

DELTA[®] Handheld XRF
for Positive Material Identification (PMI)



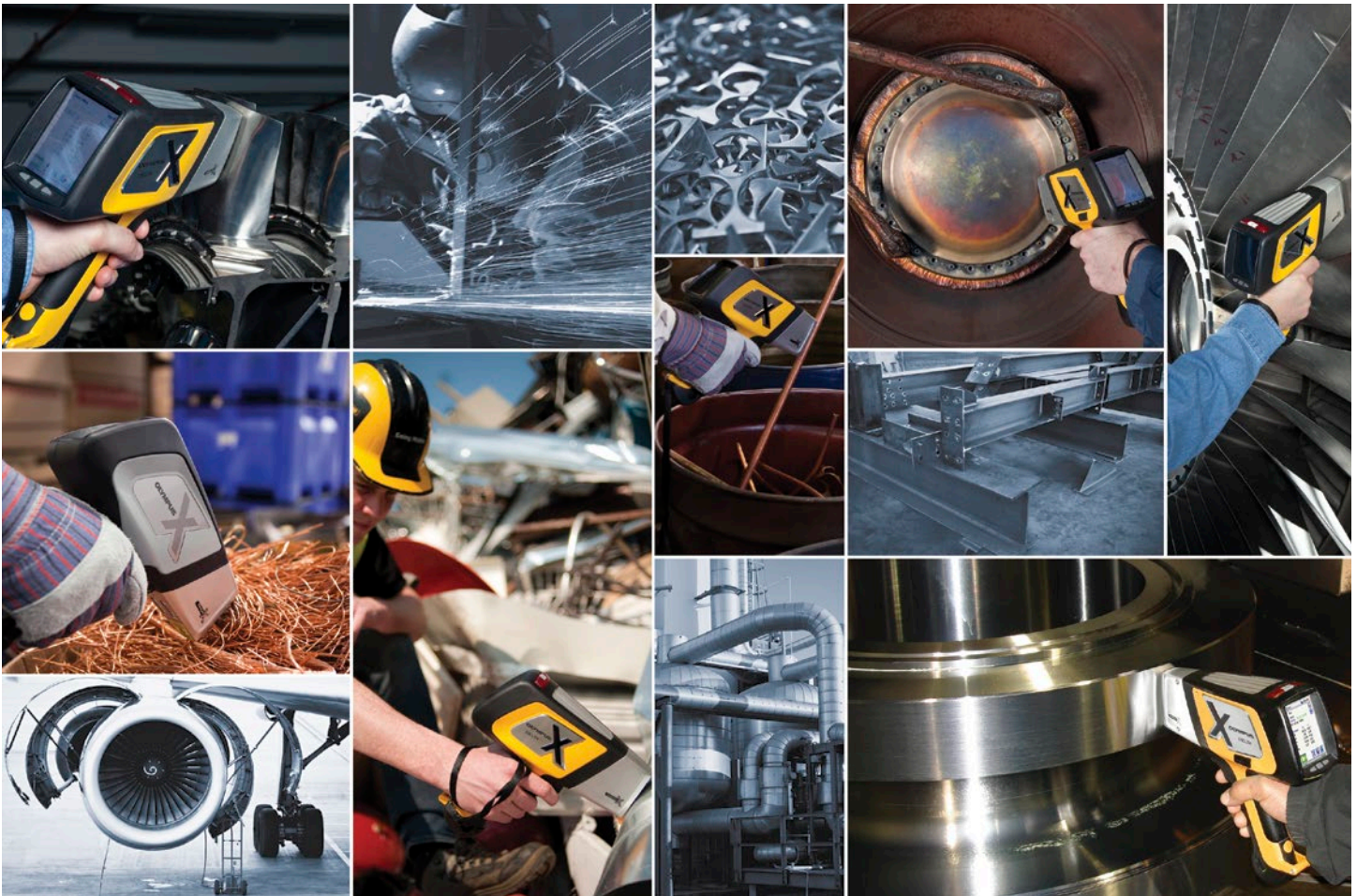
Fast, Nondestructive Inspections for
QA/QC, Safety, and Maintenance

DELTA[®] Handheld XRF Analyzer for Alloy and Metal Identification

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

- Aluminum alloys
- Chrome-moly 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

DELTA Handheld XRF Knows Metal and Alloys



When you need a reliable analysis tool to provide fast and accurate positive material identification, turn to the DELTA analyzer. From shavings, rods, turnings, and wires to small parts and components, to more sizeable material or structures, the DELTA provides anywhere, anytime testing with fast, accurate results.

