

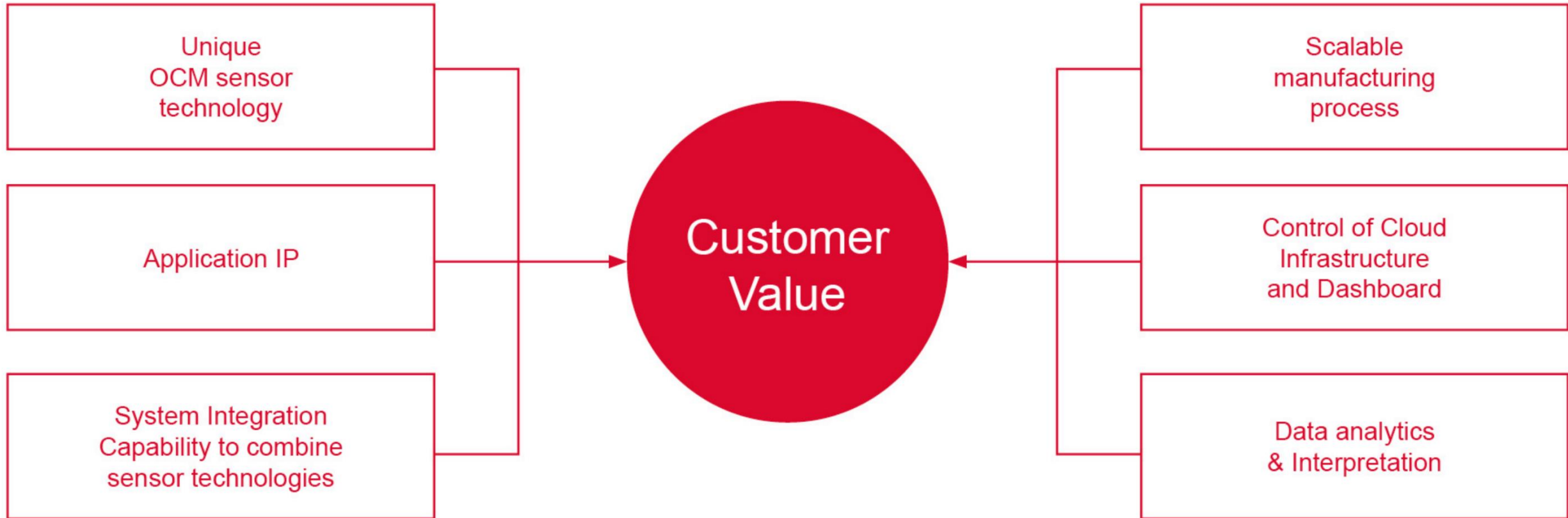


Spectrolytic
Innovative Solutions in Spectroscopy

Lubrication Expo Sep.2024
Delivering Sustainable Fluid Management
solutions



Providing Sustainable Fluid Management solutions



- Oil Condition Monitoring (OCM) sensor technology providing lab equivalent data using mid-infrared spectroscopy
- Additional core competencies have been developed to accelerate sustainable Fluid Management
- **Managing 100s of high value assets across multiple market → Saving 10,000's of man hours → Culminating in 1,000,000's of Euros in operational costs savings**

Sustainable Fluid Management is penetrating market verticals

Oil Condition Monitoring

- Marine
- Power Generation
- Industrial Fluids
- Steel & Aluminium Processing
- Mining and Moving

Cooling Fluids

- Data Centres
- EV Vehicles
- Metal Milling and Cutting

Fuel Analysis

- Biodiesel
- Jet Fuel

Process Analytical Testing

- Pharmaceutical
- Biochemical
- chemical

Legislation drives demand for a sustainable, digital fluid management solution



Sensor Platform addresses all applications

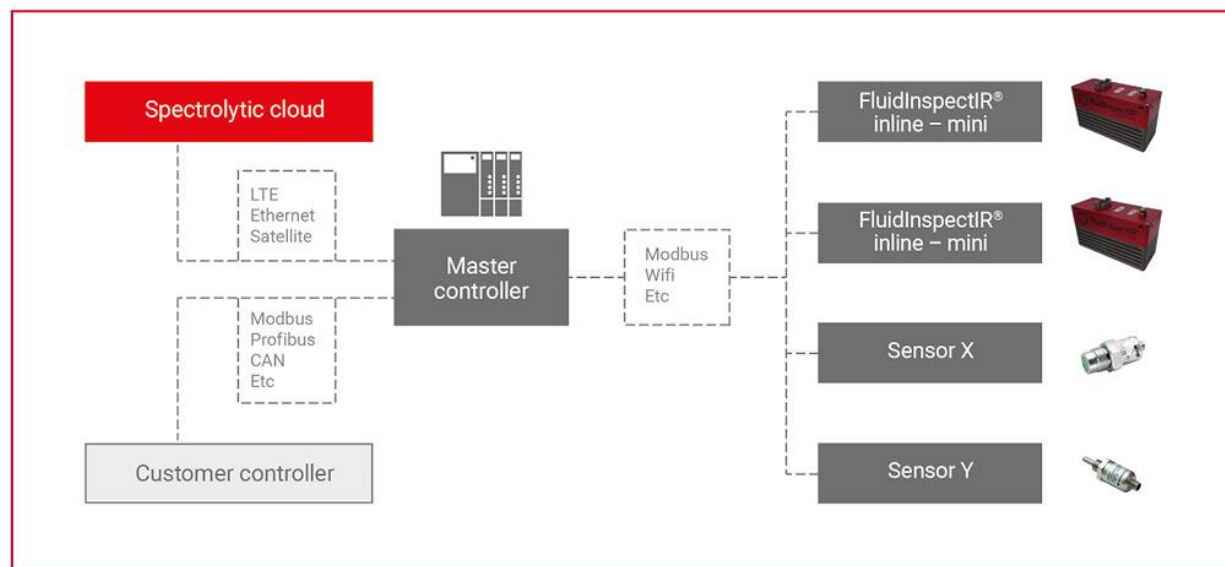
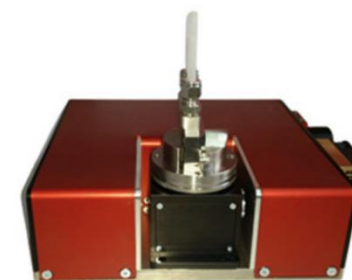
Inline



