



Portable XRF for Positive Material Identification (PMI)



- Alloy/Metal Identification
- Quality Control/Quality Assurance
- Safety and Maintenance
- Superior Light Element and Aluminum Analysis



The DELTA Line Rugged, High Performance Handheld XRF

See and feel the DELTA difference. Our analyzers are compact and robust from probe to trigger to display, with sophisticated XRF technology that's better, faster, and more responsive. From initial bootup to the final result, the DELTA is the optimum solution for all your analytical needs.

The DELTA line gives you the ultimate experience in field-portable handheld XRF analysis, providing fast measurements with accuracy, precision, detection limit, and light element measurement capabilities built into a compact single-chassis frame wrapped in robust industrial-grade casing.

Incorporating Everything You Need in Handheld XRF with State-of-the-Art Innovations – The DELTA Line from Innov-X.

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

Tight geometry for exceptional LODs and high analysis throughput

Large-Area SDD option plus customized X-ray tube provides exceptional light element sensitivity

Patent-pending automatic barometric pressure correction 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 Bluetooth for data input and output

Ergonomic rubberized handle for enhanced grip



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

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

Docking Station with Automatic Charging and Calibration Check

The unique DELTA Docking Station means not ever having to power down the analyzer. The station charges the analyzer battery and a spare, and performs periodic calibration checks. The analyzer can be removed at anytime for immediate testing.

Additional Battery Charger

DC Outlet

Power and Battery Indicator Lights

Connect to a PC for Data Management



USB Connector Port

Where Ruggedness and Performance Converge

A new, ergonomically advanced, forward-looking design backed with the latest in electronics, components, and software technology. The result: the high-performance and rugged Olympus Innov-X DELTA.

Testing times that once took 5 to 10 seconds with handheld XRF now take just 1 to 2 seconds to complete and provide even greater accuracy and precision. This means PMI inspectors and QC personnel can run hundreds more tests per day with complete confidence in the results, further increasing productivity, boosting customer confidence, and maximizing the bottom line.

Tough on the Outside

Ideally-suited for manufacturing, the DELTA is equipped with our trademark weatherproof, dust proof, protective housing.

- Ruggedized casing manufactured to industrial standards – no PDA or movable screen for superior reliability.
- Superior field use ergonomics with rubberized grip for ease of handling during all-day use.
- Large, rear-facing, motion-responsive, transflexive touch screen for clear viewing; automatically brightens in sunlight.
- An external heat sink engineered for extreme temperature and high-power use.
- Time-saving hot-swappable batteries - enables rechargeable battery to be replaced without having to turn off or re-standardize the unit.

Smart on the Inside

Engineered with advanced technology, yet so simple to use. The intuitive user interface makes navigation easy for both non-technical and more advanced operators.

- Up to 4x improvement in light element analysis resulting from the DELTA's custom 4 W, 200 μ A (max) X-ray tube.
- Up to a 10x improvement in sorting speed and throughput thanks to state-of-the-art electronics, a floating point processor, and redesigned analytical geometry.
- Time-saving, auto-calibration feature built into our exclusive docking station, eliminating the need to stop testing for standardizations.
- Expanded alloy library of 400+ unique grades; user-settable tramp limits to facilitate accurate poisonous element analysis.
 - Custom grades can be added on the spot



X Res.-Alloy Plus

11/17/10 #23

303 - Exact

El	%	+/-	Spec (303)
Si	0.21	0.02	[0.00-1.00]
P	0.028	0.003	[0.00-0.05]
S	0.343	0.009	[0.15-0.75]
Cr	17.79	0.26	[17.00-19.00]
Mn	1.82	0.14	[0.00-2.00]
Fe	69.72	0.62	[66.65-75.95]
Ni	9.97	0.29	[8.00-10.00]
Mo	0.12	0.01	[0.00-0.70]

Ready 20:10

Within seconds, the DELTA provides an easy-to-interpret results screen that can be viewed in a customizable list or spectral format. Simple, fast data export is achieved via USB, Bluetooth to Microsoft Excel spreadsheet, or printed directly via a wireless printer.



