PORTABLE XRF FOR MINING AND EXPLORATION

- Mineral Exploration
- Mining and Grade Control
- Geometallurgy and Processing
- Environmental Management
Olympus Innov-X, the specialist manufacturer of portable geochemical analyzers for the global exploration and mining industry. Our unparalleled in-house expertise in utilizing technology for field geological scenarios sets us apart from the rest.
Why should you choose Olympus Innov-X?

- Specifically and purposefully designed instrumentation for infield mining and exploration uses
- A specialist International Mining Group (IMG) created to focus solely on XRF and XRD analysis technology. IMG is staffed by experienced geological industry professionals who understand your business needs
- Our commitment to long term partnering with exploration and mining companies - we stand by our technology and service over the long term
- We focus on
  - Pioneering technological advancements and geology-focused innovations
  - Advanced training programs and ongoing global support
  - Specialist commodity calibrations and development of innovative applications
  - Mineral-specific accessories
  - Comprehensive methodology development and data management solutions
  - Real-time data integration with GPS and GIS
The DELTA Line

The DELTA Line of ruggedized XRF analyzers offers a range of high-productivity tools that efficiently and accurately meet your geochemical analysis requirements. From the DELTA-50 Premium, optimized for REEs, to the DELTA Classic, configured to meet an array of applications, it’s easy to choose the optimal DELTA portable XRF analyzer for your analysis needs.

**DELTA-50 Premium**
The ideal handheld analyzer for REE exploration and grading with a 4 W 50 kV X-ray tube. The large-area, high performance SDD works in conjunction with the higher voltage output of the tube to enable better sensitivity for important high-Z elements, including rare earth elements (REEs), Cd, and Ag.

**DELTA Premium**
The Premium combines a large-area, high-performance SDD, and a 4 W optimized X-ray tube, making it the ultimate solution for ultra-quick, analytically demanding applications, and superior light element (Mg, Al, Si) analysis.

**DELTA Standard**
The new standard in handheld XRF. The Silicon Drift Detector provides excellent speed and LODs, in addition to good light-element analysis capabilities.

**DELTA Classic**
A high-tech, flexible analyzer for typical XRF analysis applications, our classic DELTA analyzer is equipped with an Si PIN detector.
Incorporating Everything You Need in Handheld XRF with State-of-the-Art Innovations. The DELTA Line from Olympus Innov-X.

4 W X-ray tube, 200 µA current (max), plus optimized beam settings

Tight geometry for exceptional LODs and high analysis throughput

Large-Area SDD option and customized X-ray tube provide exceptional light-element sensitivity

Patent-pending automatic barometric pressure correction that adjusts calibration as needed

Lightning-fast bootup and data acquisition: faster testing, more results

Floating Point Processor: provides more calculations in less time, and leverages more advanced calibration algorithms

Integrated heat sink for high power use in extreme temperatures

Analysis indicator lights visible from 360°

Bright, responsive, color touch screen display

Accelerometer technology puts the unit into sleep mode when not in use to conserve power; logs impacts for tool management

USB interface port for high-speed data download and seamless PC control

Ergonomic rubberized handle for enhanced grip

Integrated Bluetooth for data input and output

Hot Swap: the rechargeable battery can be replaced without having to turn off or re-standardize the unit

Docking and Charging Station

Portable Workstation

PC Software
The Xplorer Package

Mobile GPS-GIS Mapping Solutions for your XRF

Pioneered by Olympus Innov-X geologists, the Xplorer package seamlessly combines XRF-generated data into your GIS package in the field in real time. The outcome for the exploration geologists is time and cost savings, improved data integrity, and an integrated, automated data management and validation process. The ability to map, visualize, assess, and follow up on targets immediately has genuinely changed surface soil/sediment geochemical exploration methodologies for the better.

- Field Portable XRF data is transferred wirelessly, and spatially registered in real time using industry-standard Mobile GIS and State of the Art Trimble GPS Hardware, in addition to GIS Software (ArcPAD or Discover Mobile)
- The result is live geochemical mapping in the field for visualization, gridding, and contouring in GIS, leading to rapid, informed decision making
- Seamless integration into powerful geochemical analysis software such as ioGAS for first class data validation and QA/QC
- Reduces human error related to XRF data transfer, GPS coordinate merging, and GIS integration
X-5000 – Powerful Portable XRF

The rugged X-5000, with its large-area Silicon Drift Detector (SDD), features an array of filtering and excitation options offering impressive analytical performance not usually available in the field:

- 50 kV, 200 µA X-Ray Tube = 10 watt system
- High resolution, large-area Silicon Drift Detector (SDD)
- Self contained, closed beam with safety interlocks
- Fully integrated onboard Win XP PC with large touch screen
- Easy-to-use, intuitive Olympus Innov-X PC Software Suite
- True portability at less than 10 kg with the battery option
- Enhanced performance for REEs, Ag, Cd, Sn, Sb and Ba
The Business Case for Portable XRF
for Exploration, Mining & Metallurgical Processing

Mineral Exploration
For exploration applications, the average return on investment (ROI) timescale is typically six (6) months. This varies on a project by project basis. Olympus Innov-X analyzers enable:

- Due diligence during property acquisition and deal making
- Qualitative chemistry of rock, chip, soil, and sediment samples at the early regional reconnaissance and mapping stages
- Quantitative data during first pass regional soil, sediment, till, and trenching stages
- Immediate identification of mineralized trends and anomalies, definition of drill targets, extension of soil sample lines
- Adaptation of sampling and mapping programs in real time to maximize exploration budgets
- Pre-screening of samples to maximize efficiency of off-site laboratory testing
- Increasing sample density in the most prospective areas
- Analysis of air core, RAB, RC and diamond core samples during the drilling phase as the samples come out of the ground
Mining & Metallurgical Processing

Portable XRF can provide productivity increases through on-site, immediate geochemical analysis results. Make decisions on the spot.