Portable



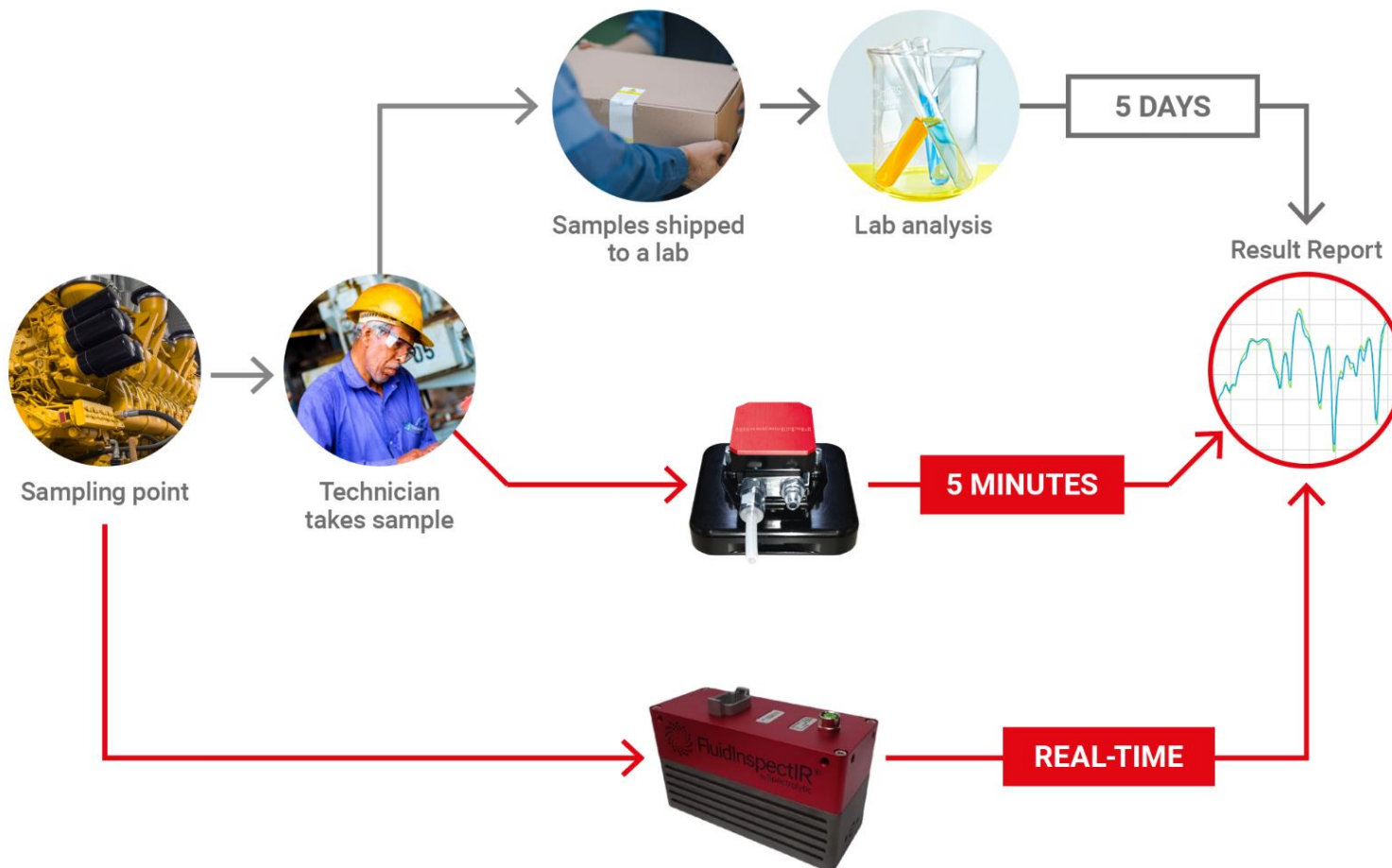
sFTIR



- Cloud computing or EDGE computing options
- Customized dashboards for data visualization & alerts via DataInspectIR
- All systems are plug & play with integrated sample delivery process
- ATEX versions (zone 1, gas group IIC, T=85) available

