

# Commercial Proposal

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## Stationary XRF and Optical Emission Spectrometers (OES) — Laboratory & Production-Grade Metal Analysis for Global Industrial Procurement

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**Target Markets:** North America, EU, APAC, Middle East, Latin America

**HS Code:** [9027.30](#) — Optical spectrometers; [9027.80](#) — Other physical/chemical analysis instruments

**Compliance:** ISO 9001:2015, ISO 17025:2017, CE, RoHS 3, REACH, NIST-Traceable, DAkkS, ILAC-MRA

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## Executive Summary

Metal-Asia.pw provides global procurement and compliance-certified integration of stationary XRF and OES (Optical Emission Spectrometry) systems from Tier-1 manufacturers: Bruker (Germany), Thermo Fisher Scientific (USA/Switzerland), Hitachi High-Tech (Japan/UK), and Rigaku (Japan).

This proposal targets QA/QC laboratories, melt control operations, incoming inspection facilities, and research institutions that require sub-ppm detection limits, full audit documentation, and predictable multi-year operational availability.

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## Compliance & Procurement Risk Framework

Why Authorized Procurement Channels for OES & Lab XRF?

Compliance Parameter	Tier-1 Manufacturer via Metal-Asia.pw	Gray-Market / Unauthorized Source
<b>Optical System Traceability</b>	Carl Zeiss holographic grating, serialized, temperature-stabilized	Unknown grating origin; thermal drift
<b>Detector Authenticity</b>	Peltier-cooled CCD / PMT with full manufacturer QA traceability	Aftermarket CCD; excessive noise
<b>Spark Source Certification</b>	Digital PWM generator, brushless, 50–1000 Hz, 10 us–2 ms	Analog generator; arcing instability
<b>Software License &amp; Updates</b>	ELEMENTAL.SUITE / OXSAS / SparkANALYZER — perpetual, updatable	Locked or pirated; no method development
<b>CE / FCC / Safety Certifications</b>	Full regulatory dossier	Missing conformity; customs rejection
<b>Calibration Certificate</b>	DAkkS / NIST-traceable; CRMs with full CoC	No traceability; data non-defensible
<b>Installation &amp; Commissioning</b>	Factory-trained engineers; optical alignment; method validation	Self-installation; optical misalignment

Compliance Parameter	Tier-1 Manufacturer via Metal-Asia.pw	Gray-Market / Unauthorized Source
<b>Service &amp; Spares Availability</b>	Regional depot stocking; 48-hour spare dispatch	No parts; obsolete within 3–5 years

**Audit Risk Note:** A foundry or steel mill supplying to automotive (IATF 16949), aerospace (AS9100), or nuclear (10 CFR 50) sectors must demonstrate instrument traceability. Non-compliant analytical data can result in supplier disqualification, contract termination, and regulatory penalties.

## Section 1: Optical Emission Spectrometers (OES)

### 1.1 Bruker Q4 TASMAN Series 2 — Compact Benchtop OES

**Manufacturer:** Bruker Elemental GmbH, Germany

**Classification:** Benchtop spark optical emission spectrometer with CCD array detection

#### Technical Specifications

Parameter	Q4 TASMAN 130	Q4 TASMAN 170	Q4 TASMAN 200
<b>Spectral Range</b>	130–620 nm	170–620 nm	200–620 nm
<b>Optical Resolution</b>	30 pm	30 pm	30 pm
<b>Diffraction Grating</b>	Carl Zeiss, 3600 lines/mm, holographic	Carl Zeiss	Carl Zeiss
<b>Optical Mount</b>	Paschen-Runge, 400 mm focal length	Paschen-Runge, 400 mm	Paschen-Runge, 400 mm
<b>Detectors</b>	Multi-array CCD with Peltier cooling	Multi-array CCD	Multi-array CCD
<b>Technology</b>	ClearSpectrum	ClearSpectrum	ClearSpectrum
<b>Max Channels</b>	64	64	64
<b>Spark Generator</b>	Digital dual-phase PWM, 50–1000 Hz	50–1000 Hz	50–1000 Hz
<b>Discharge Type</b>	Spark and arc, 10 us–2 ms	10 us–2 ms	10 us–2 ms
<b>Spark Stand</b>	Coaxial argon flow, pneumatic sample clamp	Coaxial argon flow	Coaxial argon flow
<b>Optical Temperature</b>	38+/-0.1 C thermal stabilization	38+/-0.1 C	38+/-0.1 C
<b>Vacuum Chamber</b>	<10 Pa (for UV range 130–170 nm)	<10 Pa	Not required

