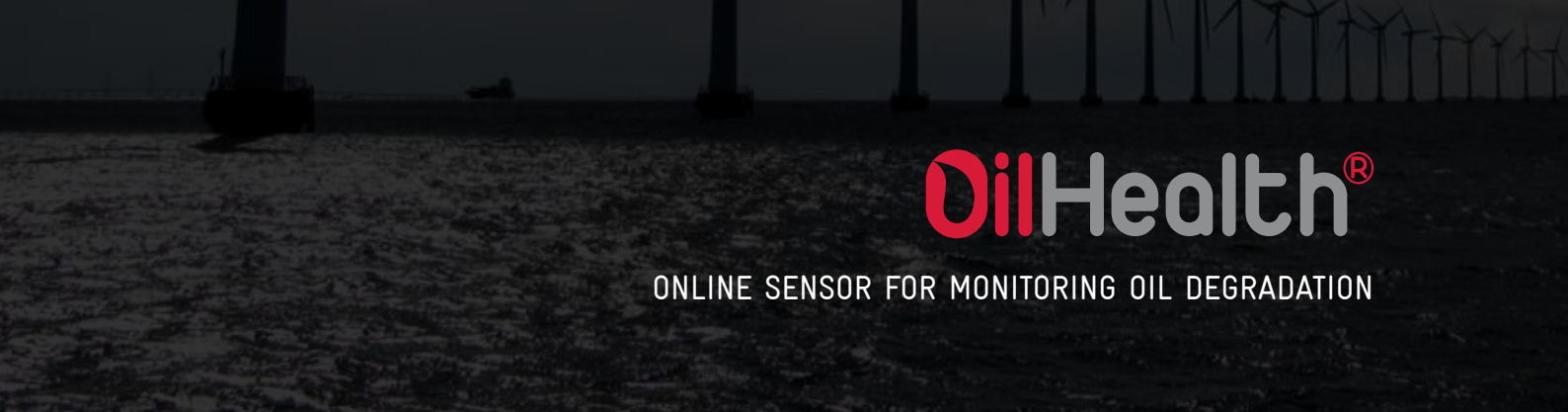




OilHealth[®]

ONLINE SENSOR FOR MONITORING OIL DEGRADATION





OilHealth®

ONLINE SENSOR FOR MONITORING OIL DEGRADATION

1

OilHealth® is an online sensor that measures the degree of degradation of lubricating oil simply and accurately.

2

OilHealth® is the successful result of over 10 years of research in the fields of oil analysis and sensor development.

3

OilHealth® supplies information making it possible to progress from preventive maintenance of the oil to predictive maintenance.

4

OilHealth® brings significant economic, environmental and operational benefits.

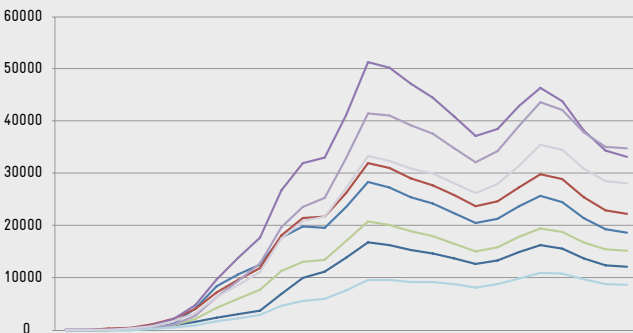
OilHealth® Patent pending: PCT/ES2010/070582 | P201231571

HOW IT WORKS

OIL DEGRADATION PROCESS

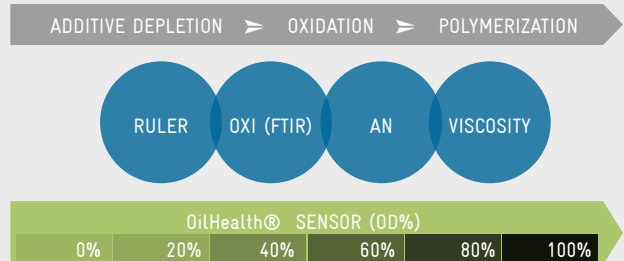
Various chemical processes take place in oil degradation. Each of these processes is associated with parameters that can be measured in the laboratory: RULER (additive depletion), AN/OXI (oxidation), Viscosity (polymerization).

TRANSMITTANCE



Fuchs Renolyn
Unisyn CLP320

OilHealth® is an optical sensor that correlates the transmittance spectrum of the oil with its state of degradation.



PARAMETERS	OIL DEGRADATION (OD)					
	0%	5%	10%	25%	50%	100%
Viscosity	-	-	-	↑	↑	↑
Acid Number (AN)	-	↓	↓	-	↑	↑
FTIR (Oxidation)	-	↑	↑	↑	↑	↑
Voltammetry (RULER)	-	↑	↑	↑	↑	↑
OilHealth®	↑	↑	↑	↑	↑	↑
Odour	-	-	↑	↑	↑	↑
Strain	-	-	-	↓	↓	↓
Filtration	-	-	↓	↓	↓	↓
Sludge	-	-	-	↑	↑	↑
Dielectric constant	-	-	↑	↑	↑	↑

SENSIVITY: ↑ ↑ ↑ | PARAMETER VARIATIONS SIGN: ↓ ↓ ↑

This is the technology that allows greater accuracy to be achieved throughout the phases of the degradation process.