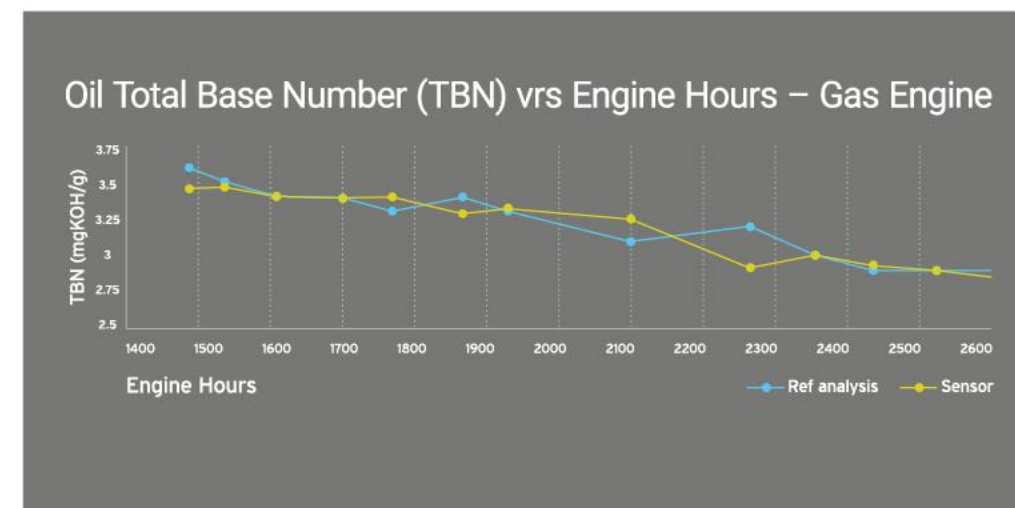
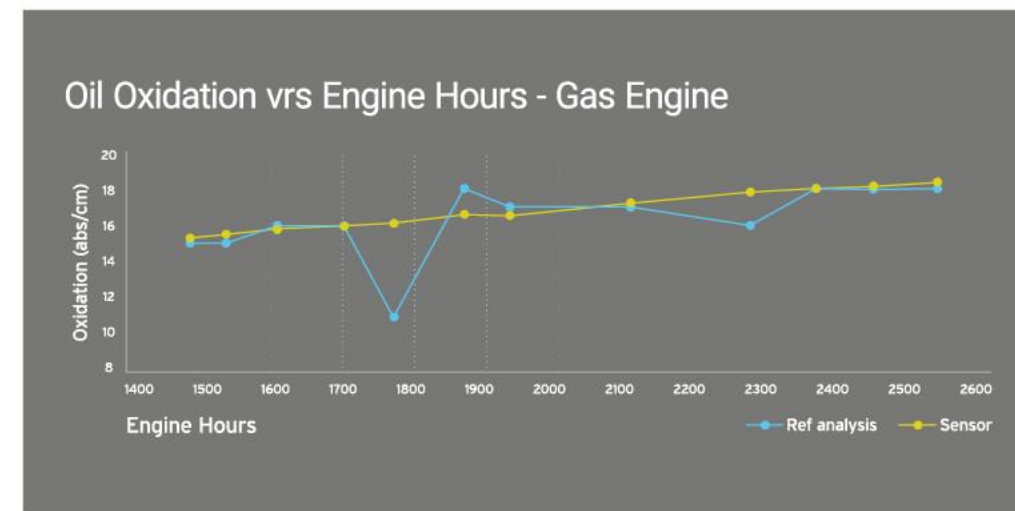
Condition monitoring positively impacts operation

- ✔ Reduce unplanned downtime
- ✔ Safely change oil drain intervals
- ✔ Reduction in H&S Hazards
- ✔ Data driven maintenance
- ✔ Reduction of CO2 footprint
- ✔ Support for warranty claims