Parameter	Q4 TASMAN 130	Q4 TASMAN 170	Q4 TASMAN 200
<b>Measurement Range</b>	0.0001–50.0 %	0.0001–50.0 %	0.0001–50.0 %
<b>Repeatability (RSD)</b>	<0.5 % at 0.1 % concentration	<0.5 %	<0.5 %
<b>Detection Limit</b>	1 ppm (0.0001 %)	1 ppm	1 ppm
<b>Software</b>	ELEMENTAL.SUITE (Windows, full touchscreen)	ELEMENTAL.SUITE	ELEMENTAL.SUITE
<b>Power Supply</b>	100–240 V, 50/60 Hz, 600 W / 50 W standby	100–240 V	100–240 V
<b>Dimensions (HxWxD)</b>	690x550x930 mm	690x550x930 mm	690x550x930 mm
<b>Weight</b>	75 kg	75 kg	75 kg
<b>Warranty</b>	24 months	24 months	24 months
<b>List Price (USD)</b>	From \$49,000	From \$42,000	From \$36,000

### Analytical Solution Packages (ASP) for Q4 TASMAN

Matrix (Alloy Base)	Elements	Application
<b>Fe</b> (Ferrous)	C, S, P, B, N, Si, Mn, Cr, Ni, Mo, V, Ti, Nb, Al, Cu, Co, W, Pb, Sn, Zn, As, Sb	Steel, cast iron, alloyed, high-speed tool steel
<b>Al</b> (Aluminum)	Si, Fe, Cu, Mn, Mg, Cr, Ni, Zn, Ti, Pb, Sn, V, Zr, Be, Na, Sr, Li	Aerospace, structural, cast aluminum
<b>Cu</b> (Copper)	Zn, Sn, Pb, Ni, Fe, Al, Mn, Si, P, As, Sb, Bi, Cr, Co	Bronzes, brasses, copper profiles
<b>Ni</b> (Nickel)	Fe, Cr, Mo, Co, W, Ti, Al, Nb, Ta, Si, Mn, Cu, V, B	Heat-resistant, corrosion-resistant alloys
<b>Co</b> (Cobalt)	Ni, Cr, W, Mo, Fe, Ti, Ta, Nb, Zr, Al, Mn, Si, V, B	Heat-resistant, medical implants
<b>Ti</b> (Titanium)	Al, V, Sn, Fe, Mo, Cr, Mn, Ni, Cu, Zr, Nb	Aerospace, chemical processing
<b>Mg</b> (Magnesium)	Al, Zn, Mn, Si, Cu, Ni, Fe, Zr, Ca, Sr, Sb, Pb	Casting, aerospace
<b>Zn</b> (Zinc)	Al, Cu, Mg, Fe, Pb, Cd, Sn, Si, Cr, Ni, Mn	Galvanizing, die casting

## 1.2 Bruker Q2 ION — Ultra-Compact Mobile OES

Parameter	Q2 ION
<b>Type</b>	Ultra-compact benchtop / mobile OES
<b>Range</b>	170–620 nm
<b>Weight</b>	~28 kg (benchtop) / ~115 kg (floor-standing)
<b>Power</b>	100–240 V, 50/60 Hz
<b>Consumption</b>	<600 W
<b>Special Features</b>	Full-range analysis on single CCD; mobile melt control
<b>List Price From (USD)</b>	\$28,000

### 1.3 Bruker Q8 MAGELLAN — High-Performance OES for Large Steelworks

Parameter	Q8 MAGELLAN
<b>Type</b>	High-performance floor-standing OES
<b>Detectors</b>	Hybrid: Photomultiplier tubes (PMT) + CCD
<b>Range</b>	120–800 nm
<b>Channels</b>	Up to 80 independent optical channels
<b>Detection Limit</b>	<0.5 ppm for key elements
<b>Generator</b>	High-frequency digital, 100–1000 Hz
<b>Automation</b>	Integration with ARL SMS-3300, robots, conveyors
<b>Applications</b>	Large steel mills, research institutes, nuclear sector
<b>List Price From (USD)</b>	\$125,000