- Instantaneous screening of blast hole samples in open pits allows for more efficient movement of ore/waste material by reducing the reliance on the turnaround time from the mine laboratory
- Field analysis of stockpiles assists rapid blending and feeding to the mill
- Real time analysis of feeds, concentrates, and tails allow immediate dosing adjustments to be made in the processing plant
- Underground grade control can be improved in certain settings by establishing sampling and analysis methodologies that involve DELTA portable XRF. Olympus Innov-X XRF’s aid the decision making process at the underground face in many underground mines around the world on a daily basis
- Sample and matrix specific calibrations are usually required for mine-site applications. The DELTA is designed to be very easy to set up and use with multiple calibration models to ensure optimal performance – even for challenging light element (Mg, Al, Si) analysis
Some Typical LOD’s*  
Mg ~ 0.5%  
Al-Si ~ 0.1%  
P ~ 500 ppm  
S ~ 100 ppm  
K-Ca ~ 20-30 ppm  
Ti-V-Cr ~ 5-10 ppm  
Mn-Fe-Cu-Pb-Zn ~ 3-5 ppm  
As-Mo-Sr-Rb-Zr-U-Th ~ 1-2 ppm  
Ag-Cd-Sn-Sb ~ 5-10 ppm  
Au ~ 5-7 ppm  

* Typical results for 120 sec test per beam using Soil & Mining Modes in a Silica Matrix

Mineral Exploration and Mining Applications

The advanced analytical performance and broad element suite means there is an Olympus Innov-X field portable XRF for nearly any geological situation. Common analysis applications include:

- Base metals: Cu-Pb-Zn-Ag-Mo
- Gold (including pathfinders & lithogeochemistry)
- Uranium +/- rare earth elements (+ pathfinders)
- Nickel Sulphide and Laterite deposits
- Iron Ore and Bauxites
- Phosphates and Potash
- Epithermal Sn-W-Mo-Bi-Sb Deposits
- Mineral Sands - Ti-Zr
- Coal, Oil and Gas – mud logging and trace element chemistry

Note: Depends on sample matrix and analysis time
What do our Customers Say?

“The HZL Exploration Department acquired its first XRF from Innov-X in June 2010. The instrument, once its limitations are understood, allows for rapid screening of material that gives us a measure of exploration flexibility and long-term cost savings we’ve not had before. After six months, we’ve paid back the acquisition cost. And a second unit has just been delivered to us.”

Tony Adkins
Head of Exploration at Hindustan Zinc Limited in India

“We acquired an Innov-X Omega XRF unit early in the 2010 field season. The unit went to the Yukon, where it was used to test soils in the Dawson Range for the pathfinder elements (As, Sb) associated with gold mineralization. By using the Omega, our crew could immediately identify and follow up on mineralized trends exposed in our backhoe trenches. The trenching was more efficient and focused than it otherwise would have been, saving precious time and thousands of dollars. The Omega may have paid for itself already.”

David Pawliuk
Vice President, Exploration, Silver Quest Resources Ltd, Canada

“The Innov-X desktop and handheld XRF units have both been vital to FQM’s exploration efforts in Africa. The quick, reliable results and its ease of use have been valuable for making critical exploration and mining evaluations at all of our operations worldwide.”

Frank Santaguida
Exploration, First Quantum Minerals Limited, Zambia/DRC.

“We have used the Omega XRF fairly extensively in our Canadian exploration efforts and are pleased with the results. In the right environment, the tool provides fast and reliable geochemical information, reducing lab costs and turnaround time.”

Ross Sherlock
Exploration Manager, Gold Fields Canada

“We have been using our X-5000 and DELTA portable XRFs to rapidly collect multielement data from drill core, RC chips, and soils in the field and laboratory. These tools are being used in research and development projects to assess 3D spatial variations of geochemistry in large mineral systems (Au, U, Cu) that will effectively aid exploration targeting, and better define locations for detailed sampling and further analysis. This technology has matured to the point that it can be effectively implemented in research projects as a frontline tool.”

Dr. James Cleverley
Senior Geochemist, CSIRO Minerals Down Under Research Flagship.
Your Partner...

Olympus Innov-X is focused on long-term partnerships with exploration and mining companies. We understand the mineral exploration and mining industry, and the demanding environments in which our equipment is used. We have engineered our analyzers to be rugged and reliable, and our aim is to keep you up and running. We are committed to supporting you and your investments with Olympus Innov-X analyzers.

Return on Investment

Portable XRF allows for hundreds of on-site analyses per day. Although the return on investment (ROI) offered by a portable XRF project depends on many different aspects of its use, including the type of project and target material, the value added by having on-site, real-time data can be significant. Rapid decision making based on accurate, immediate analysis maximizes shareholder value. That is the Olympus Innov-X focus.

Outstanding Customer Support

From initial demonstration, to identification of your testing needs, to thorough user training, and fielding any questions or needs going forward, we are here to support you. We take pride in the comprehensive training offered by our support department, and our responsiveness to our customers’ needs. We are committed to your satisfaction.

Global Support Coverage

With offices around the world, we have local support centers to support you and your analyzers wherever they’re being utilized.