Features for PMI

The DELTA® analyzer is a reliable and rugged tool that maximizes both speed and accuracy. The need to determine whether an ID is incorrect or if longer testing is required must be balanced with maximum testing speed without increasing the risk of mistaken IDs or erroneous readings.

Olympus' 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 analyzer a productive XRF tool for alloy inspection.

High-Temperature Ready

- The DELTA analyzer is engineered for in-service inspection of systems with temperatures in excess of 426 °C (800 °F)
- Heat sink dissipates heat away from the XRF electronics
- 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

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

Tramp Library

- Enables operators to set a max tolerated concentration for individual elements in 7 unique grade families; these elements are considered “tramp” or “residual” elements
- The DELTA analyzer is 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 counting small, expected amounts of tramp elements against the grade match
- Detects and quantifies tramp residuals critical to selective corrosion investigations and failure analysis



The powerful DELTA handheld XRF maximizes both speed and accuracy for alloy and metal ID, quality control and assurance, safety, and maintenance.

SmartSort Mode

- Prevents mix-ups by enabling the setup of specific grades to automatically extend testing time
- Maximizes efficiency for speed testing; eliminates unnecessarily long tests and prevents mix-ups by automatically extending tests for light elements (Mg, Al, Si, P, S) only when absolutely necessary
- Makes the analyzer a fast and accurate inspection tool
- Available on the DELTA Professional model



Analysis results display demonstrating nominal value (3% Al) and tramp element (0.09 % Fe) features.

DELTA[®] for Positive Material Identification

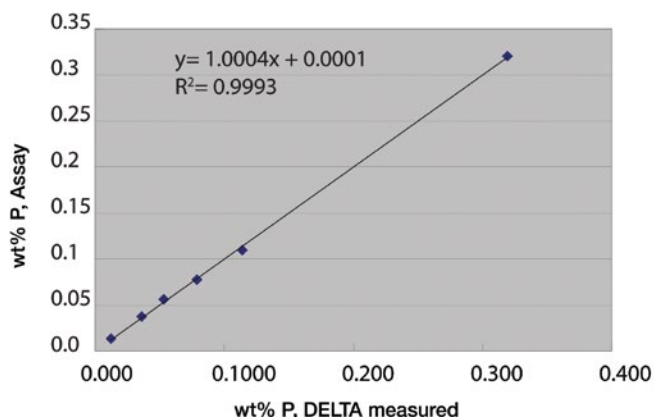
With X-act Count[™] Technology

Superior Light Element Analysis with the DELTA Professional Analyzer

Analyzing light alloys and elements (Mg, Al, Si, P, and S) can be challenging for handheld XRF instruments, but the DELTA alloy and metal XRF analyzer with a silicon drift detector (SDD) and X-act Count technology overcomes this challenge. Its integration with a 40 kV Rh-anode tube and automatic filtering provides fast, precise analysis of transition and heavy metals and sensitive measurement of light element content. SmartSort automatically extends or terminates testing sample by sample, to maximize accuracy and throughput.

DELTA SDD Analyzer Benefits

- Magnesium (Mg) detection down to 0.20%
- 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 3-beam alloy plus calibration
- Extensive grade library combined with SmartSort provides nominal chemistry for light elements when the fastest testing speeds are required



Correlation plot of phosphorus (P) in low-alloy steel analysis by the DELTA Premium SDD analyzer.



Ultimate Aluminum Analysis

The Olympus DELTA SDD analyzer offers excellent Al performance. It easily and directly sorts and grades aluminum and aluminum-containing materials.

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

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 results screen.

DELTA® Handheld XRF for Overall Value

Small Component and Weld Analysis

Integrated Small-Spot Collimator

DELTA analyzers have a standard 9 mm spot size, but can be equipped with a 3 mm diameter spot collimator for highly focused sample analysis. This provides the capability of analyzing thin weld beads independent from substrate materials and small fixture components, wires, and solders.