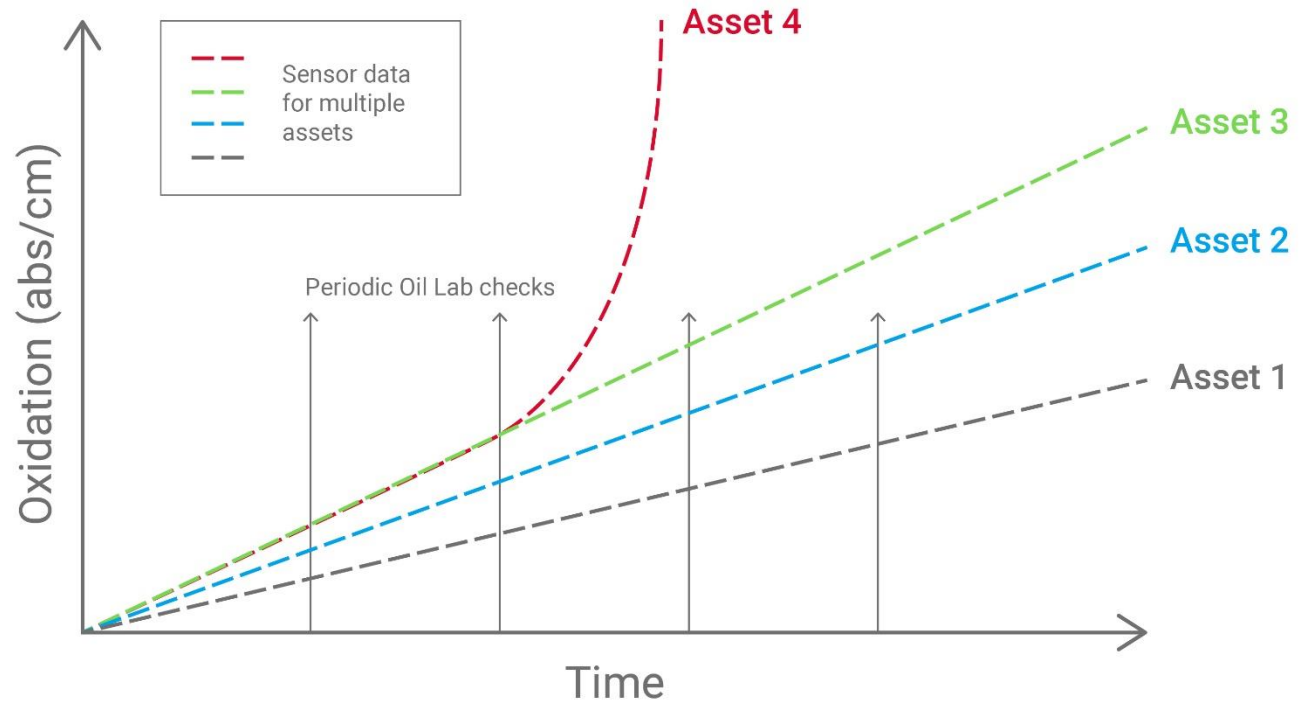
Sensor Accuracy validated together with Exxon Mobil

- Does it work?
- Excellent agreement between predicted sensor data and reference analysis as shown on the right
- Predicted oil degradation parameters are presented in the same units as in conventional oil laboratory analysis
- Existing know-how and warning/action levels can be used. No need for additional training
- Our sensors provide customers with accurate, understandable and actionable oil analysis data 24/7.
- The FluidInspectIR[®] removes all human involvement from the oil analysis process.
 - No sample taking required
 - No storage/shipment required
 - No lab technician carrying out measurements



The Power of slopes and real-time data with FluidInspectIR®

- Trend analysis via periodical oil laboratory analysis not realistic
- Assessment of parameters done on absolute values / OEM warning levels
- Unplanned down time costs big \$\$\$ potential failure can only be detected by slope analysis
- Early identification results in controlled and sustainable actions
- No “deep know-how” required as deviations become obvious to operator



Inline Installations Examples

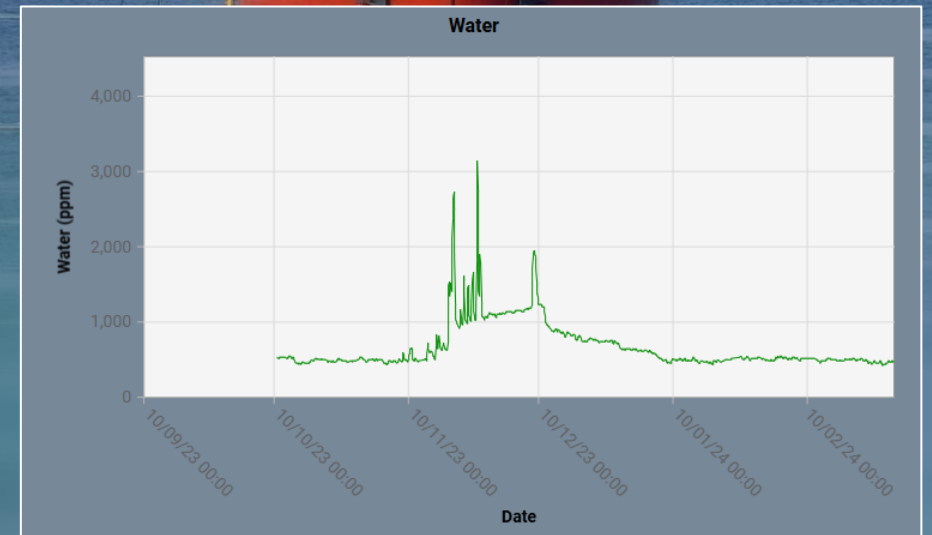
Application:

Diesel Engine – Dredging vessel

Customer benefit:

Minimising production losses

- Spiking of water concentrations coincided with vessel being moored in harbour
- The root cause was traced back to a failure of the cooler was replaced in a planned manner saving \$\$ and avoiding risk of damage to the vessel
- Commercial impact for customers:
Total saving: 115k£ over 9 month

