

FLUIDINSPECTIR® BENCHPRO AND ELEMENTAL ANALYSIS

Integrated Oil Condition Monitoring & Elemental Analysis System

1. PRODUCT OVERVIEW

The FluidInspectIR® BenchPro and Elemental Analysis is a two-system solution delivering both multi-parameter oil condition monitoring and rapid quantitative elemental analysis through a single unified software platform. Together, the combined system supports oil condition monitoring (OCM) and predictive maintenance programmes in both laboratory and on-site field environments, across engine, gear, hydraulic, turbomachinery, marine, and dielectric oil applications. The system provides the user with lab- equivalent oil analysis results within minutes and therefore enabling the user to make data driven decisions there and then without having to wait for days or weeks for a laboratory result to appear.



The FluidInspectIR® BenchPro handles Oil Condition Monitoring (OCM)— covering chemical composition (oxidation, Nitration, TAN, TBN, additive depletion etc), viscosity and particle contamination, while the integrated elemental analyser determines the concentration (in ppm) of up to 24 elements in ≤ 30 seconds

The elemental analyser is a compact Rotating Disc Electrode Optical Emission Spectrometer (RDE-OES) that delivers full compliance with ASTM D6595 and ASTM D6728,...

Mains powered and operated via a touchscreen GUI or laptop, the BenchPro auto-pumps fluid samples from a sample bottle. Results are displayed on screen and saved or downloaded to a laptop or server, with optional integrated modem and cloud connectivity. The measurement process for the elemental analysis is more manual, where a sample is loaded by the operator into the analyser. All data are automatically attributed to the relevant sample and combined for further analysis. The dedicated BenchPro software allows further charting, plotting, and analysis.

Oil Library

Spectrolytic has developed a comprehensive oil library of over 100 pre-validated oils spanning all major application categories — including engine, gear, hydraulic, turbomachinery, marine, and dielectric oils. This library underpins the measurement algorithms and condition thresholds used across all application parameters. The system will be customised, based on the customers input, for the specific oils in operation. Additional oils can be added to the system by the customer if and when required.

- **Standard supply includes:** 10 oils pre-loaded with the system, covering the customer's primary application(s)
- A structured process for end users to add customer-specific oils to the library where required
- Ongoing library updates from Spectrolytic as new oil formulations are validated

2. APPLICATION PARAMETERS & ELEMENTAL ANALYSIS RANGE

Application Measurement Parameters								Elemental Analysis Range		
BenchPro — Oil Condition Monitoring								24 elements simultaneously in ≤30 seconds		
Parameter	Gas	Turb	Hyd	Diel	Gear	Mar	Dies	Element	Range (ppm)	Typical Application
Oxidation (abs/cm)	✓	✓	✓	✓	✓	✓	✓	Fe (Iron)	0–1000	Engine cylinder / bearing wear
Nitration (abs/cm)	✓							Cu (Copper)	0–1000	Bearing, bushing, cooler wear
Sulphation (abs/cm)	✓		✓				✓	Al (Aluminium)	0–1000	Piston, pump housing wear
ipH	✓							Cr (Chromium)	0–1000	Piston ring, chrome lining wear
Water (ppm)	✓	✓	✓	✓	✓	✓	✓	Pb (Lead)	0–1000	Bearing overlay / fuel contamination
TBN (mgKOH/g)	✓	✓					✓	Si (Silicon)	0–1000	Dirt / silica ingestion, antifoam
TAN (mgKOH/g)		✓	✓	✓	✓			B (Boron)	0–1000	Coolant contamination indicator
KV100C (cSt)	✓	✓				✓		Na (Sodium)	0–1000	Coolant / seawater contamination
KV40C (cSt)			✓	✓	✓			Mo (Molybdenum)	0–1000	Anti-wear / friction modifier
Fuel Dilution	✓						✓	Zn (Zinc)	0–6000	ZDDP anti-wear / antioxidant
Soot (wt%)	✓						✓	Mg (Magnesium)	0–6000	Detergent additive (engine oils)
Amine AO (%)		✓	✓					P (Phosphorus)	0–6000	Anti-wear additive (ZDDP)
Phenol AO (%)		✓	✓					Ca (Calcium)	0–6000	Detergent / dispersant additive
ISO 4406 Class.			✓	✓	✓	✓		+ 11 more	Various	Ag, Ni, Ti, V, Cd, Sn, Mn, K, Li, Sb, Ba
Wear Particle Cls.			✓		✓	✓		Custom upper ranges available on request. Compliant with ASTM D6595 and ASTM D6728.		
Biodiesel: FAME%, density and water										

3. SUMMARY & TECHNICAL SPECIFICATIONS

Parameter	Specification
Weight	Combined weight about 40kg
Dimensions (W×L×D)	40cm x 40cm x 30cm for OCM and 40cm x 40cm x 40cm for Elemental
Power Supply	220V for both systems
Analysis Time	Less than 10min per sample
Sample Volume	Min 200ml
Connectivity	MODBUS & Cloud connection available

4. WARRANTY & AFTER-SALES SUPPORT

All FluidInspectIR® BenchPro and Elemental Analysis systems are supplied with a **12-month warranty** from the date of purchase, covering manufacturing defects and system components. Long-term availability of spare parts and consumables is maintained to support the full operational lifetime of the equipment.

Comprehensive technical support is available both during and after the warranty period, including remote diagnostics, application guidance, and access to ongoing oil library updates. Service agreements and extended support packages are available upon request.