DELTA Premium Handheld XRF Analyzer



Versatility - The DELTA can be set up in its optional portable XRF Workstation, controlled by a laptop PC with full analysis and reporting capabilities.

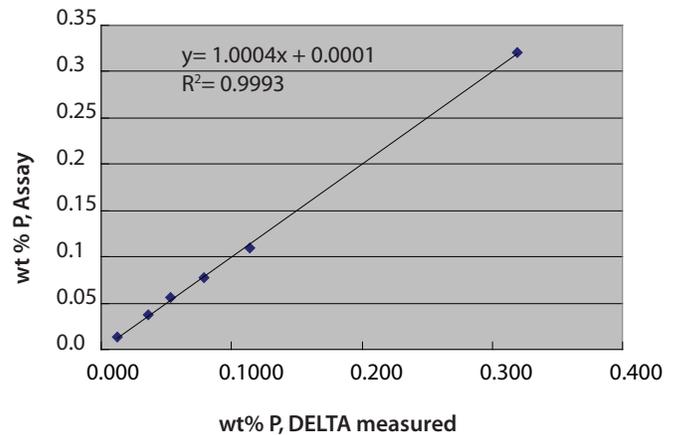
Superior Light Element Analysis

Traditionally a difficult area for handheld XRF, the analysis of light alloys and light elements (Mg, Al, Si, P, S) is now routine with the DELTA. With automatic filtering, there is no compromise – you get fast, precise analysis of transition and heavy metals, and sensitive measurement of light element content. SmartSort maximizes testing throughput – beams are automatically activated based on the sample tested.

- Magnesium (Mg) detection down to 0.20% with the DELTA Premium.
- Quick and accurate quantification of S content in stainless and low alloy steels.
 - Reliable identification of 303 and 416 grades.
- Measures Si and Al in stainless, bronzes and other alloys.
- Measures P in carbon steel down to 0.014% with exclusive 3-beam Alloy Plus calibration, included with the DELTA Premium Alloy Analyzer.
- Extensive grade library provides nominal chemistry for light elements when the fastest testing speeds are required.

Phosphorus (P) in low alloy steel analysis by DELTA Premium Alloy Analyzer.

Correlation plot: Measured P % vs Assay P %



El	%	+/-	Spec (356)
Mg	0.38	0.13	[0.20-0.45]
Al	92.31	0.19	[89.75-93.30]
Si	6.90	0.04	[6.50-7.50]
Mn	0.021	0.006	[0.00-0.35]
Fe	0.17	0.01	[0.00-0.60]
Ni	0.027	0.003	Tramp[0.05]
Cu	0.055	0.004	[0.00-0.25]
Zn	0.076	0.004	[0.00-0.35]
Pb	0.019	0.002	Tramp[0.05]
Bi	0.034	0.002	Tramp[0.05]

DELTA alloy result screen

Ultimate Aluminum Analysis

Easily and directly sorts and grades Aluminum and Aluminum containing materials. The Innov-X DELTA Premium offers unmatched Al performance.

Aluminum Alloys

- Accurately measures Mg content in 5000 series alloys and separates Mg-containing alloys. Sorts 3003 and 3004; 1100 and 6063; 2014 and 2024.

Titanium Alloys

- Accurately determines the Al content in Ti alloys, including CP Ti cut with Al.