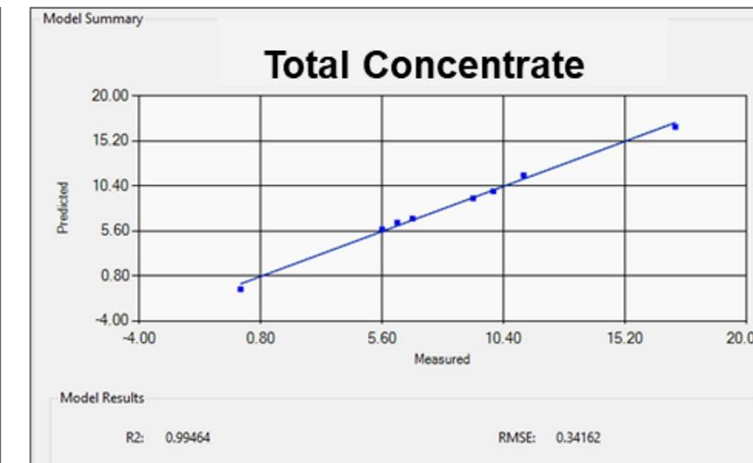
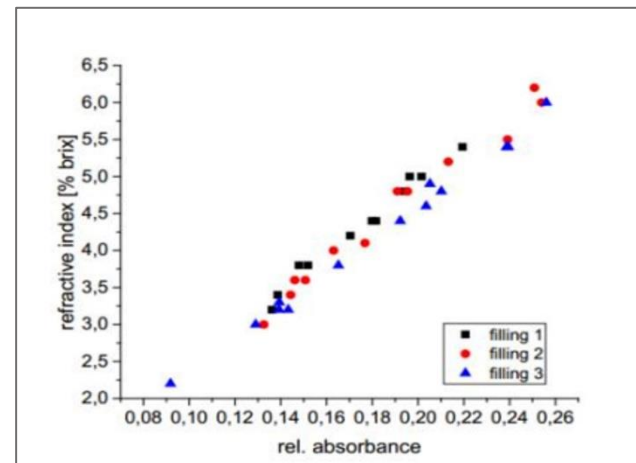
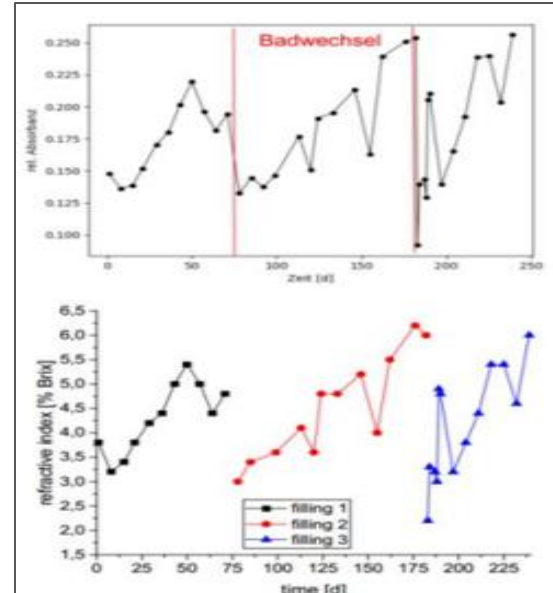


Inline Installations Examples

Application:
Metal Cutting fluids (1/2)

Customer benefit:
Product Integrity & Process Optimisation

- Delivering the Status Quo by providing real time data on concentrate and pH
- IR data show excellent correlation with BRIX measurements
- Concentrate can be measured extremely accurate ($R^2 = 0.99$)

