



X-RAY FLUORESCENCE MEASUREMENT SYSTEM

**XMS**

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Enabling XRF analysis in industrial automation

Innovation with Integrity

# The instrument for XRF automation

The XMS is a compact and rugged X-ray fluorescence measurement head designed specifically for industrial applications. Elemental composition analysis is increasingly required in many applications such as in the extraction of natural resources (minerals, metals, oil and gas), raw material transformation and manufacturing (metal alloys, glass, rubber), and metal and waste recycling.

The system's fast data collection and analysis allows manufacturers and service providers to set up process control routines, pass/fail grade tests, and to optimize their production and quality yield.

Such a wide range of applications requires extremely versatile instrumentation with a robust design that can withstand industrial and harsh environments, a large element detection range, and reliable software to be integrated on the measurement line.

The XMS is a robust and versatile sensor for XRF measurements, developed especially to meet the different requirements of in-line applications.

Integrating a state-of-the-art silicon drift detector with a Graphene window, the XMS allows for outstanding element detection performance. An optional helium purge is also available, enabling detection down to Na, which would be otherwise not possible.

The new detector technology together with the latest generation of a 50 kV X-ray tube with a Rh target, the XMS allows for FWHM @ Mn  $K\alpha$  < 145 eV up to 450,000 cps ensuring the best data in the shortest acquisition time.



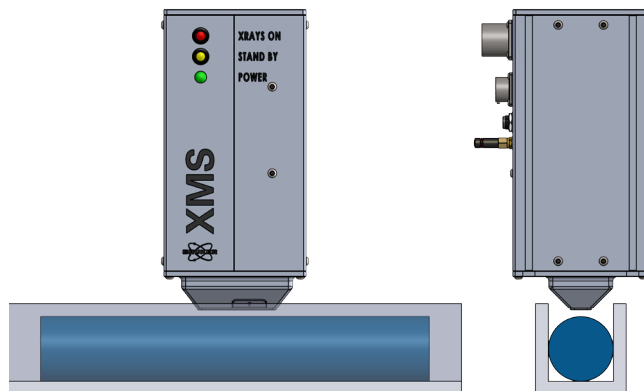
Thanks to its rugged construction, the XMS is the perfect solution for industrial applications where environmental and operational conditions demand an extreme robustness against shocks, vibration, humidity, and dust.

The XMS comes with a dedicated Application Programming Interface based on XML, which allows easy integration into almost any coding language (Python, C, VB, etc.).

# Natural resources exploration

Core logging is a fundamental step in geology, mining, oil and gas exploration. Cylindrical shaped rocks are drilled into earth with potential mineral deposits and the core's elemental composition is accurately measured. The identification of even small traces of precious elements can drive important decisions for mining companies (e.g., to set up a new extraction site or not) or, for geologists, to give insights on the area's geological history. The XMS, thanks to its rugged design and its universal API interface, is the ideal solution for the automation of core logging activities.

**Figure 1**  
The XMS can fit inside rocks core boxes thanks to its suitably designed slim nose.



## In-line process control

In-line process and quality control represents the most effective approach for real-time performance of the production line and to take immediate corrective actions, maximize production yield and minimize operative costs. The XMS is built to be easily integrated onto conveyor belt systems for in-line and on-line stationary control.

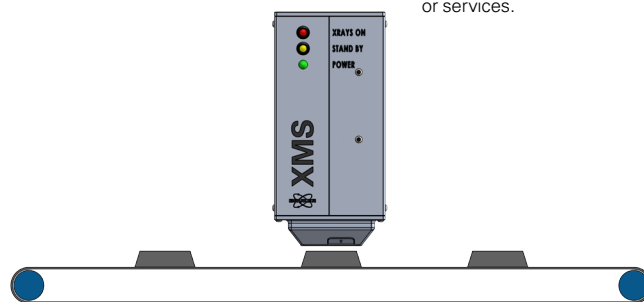
Application examples are the measurement of the correct metal concentration mix before melting takes place inside a furnace or the quality control of metal alloys.

**Figure 2**  
Various drill cores waiting to be analyzed and logged.

The XMS can be easily integrated into an automated measurement system to scan different points along the cores as they sit in their trays thanks to the suitably designed measurement nose.

Moreover, the XMS enables low-energy element detection down to sodium thanks to a dedicated helium purge valve, which saturates the gap between the detector and the sample under analysis.

**Figure 3**  
XMS can be easily deployed in in-line applications where continuous process control is crucial to ensure a high quality standard of products or services.



## Technical Specification

<b>XRF excitation</b>	Rh target X-ray tube, 5 kV - 50 kV, 5 $\mu$ A - 200 $\mu$ A, 4 W
<b>Filters</b>	Five (5) software selectable filters
<b>Collimator options</b>	8 mm standard, 5 mm or 3 mm as optional
<b>XRF detection</b>	State-of-the-art SD detector with Graphene-based window (FWHM resolution < 145eV @Mn K $\alpha$ @ 450,000 cps)
<b>Detector shield</b>	Protective grid against punctured detector
<b>XRF analysis range</b>	Mg-U   Light elements capability down to Na with optional He purge
<b>Operating environment</b>	Operating temperature: -10°C to +50°C Altitude: $\leq$ 2,500 m Splash/dust resistant enclosure
<b>Sample temperature</b>	Default to 150°C with Ultralene® window Up to 350°C with Kapton® window (max. 5 s measurement, min. 60 s cool down)
<b>Communication</b>	USB 2.0 (USB-B OTG connection)
<b>Software</b>	XML based Application Programming Interface (API)
<b>LEDs</b>	XRAYS ON, STAND BY and POWER
<b>Dimensions</b>	W          D          H 232 mm x 105 mm x 110 mm
<b>Weight</b>	~ 1.9kg
<b>Power supply</b>	9V DV, 3A
<b>Auxiliary connector</b>	Relay contacts "X-ray ON", Safety Interlock

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