Spectrolytic
Innovative Solutions in Spectroscopy

CASE STUDY

Extending Biogas Engine Lubricant Life 3x with Spectrolytic FluidInspectIR®

In partnership with OptiGas (NEF Förderungs GmbH)

In today's operating environment, extending lubricant life while maintaining asset integrity is a critical objective for industrial operators. **Spectrolytic FluidInspectIR®** provides a data-driven solution that enables the transition from conservative, time-based oil changes to **optimised condition-based maintenance strategies**.

This case study highlights a proven application where FluidInspectIR® has delivered significant operational and financial benefits.

600h → 1,400h → 1,800h Oil life trajectory	3x Lubricant life increase	50%+ Reduction in oil spend	>£10,000 Programme savings

The Challenge

OptiGas (NEF Förderungs GmbH) together with **Spectrolytic** challenged the norm and in collaboration have delivered remarkable results in oil life extension in real world conditions.

A biogas engine operator was changing oil every **600 hours** based on a fixed, conservative schedule. There was no visibility into actual oil condition — resulting in:

- **Excessive oil consumption** and premature oil replacement
- Unnecessary **labour and maintenance costs**
- A high **CO_2 footprint from disposal**
- **No insight** into actual lubricant condition or remaining useful life

The operator required a reliable method to **validate extended oil use without compromising equipment reliability**.

The Solution

A **Spectrolytic FluidInspectIR® Plus system** was installed to provide continuous, real-time oil condition monitoring. The system tracked key parameters including **TAN, TBN, oxidation, sulphation, water** etc. using mid-IR based chemical analysis — delivering actionable data on degradation, contamination, and additive performance.

This enabled a shift toward **evidence-based maintenance decision-making**.

Implementation

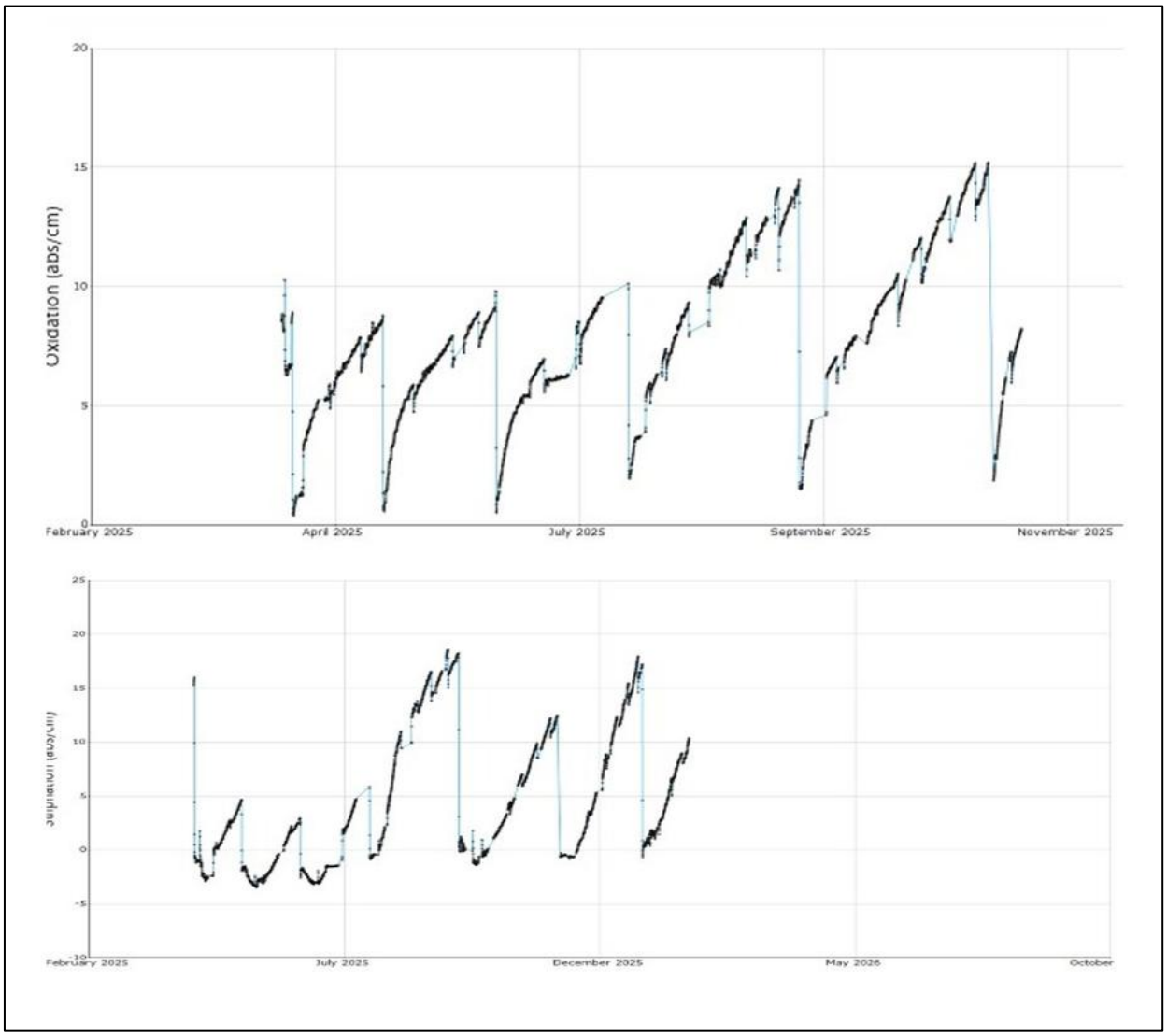
- Installation on a high-value, high-impact asset
- Establishment of a baseline oil fingerprint
- Continuous monitoring and trending of oil condition parameters
- Data-driven validation against OEM recommendations

Results

The deployment delivered clear, measurable outcomes:

- Oil drain interval safely **extended from 600h to 1,400h** — an increase of 2.3x
- Ongoing data indicates a trajectory toward **1,800h**
- **50%+ reduction in oil spend**
- A **sulphation spike from poor H_2S filtration** was also detected and resolved before causing damage — demonstrating the system's value beyond routine monitoring

USE CASE — BIOGAS ENGINE: OIL DRAIN INTERVAL EXTENSION



Real-time oxidation and sulphation monitoring data captured by FluidInspectIR® — showing oil condition trending across multiple drain intervals, including detection of a sulphation spike from poor H_2S filtration.

Operational Impact

- Significant reduction in lubricant consumption
- Lower maintenance and disposal costs
- Maintained (and validated) equipment reliability
- Increased confidence in maintenance decision-making
- Greater resilience across constrained supply chains

Key Insight

FluidInspectIR® provided the **actionable data validation** required to safely challenge OEM-defined intervals. Rather than relying on conservative estimates, the operator could make decisions based on **actual oil condition in real time**.

Financial Benefits

Programme savings to date: **> £10,000**

Projected lifetime savings: **> £100,000s**

Conclusion

Spectrolytic FluidInspectIR® enables operators to move beyond fixed maintenance schedules and unlock the full functional life of their lubricants.

The result is a measurable combination of **cost reduction, operational efficiency, and improved asset reliability** — supported by real, actionable data.

When every litre counts, extending oil life is no longer just a maintenance improvement — it is a **strategic supply chain advantage**.

Organisations adopting advanced monitoring solutions such as Spectrolytic FluidInspectIR® today will be best positioned to manage volatility and optimise performance tomorrow.

Interested in understanding how this can be applied within your operations?

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