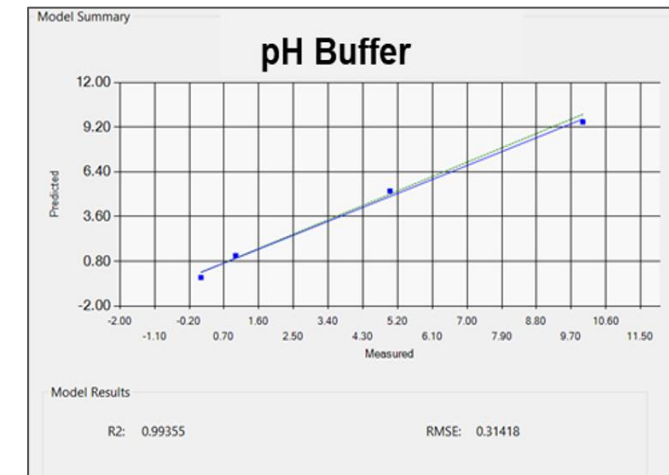
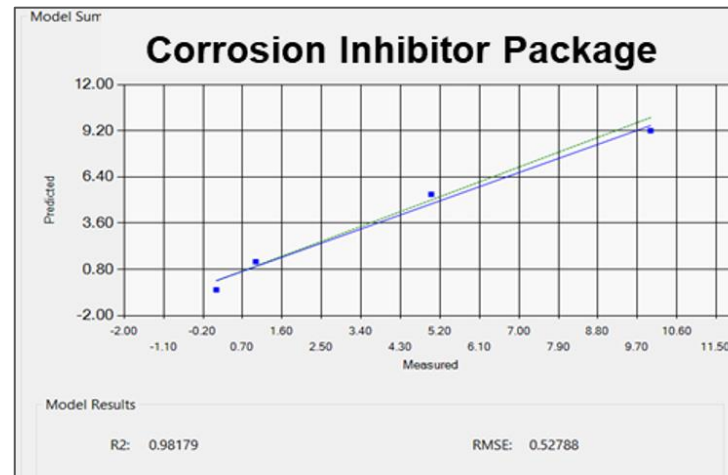
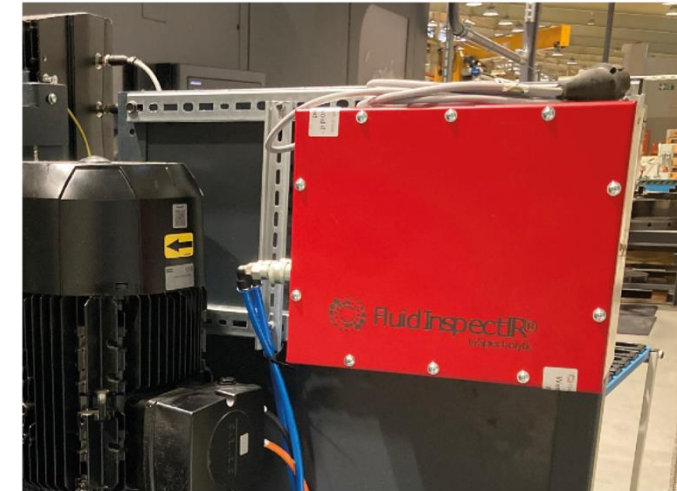
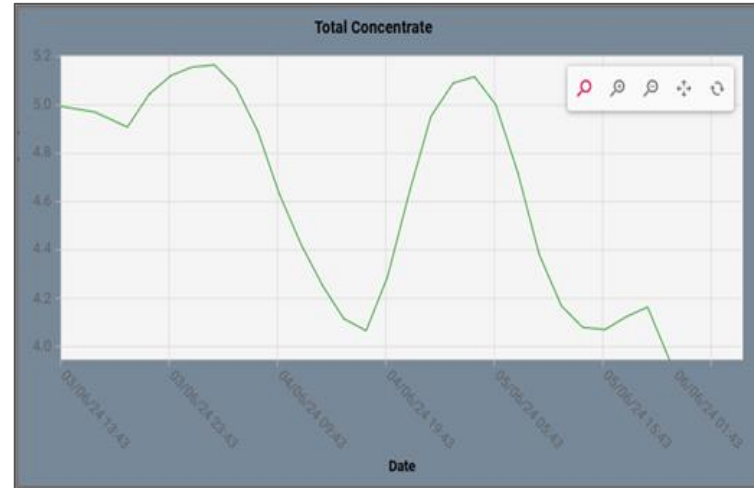


Inline Installations Examples

Application:
Metal Cutting fluids (2/2)

Customer benefit:
**Product Integrity
& Process Optimisation**

- Concentrate is accurately monitored inline
- Key enabler for automation of Metal Cutting Fluid management
- Additional parameters provide further insights to end users & cooling fluids manufacturers
 - Corrosion Inhibitor package
 - pH Buffer Package



Inline Installations Examples

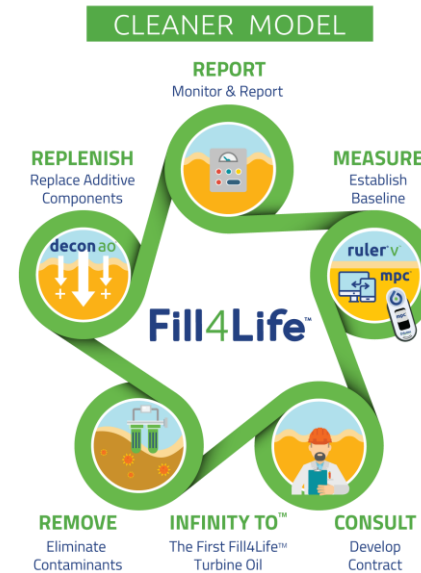
Application:

Turbine oil together with Fluitec

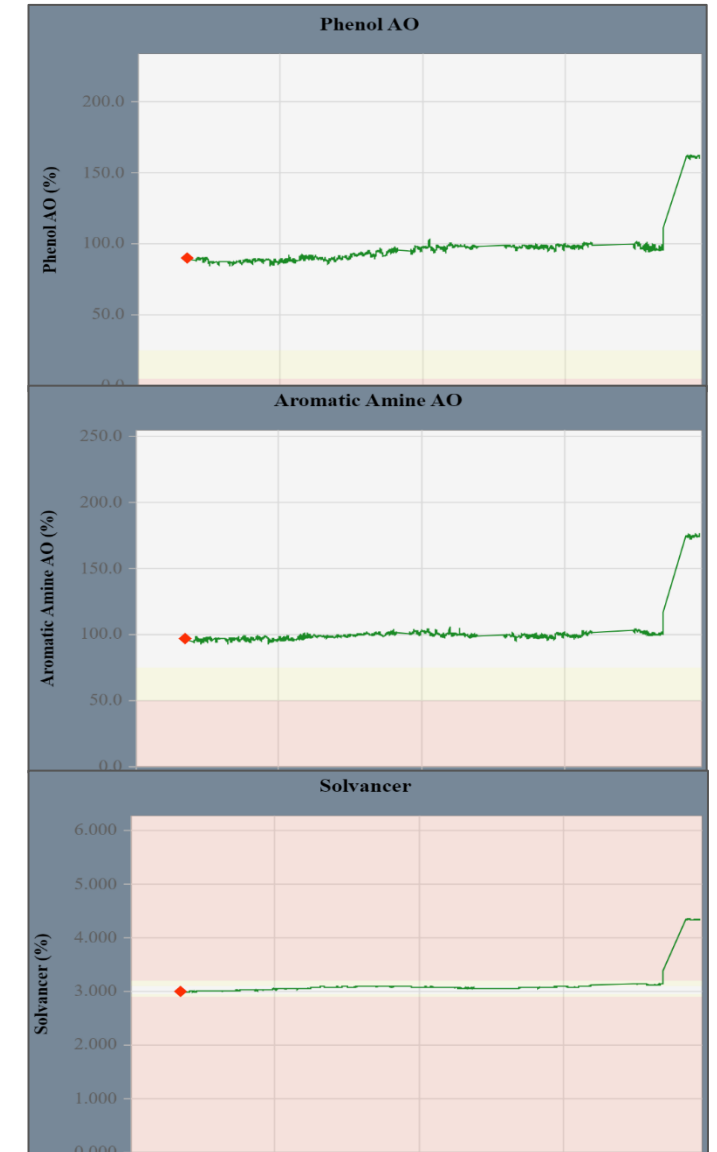
Customer benefit:

CO2 savings, Oil lifetime extension, \$\$ savings

- Inline measurement of AO concentration, & varnish potential
- Excellent correlation with RULER data for AO
- Enables end customer to reliably monitor assets remotely and to automate oil management
- Saves tons of CO2 and 100k\$ per turbine by avoiding oil changes (Fill4Life with Fluitec)
- Key enabling technology for sustainable lubrication management



“Spectrolytic's cutting-edge sensor technology compliments our Fill4Life solutions perfectly. This is a significant step towards achieving our goals of creating sustainable, long-lasting solutions for our clients.”
Pierre Vanderkelen, CEO of Fluitec



Inline Installations Examples

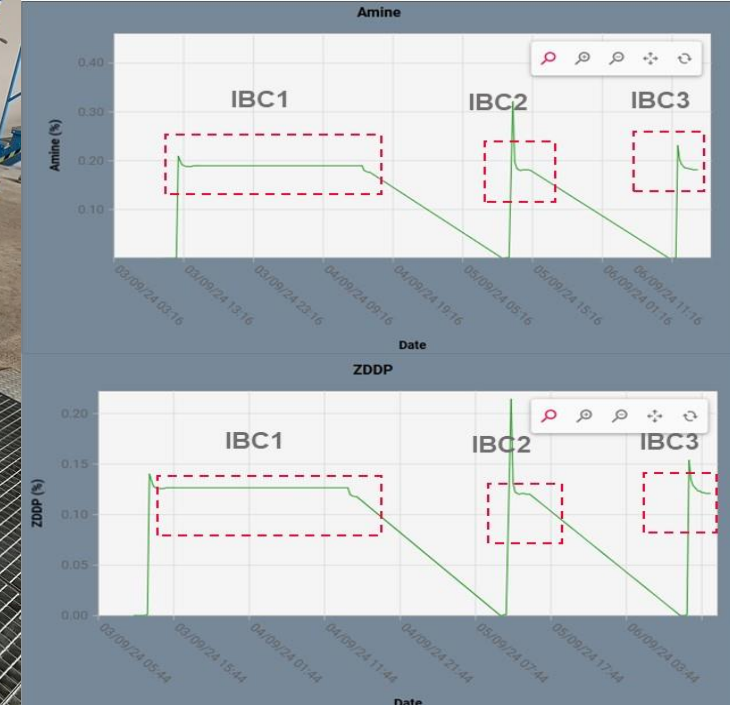
Application:

Mobile Filtration and Chemical Addition

Customer benefit:

Quality control of services provided

- Mobile Filtration Unit with FluidInspectIR-inline hooked up to multiple IBCs (large used oil container with 1000 litres).
- Water removal & particle count was measured inline to provide digital confirmation of filtration process
- Decon AW added at the end of filtration process to return filtered used oil to nearly fresh oil conditions
- Sensor measured Amine and ZDDP concentration
- Outstanding opportunity to extent oil lifetime and to automate filtration process