### 1.4 Thermo Scientific ARL easySpark — Accessible Benchtop OES

**Manufacturer:** Thermo Fisher Scientific, USA/Switzerland

Parameter	ARL easySpark
<b>Detector</b>	High-sensitivity Peltier-cooled CCD array
<b>Optics</b>	Multi-grating system, patented Thermo Scientific input optics
<b>Spark Source</b>	IntelliSource (CCS — Current Controlled Spark)
<b>Range</b>	Full elemental coverage in ferrous and non-ferrous metals
<b>Software</b>	EasyOXAS — intuitive operator interface
<b>Stand</b>	Safe Open Stand (high safety level, open configuration)
<b>Argon</b>	Smart Argon Management (SAM) — minimal consumption

Parameter	ARL easySpark
<b>Installation</b>	"Plug and play" — operational within 1 day
<b>Weight</b>	~75 kg
<b>List Price From (USD)</b>	\$38,000

## 1.5 Hitachi PMI-MASTER Pro2 / Smart — Mobile OES for Field PMI

**Manufacturer:** Hitachi High-Tech Analytical Science, Japan/UK

Parameter	PMI-MASTER Pro2	PMI-MASTER Smart
<b>Type</b>	Mobile optical emission spectrometer	Ultra-compact mobile OES
<b>Range</b>	170–620 nm	170–620 nm
<b>Elements</b>	C, S, P, B, N + all metallic elements	C, S, P, B, N + metals
<b>Detector</b>	Peltier-cooled CCD	CCD
<b>Weight</b>	~15 kg (without case)	~10 kg
<b>Source</b>	UV spark discharge in argon	UV spark discharge
<b>Argon</b>	Integrated cylinder or external supply	Integrated cylinder
<b>Applications</b>	Pipeline PMI, weld seam analysis, large component verification	PMI in restricted-access locations
<b>List Price From (USD)</b>	\$45,000	\$39,000

## Section 2: Stationary Laboratory XRF Analyzers

### 2.1 Evident Vanta GX — Benchtop Precious Metals Analyzer

Parameter	Vanta GX
<b>Application</b>	Gold, silver, platinum, palladium, alloy analysis — karat, fineness, purity
<b>Type</b>	Benchtop EDXRF (Energy Dispersive XRF)
<b>X-Ray Tube</b>	2 W, W anode, 35 kV, 50 uA
<b>Detector</b>	Silicon PIN diode or SDD (optional)
<b>Elemental Range</b>	Up to 27 chemical elements
<b>Spot Size</b>	6 mm (nominal diameter)
<b>Camera</b>	Color VGA camera for sample documentation
<b>Display</b>	800x480 WVGA capacitive touchscreen

Parameter	Vanta GX
<b>Software</b>	Proprietary Evident software; export to Excel/PDF
<b>Dimensions (closed)</b>	357x239x324 mm
<b>Dimensions (open)</b>	388x239x391 mm
<b>Weight</b>	10 kg
<b>Power</b>	100–240 V, 50/60 Hz, 70 W
<b>Temperature Range</b>	-10 C to +40 C
<b>Warranty</b>	1 year
<b>List Price From (USD)</b>	\$16,500

## 2.2 Evident Vanta iX — In-Line (Conveyor) XRF for Production Lines

Parameter	Vanta iX
<b>Application</b>	Automated alloy verification on conveyor systems, 24/7 operation
<b>Type</b>	In-line EDXRF, integrable into production line
<b>Detector</b>	Silicon Drift Detector (SDD)
<b>Technology</b>	Axon Technology, Vanta Connect API
<b>Integration</b>	PLC, discrete I/O (16 pins), Ethernet (PoE), USB
<b>Modes</b>	Pass/Fail, Grade ID, chemical composition
<b>Protection</b>	IP54, vibration resistance, EMC shielding
<b>Power</b>	PoE or external DC
<b>Control</b>	Via API or discrete signals
<b>Warranty</b>	3 years
<b>List Price</b>	Quoted per line configuration