Red Metals

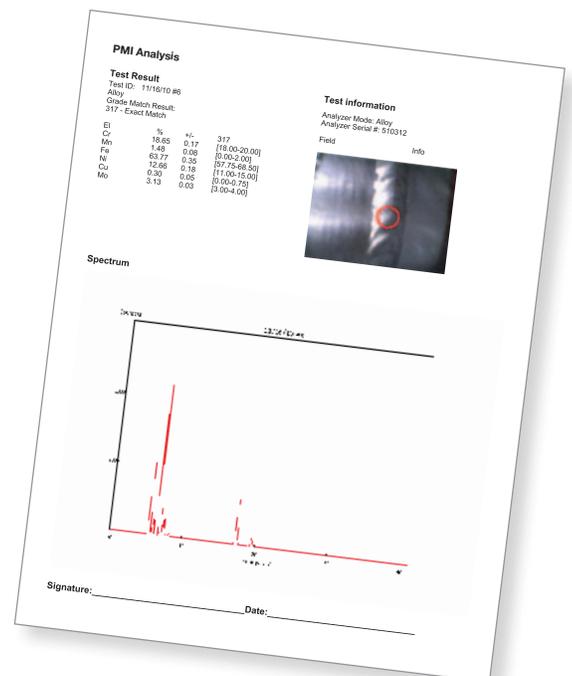
- Accurately classifies Al and Si bronzes

High-Temperature Cast Stainless

- Measures Al in high-temp, Ni/Co superalloys.

Easy Exporting and Report Generation

Within seconds, the DELTA provides an easy-to-interpret, customizable results screen. Data can be exported to Microsoft Excel via USB or Bluetooth, or printed directly via a wireless printer. Custom report generation is straightforward using the DELTA PC Software included with all DELTA analyzers. Reports can include data results, qualitative sample information, spectra, and even camera images, and can also be formatted with the operator's company details and logo.



Sample DELTA analysis report, featuring sample image and small spot collimator indicator

Small Component and Weld Analysis

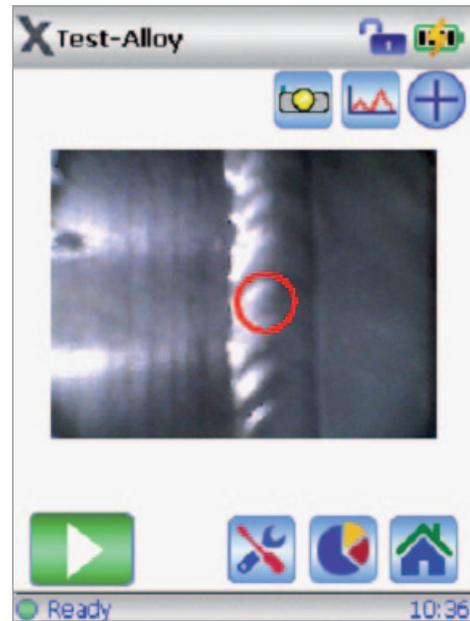
Integrated Small-Spot Collimator

DELTA Analyzers can be equipped with 3 mm diameter spot collimation for highly focused sample analysis. An integrated full VGA camera takes a live video image of the sample tested and superimposes a spot location for precise test location. Capable of analyzing thin weld beads independent from substrate materials. Analyzes small fixture components, wires, and solders.

- Spot size can be changed in real-time by switching between the collimated 3 mm diameter spot and the standard 10 mm diameter analysis spot.
- The sample image is saved to memory after analysis. The image can be archived along with the analysis results and exported for simple report generation.
- The convenience of a benchtop spectrometer in a rugged handheld analyzer.



Small spot collimation for PCB component analysis



3 mm spot collimation for analysis of weld bead exclusive of joined material

Weld Mask Adaptor

The ruggedized weld mask can be attached to the front plate of the snout to collimate analysis to a 3 mm width slot, which is perfect for rapid, on-site weld bead analysis. The DELTA weld mask is engineering with layered metals to exclude substrate materials from analysis.



DELTA Premium Alloy Analyzer with Weld Mask installed

Exclusive DELTA Alloy Analysis Features

The DELTA is a reliable and rugged analyzer that maximizes both speed and accuracy. Other XRF systems have trade-offs. They may be able to identify alloys quickly, however inexperienced operators may not be able to determine whether an ID is incorrect, or whether longer testing is required. So how does the conscientious inspector maximize testing speed without increasing the risk of mistaken IDs or erroneous readings? Innov-X's SmartSort solution automates all these decisions, enabling even inexperienced operators to maximize both speed and inspection accuracy. This powerful feature yields optimized throughput and accuracy, making the DELTA an extremely productive XRF for alloy inspection.