- Spot sizes can be changed by simply touching the screen
- An integrated full VGA camera takes a live video image of the sample tested and superimposes a spot location for precise test location
- The sample image is saved to memory after analysis; images can be archived along with the analysis results and exported for simple report generation



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

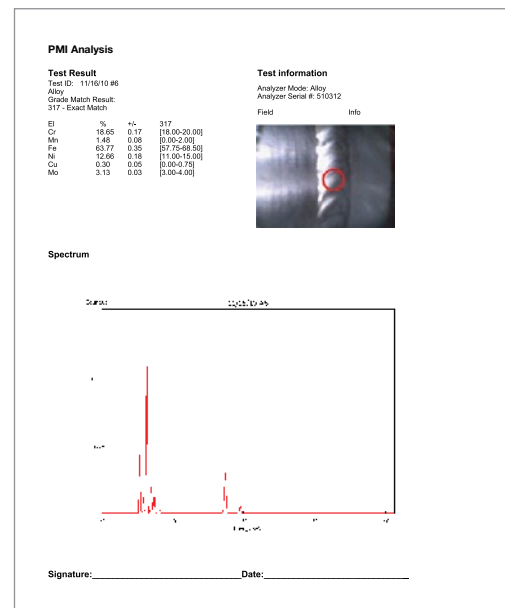
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Mn	0.021	0.006	[0.00-0.35]
Fe	0.17	0.01	[0.00-0.60]
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DELTA with an optional welding mask.

Easy Report Generation

- Get fast, easy-to-interpret customizable results screen
- Generate custom reports with DELTA PC software
 - Incorporate quantitative and qualitative results
 - Incorporate analysis images
 - Incorporate operator and company information
 - Incorporate company logo



DELTA analyzer alloy report.

The DELTA[®] Series

Everything You Need in Handheld XRF

DELTA handheld XRF analyzers are ergonomically advanced with a forward looking design incorporating the latest in electronics, components, and software technology.

The DELTA X-act Count™ technology can provide even better sensitivity and precision in faster time for more materials than before. Throughput is increased with the same or better precision in half the time for most elements.

Features and Benefits

- Powerful 4 W X-ray tube for optimum element excitation
- Tight geometry for exceptional LODs and fast analysis
- Rapid data acquisition for faster testing time
- Floating point processor: Provides more calculations in less time and leverages more advanced calibration algorithms
- Analysis indicator lights visible from 360° to help ensure safe use
- Advanced color touch LCD screen for clarity, brightness, responsiveness, and energy efficiency during indoor/outdoor use
- DELTA PC software for enhanced data analysis, calibration modeling, and optional closed beam workstation operation
- USB interface port for high-speed downloads and seamless PC control
- Ergonomic rubberized handle for enhanced grip
- Hot swap batteries to maximize uptime and productivity



The unique DELTA docking station frees you from having to power down the analyzer. The station charges the analyzer battery and a spare and performs periodic calibration checks. DELTA analyzers can be operated 24/7 in the field with hot swap battery replacement*.

*Available for DELTA Professional.



Optional DELTA® Accessories



1. DELTA Portable Workstation

Portable workstation with integrated safety-lock and shielding is convenient for bagged, prepped, filters, dust wipes, and liquid samples or for multiple small objects; a PC is connected for remote control of this closed-beam DELTA setup.