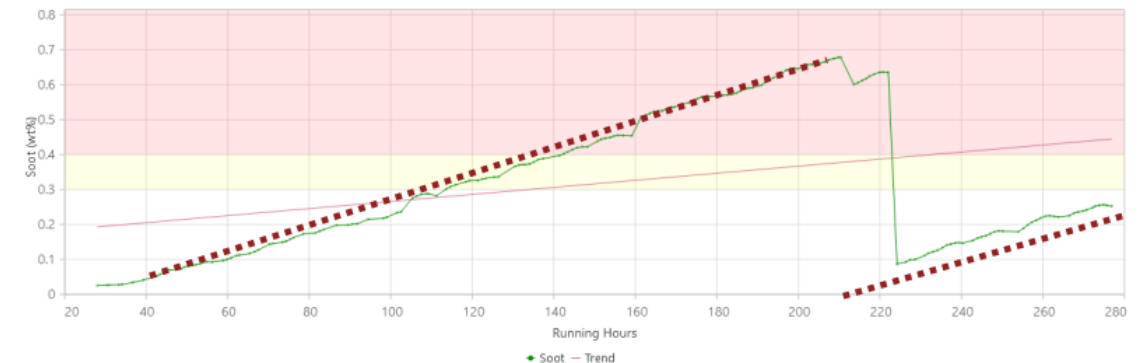
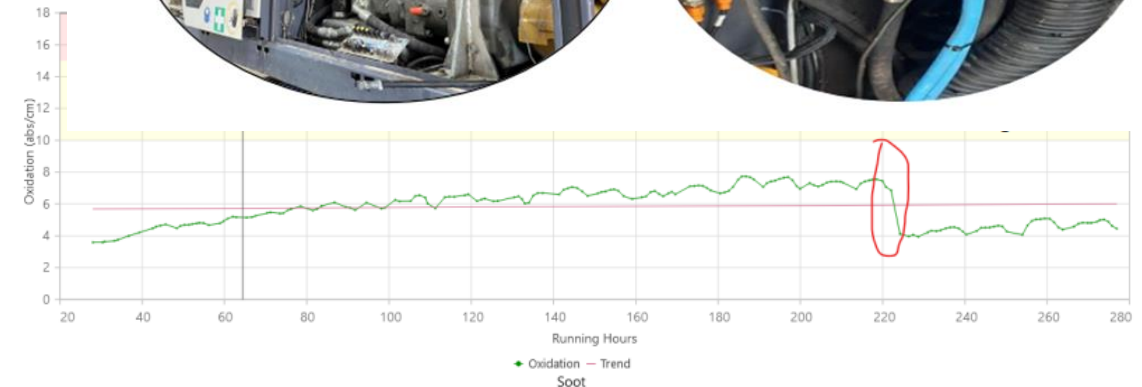
Inline Installations Examples

Application:
Moving vehicles & Mining

Customer benefit:

Optimisation of maintenance process / Fleet management

- Oil quality is an early indicator of potential problems in engines or hydraulic systems
- Traditional oil sampling often not effective due to large fleet size and/or remote locations
- Real time oil analysis with laboratory data quality provides a cost-effective solution in combination with the “Power of Slopes”
- Sensor provides data on oxidation, sulphation, TBN, TAN, water, ipH, soot and additives. Optionally viscosity and wear sensors can also be integrated into the solution
- FluidinspectIR-T-V compliant with military vibration, EMC & temperature tests



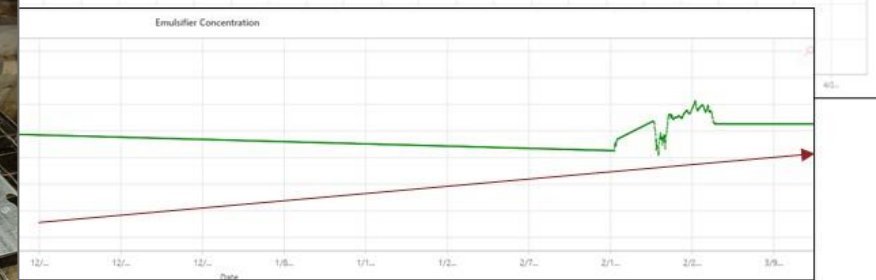
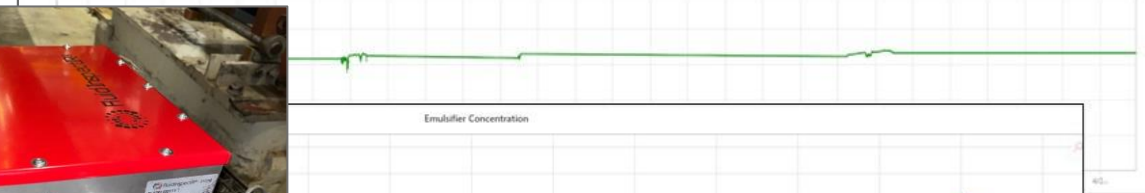
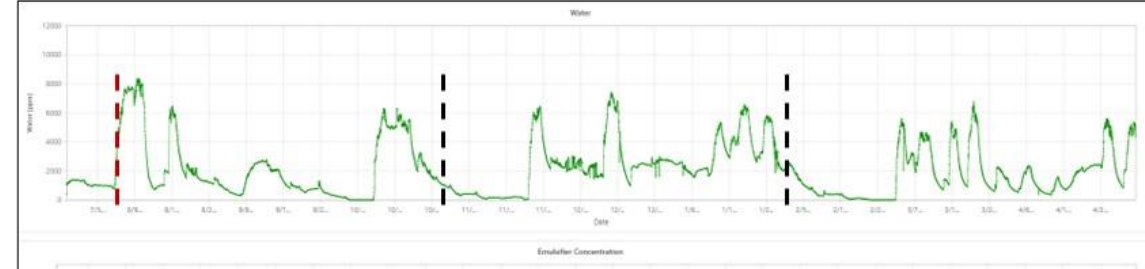
Inline Installations Examples

Application:
Steel Rolling

Customer benefit:

Automated early water detection

- Sensor configured in steel work applications to measure up to 30% water (hot rooling)
- Sensor accurately detect water break-in in real time and can be used to trigger water removal system
- Inset shows increase in emulsifier concentration in gear oil with each water break-in in cold rolling application
- Impossible to measure using standard lab analysis





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