Spectrolytic
Innovative Solutions in Spectroscopy

CASE STUDY

Quality Control in Mobile Oil Filtration Services

Inline chemical monitoring for mobile filtration and re-additisation operations

For mobile oil filtration service providers, demonstrating the quality of each treatment — filtration, water removal, and chemical re-additisation — has historically relied on sending oil samples to a laboratory and waiting for results. **Spectrolytic FluidInspectIR®** changes this fundamentally, providing **real-time, inline confirmation** of every stage of the filtration and chemical addition process.

This case study demonstrates how FluidInspectIR® was deployed on a Mobile Filtration Unit across multiple 1000-litre IBC containers, delivering digital proof of filtration effectiveness and chemical dosing accuracy — in real time.

Multi-IBC	Inline	Extended
Monitoring across multiple 1000-litre containers	Digital confirmation of filtration quality	Oil life extended through verified re-additisation

The Challenge

Mobile oil filtration service providers process large volumes of used oil across multiple IBC containers (each holding 1000 litres). The filtration process must effectively remove water and contaminants, and chemical additions such as Decon AW must be dosed correctly to return the oil to near-fresh conditions. Without real-time monitoring, there is no way to verify — during the process — that either goal is being achieved.

The challenge was providing customers with verifiable, digital proof of service quality — and identifying the opportunity to automate and optimise the filtration and re-additisation process.

- No real-time confirmation that filtration is removing water and particles to target levels

- No inline verification that chemical additions (Amine, ZDDP) have reached correct concentrations
- Reliance on periodic lab sampling that cannot track changes within each IBC batch cycle
- No automated data record of oil condition at each stage of processing
- Missed opportunity to verify that treated oil has genuinely returned to near-fresh conditions

The Solution

A **Spectrolytic FluidInspectIR®** system was integrated with the Mobile Filtration Unit to provide continuous real-time monitoring of key oil quality parameters — water content, particle count, Amine concentration, and ZDDP concentration — across each IBC processing cycle.

The inline data provided immediate, actionable confirmation that the filtration process was working and that Decon AW chemical addition was achieving its target — across **IBC1, IBC2, and IBC3** — delivering digital quality assurance for every batch.

Implementation

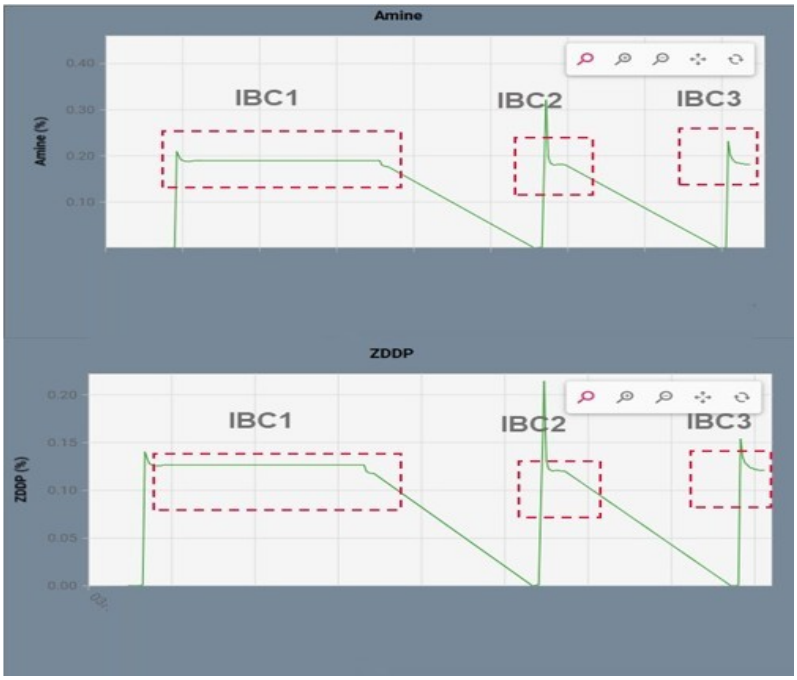
- Mobile Filtration Unit with FluidInspectIR-inline connected to multiple IBCs (1000-litre containers)
- Water removal and particle count measured inline to provide digital confirmation of filtration process
- Decon AW added at the end of filtration process — Amine and ZDDP concentration monitored in real time to confirm return to near-fresh oil conditions
- Sensor measured Amine and ZDDP concentration trends across IBC1, IBC2, and IBC3 batch cycles
- Automated trending data captured for each IBC — providing a verifiable service record

Results

The deployment delivered clear, measurable outcomes:

- Digital confirmation of filtration effectiveness captured inline across every IBC batch
- Amine and ZDDP concentration trends confirmed Decon AW dosing achieved target concentrations
- Used oil successfully returned to **near-fresh oil conditions** with inline chemical verification
- Automated data record created for each IBC batch — **entirely impossible with periodic lab sampling**
- Outstanding opportunity identified to extend oil lifetime and automate the filtration process

USE CASE — MOBILE FILTRATION: AMINE & ZDDP CONCENTRATION TRENDING



Real-time Amine and ZDDP concentration data captured by FluidInspectIR® across three IBC batch cycles — showing the effect of Decon AW addition and confirming return to near-fresh oil conditions. Impossible to capture with standard periodic lab analysis.

Operational Impact

- Quality control of mobile filtration services delivered with digital, inline proof
- Elimination of uncertainty in chemical addition dosing — confirmed by real-time measurement
- Demonstrated ability to extend oil service life through verified filtration and re-additisation
- Real-time data enables automation of filtration stop/start and chemical dosing decisions
- Customer confidence through transparent, data-backed records of every service batch
- Improved health & safety by reducing manual sampling requirements during active operations

Key Insight

FluidInspectIR® transformed a manual, judgement-based filtration service into a digitally verified, data-driven process. The ability to measure Amine and ZDDP concentration inline — and track their recovery across each IBC batch — provided the evidence needed to confirm that used oil had genuinely returned to near-fresh conditions. This level of insight is simply impossible with periodic lab sampling, and opens the door to fully automated filtration and chemical addition control.

Value Delivered

Digital quality verification + extended oil lifetime:	**Proven ROI**

Comprising: oil life extension, reduced lab costs, and service quality differentiation

Conclusion

Spectrolytic FluidInspectIR® enables mobile oil filtration service providers to move beyond reactive lab sampling and deliver measurable, verifiable quality to every customer — in real time.

The result is a compelling combination of **extended oil life, automated process control, and digital service quality assurance** — backed by data that periodic sampling simply cannot provide.

Inline oil condition monitoring is no longer just a maintenance tool — it is the foundation for a smarter, data-driven approach to oil filtration and chemical addition services.

Organisations deploying FluidInspectIR® today are best positioned to automate their filtration processes, extend oil lifetimes, and differentiate their service offering through verifiable data.

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

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