SPECIFICATIONS

Power supply (V)	24 V
Energy consumption	<1A
Signal outputs	Analogue Output: 0-10V 4-20mA Digital Output: ModBUS RTU (RS485) ModBUS TCP (Ethernet)

Oil pressure	Maximum 12 bar
Operating temperature	From -20°C to 80°C
Viscosity range	Up to 460 cSt
Fluid compatibility	Mineral and synthetic oils (PAO)
Size/Weight	157 x 217 x 80 mm / 2400 gr
Degree of protection IP	IP65

VALIDATION

THE SENSOR'S ALGORITHM HAS BEEN VALIDATED FOR THE FOLLOWING LUBRICATING OILS:

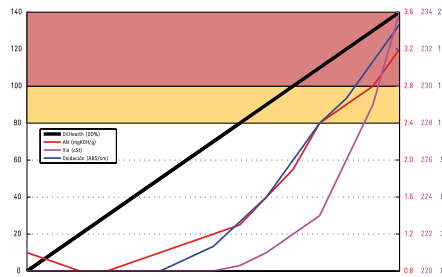
- Fuchs Renolin Unisyn CLP 320
- Fuchs Gearmaster ECO 320
- Shell Omala Oil 320
- Shell Omala Oil HD 320
- Mobilgear SHC XMP 320
- Castrol OptiGear Synthetic X320
- Castrol Tribol 1510/320
- Castrol Optigear BM 320
- Klüberoil GEM 1-320N
- Klübersynth GEM 4-320N
- Klübersynth GH 6- 320
- Beslux Gear XP-320
- Beslux Gearsynt XP-320
- Texaco Meropa 320 WM
- Cepsa Aerogear Synt 320

OilHealth® HAS UNDERGONE A RIGOROUS VALIDATION PROCESS:

Using real samples of wind turbines at IK4-Tekniker's Oil Laboratory.



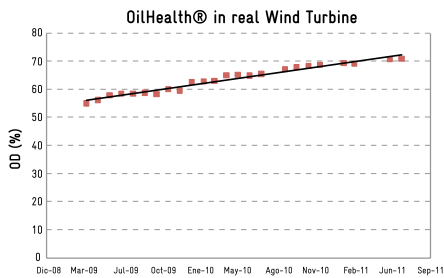
In Test Rig trials in which the algorithm was calibrated for the whole degradation process.



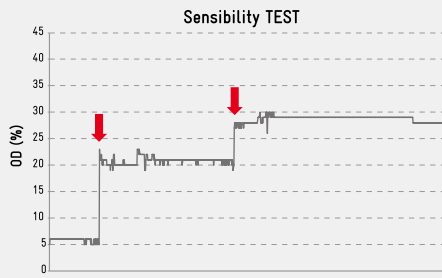
In an climatic chamber in extreme conditions of temperature (-20°C to +80°C) and humidity.



With machines under real conditions of temperature, humidity, pressure, vibrations, etc.



By means of external sensitivity and electromagnetic compatibility trials, etc.



By means of sensor stability tests in the presence of external contaminants (stable up to 1% of water).



EASY TO INSTALL

Hydraulic connection: by-pass

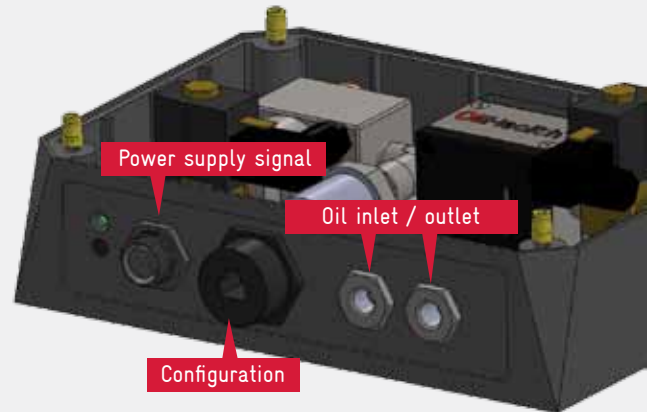
- **Sensor inlet:** Sampling point
- **Sensor outlet:** Sump



EASY TO INTEGRATE

Communication options

- **Analogue Output:** 0-10V | 4-20mA
- **Digital Output:** ModBUS RTU (RS485)
ModBUS TCP (Ethernet)



ADVANTAGES

OilHealth® is an optical sensor that provides a reliable measurement of the degree of degradation of the lubricating oil:

- ▶ **Online:** it monitors the oil that the machine is operating with right now.
- ▶ **Straightforward:** the signal gives a numerical value of the degradation right away.
- ▶ **Linear:** the sensor's measurements allow forecasts to be made so that oil changes can be optimized.
- ▶ **Accurate:** it detects minimal changes in the degree of degradation of the oil.

By means of a by-pass and with a whole range of communication possibilities it can be easily fitted to machines that work in extreme conditions and which are difficult to access.

The information supplied by **OilHealth®** enables oil condition based maintenance to be carried out. This allows the changing of it to be optimized, which leads to significant economic, environmental and operational benefits.



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