2. DELTA Holster

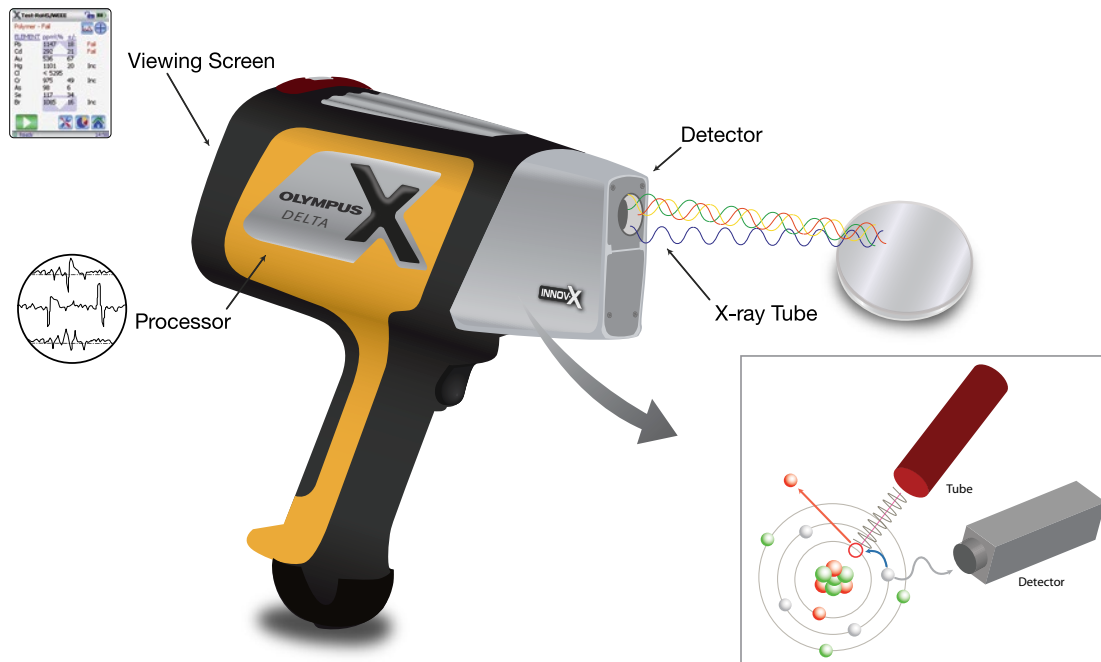
The holster keeps the analyzer by your side and within easy reach.



3. DELTA FlexStand

Lightweight, mobile test stand with shielded sample chamber for testing small samples, sample cups, and bagged samples.

DELTA Handheld XRF Configuration



The DELTA analyzer brings the power and flexibility of handheld X-ray fluorescence spectrometry to the field. Ruggedized and ultra portable, this fast technology provides 24/7 uptime and accelerated testing times, enabling hundreds more tests to be conducted per day with analytical confidence. The DELTA series analyzers are configured with powerful miniature X-ray tubes, Si-PIN detectors or highly advanced silicon drift detectors (SDD), specialized filters, and multibeam optimization for the ultimate in XRF field analysis. The DELTA analyzer's real value is to help make decisions in real time with minimal reliance on off-site laboratory testing.

DELTA Series



DELTA Professional

The DELTA Professional provides the best value solution with superior performance in speed, LODs, and elemental range.



DELTA Element

The DELTA Element is the entry-level DELTA analyzer, built for economy and fast ROI for basic alloy identification and metals analysis.

DELTA Comparison*

DELTA Professional	DELTA Element
4 W Ag, Rh, Au, or Ta anode (per application) X-ray tube	4 W Au anode X-ray tube
Silicon Drift Detector	Si-PIN Diode Detector
Alloy and Mining: Mg and up for Rh/Ag and Al and up for Ta/Au; Soil: P and higher	Alloy: Ti and higher
Weight: 1.5 kg (3.25 lbs) without battery	
Dimensions: 260 mm × 240 mm × 90 mm (10.25 in. × 9.5 in. × 3.5 in.)	
Environmental Temperature Range: -10 °C to 50 °C (14 °F to 122 °F)	
Processing Electronics: 530 MHz CPU with integrated FPU with 128 MB RAM; Proprietary Olympus Digital Pulse Processor (DPP)	
Power: Rechargeable Li-ion battery; Hot-swap maintains analyzer power during battery charge	
Data Display: 32 bit Color QVGA resolution, Blanview transmissive backlit touch screen; 57 mm × 73 mm (2.25 in. × 2.9 in.)	
Data Storage: 1 GB microSD™ (stores ~75,000 readings)	
Data Transfer: USB	

Standard Accessories*

- Carrying Case
- Li-ion Battery
- Electronic User Manual and User Interface Guide and Printed Quick Start Guide
- Battery Charger
- Mini USB Cable
- 316 Stainless Steel Calibration Check Reference Coin
- Ten (10) Spare Windows
- Integrated Wrist Strap
- DELTA PC Software
- Factory Authorized Training & Support

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