SmartSort Mode

- Enables specific grades to be set up to automatically extend testing time, thus preventing mix-ups.
- Maximizes efficiency for speed testing. Automatically extends tests for light elements (Mg, Al, Si, P, S) when absolutely necessary, thus eliminating unnecessarily long tests, and preventing mix-ups.
- Makes the DELTA an extremely fast analyzer for inspections.



Analysis results display demonstrating Nominal value (3% Al) and Tramp element (.09 % Fe) features.

Grade Match Messaging

- Enables qualitative information and messages to be added into the grade ID library
- Fully customizable messages allow for refinery-specific coding messages
- Can be used to store multiple Messaging libraries for individual work sites



High-Temperature Ready

- The DELTA is engineered to be utilized for in-service inspection of high temp systems with temperatures in excess of 426 °C (800 °F)
- The DELTA's industry-exclusive heat sink dissipates heat away from the XRF electronics
- The DELTA can be used for longer durations in hot environments
- Facilitates enhanced reliability of key XRF electronic components
- Provides faster cooling of electronics after exposure to high temperatures

Welding Grade Library

- Can be activated alongside the standard inspection library for comprehensive PMI work
- Provides easy grade addition or editing onboard the analyzer
- Standard Grade Match Messaging library included

Tramp Library

- A long-time standard feature in OES systems, the DELTA is the first HHXRF to incorporate this feature
- Allows operators to set a max tolerated concentration for individual elements in 7 unique grade families; these elements are considered "Tramp"
- The DELTA comes preloaded with a tramp library based on industry standards
- The analyzer can identify and report tramp material, enabling the user to simplify grade matching by not having to count small, expected amounts of tramp elements against the grade match
- Detects and quantifies tramp residuals critical to selective corrosion investigations and failure analysis



The DELTA Knows Metal and Alloys

Configured with a standard package of 25+ elements, the DELTA generates alloy chemistry and grade ID in seconds. From simple sorting to challenging grade separations, the DELTA provides highly specific material chemistry to rapidly and accurately identify pure metals and alloy grades including, but not limited to:

- Aluminum alloys
- Chromium-Molybdenum steels
- Cobalt alloys
- Copper alloys
- Exotic alloys
- Magnesium alloys
- Nickel alloys
- Nickel/Cobalt alloys
- Precious metals
- Stainless steels
- Tool steels
- Titanium alloys
- Wrought aluminum alloys
- Zinc alloys
- Zirconium alloys

When you need a reliable analysis tool to provide fast and accurate Positive Material Identification, turn to the DELTA. From turnings, shavings, rods, and wires to small parts and components, to more sizeable material or structures, the DELTA provides anywhere, anytime testing with faster and more accurate results than ever before.



**Petrochemical,
Power Generation**



Precision Manufacturing



Aerospace



Biomedical

The DELTA Line

The DELTA Line of ruggedized XRF analyzers offers a range of high-productivity tools that efficiently and accurately meet materials analysis requirements. From the DELTA Premium, optimized for analytical sensitivity and light element analysis, to the DELTA Classic, configured to meet a wide array of applications at an attractive price, it's easy to choose the optimal DELTA HHXRF analyzer for your analysis needs.



DELTA Premium

Combining a large area, high-performance SDD, and a 4 W optimized X-ray tube, the Premium is the ideal solution for ultra quick, analytically demanding applications, and superior LE analysis in air.



DELTA Standard

Silicon Drift Detector offers excellent speed and LODs, in addition to some light element analysis capabilities. The new standard in handheld XRF.



DELTA Classic

Our classic DELTA analyzer is equipped with an Si PIN detector. A high-tech, flexible analyzer for typical XRF analysis sorting of stainless steels, nickel alloys, and more.

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