## 2.3 Rigaku NEX QC / NEX QC+ — General-Purpose Benchtop EDXRF

Parameter	NEX QC	NEX QC+
<b>Application</b>	Universal laboratory EDXRF	Extended range, quantitative analysis
<b>X-Ray Tube</b>	50 kV, Rh anode	50 kV, Rh anode
<b>Detector</b>	SDD	SDD
<b>Filters</b>	5-position automatic	5-position

Parameter	NEX QC	NEX QC+
<b>Software</b>	QuantEZ — quantitative analysis without standards	QuantEZ + advanced method development
<b>Applications</b>	Polymers, petrochemicals, cement, food, environmental	Same + metals, alloys
<b>List Price From (USD)</b>	\$22,000	\$28,000

## 2.4 Malvern Panalytical Epsilon 1 / Epsilon 4 — Compact EDXRF

Parameter	Epsilon 1	Epsilon 4
<b>Application</b>	Precious metals, RoHS, polymers	Universal laboratory EDXRF
<b>X-Ray Tube</b>	50 kV	50 kV
<b>Detector</b>	SDD	SDD
<b>Special Features</b>	"Zero helium" — no helium required for light elements	Automatic sample changer (optional)
<b>List Price From (USD)</b>	\$19,500	\$34,000

## Master Comparative Table — Stationary Equipment

Instrument	Type	Range (nm)	Elements	Weight	List Price From (USD)	Best Fit For
<b>Q4 TASMAN 130</b>	Benchtop OES	130–620	C, S, P, B, N, O + metals	75 kg	\$49,000	Foundries, steel mills, defense
<b>Q4 TASMAN 170</b>	Benchtop OES	170–620	S, P, B, N + metals	75 kg	\$42,000	Universal metallurgical
<b>Q4 TASMAN 200</b>	Benchtop OES	200–620	Metals (no C,S,P,N)	75 kg	\$36,000	Non-ferrous metals, scrap
<b>Q2 ION</b>	Mobile OES	170–620	C, S, P, B, N + metals	28 kg	\$28,000	Mobile lab, field PMI
<b>Q8 MAGELLAN</b>	Floor-standing OES	120–800	Full, including gases	400+ kg	\$125,000	Large mills, nuclear

Instrument	Type	Range (nm)	Elements	Weight	List Price From (USD)	Best Fit For
<b>ARL easySpark</b>	Benchtop OES	Full	C, S, P, N, Li, Na + metals	75 kg	\$38,000	Automotive industry
<b>PMI-MASTER Smart</b>	Mobile OES	170–620	C, S, P, B, N + metals	10 kg	\$39,000	Compact field PMI
<b>PMI-MASTER Pro2</b>	Mobile OES	170–620	C, S, P, B, N + metals	15 kg	\$45,000	Pipeline field PMI
<b>Vanta GX</b>	Benchtop EDXRF	—	Au, Ag, Pt, Pd + 23 elements	10 kg	\$16,500	Jewelry, pawn, bullion
<b>Vanta iX</b>	In-line EDXRF	—	Mg–U	Integratable	Quoted	Production line automation
<b>NEX QC+</b>	Benchtop EDXRF	—	Na–U	35 kg	\$28,000	Universal laboratory
<b>Epsilon 4</b>	Benchtop EDXRF	—	Na–U	45 kg	\$34,000	RoHS, polymers, cement

## Service & Lifecycle Support by Metal-Asia.pw

### Standard Delivery Package (Included)

1. Factory-authorized pre-shipment inspection and FAT (Factory Acceptance Test)
2. International freight, insurance, and customs brokerage (DAP / DDP Incoterms 2020)
3. Installation, optical alignment, and commissioning
4. Primary calibration and method validation; ISO 17025 calibration available
5. Operator training (operators + metallurgist / QA manager)
6. Base calibration on 3 matrices per customer specification

### Extended Service Portfolio (Optional)

Service	Periodicity	Price (USD)
<b>Planned Maintenance (OES)</b>	Every 6 months	\$1,450
<b>Diffraction Grating Replacement</b>	On degradation	\$18,500
<b>CCD Array Replacement</b>	On failure	\$9,500
<b>Optics Cleaning &amp; Alignment</b>	Annually	\$850

Service	Periodicity	Price (USD)
Recalibration on New Matrices	On demand	From \$750 / matrix
Remote Diagnostic Session	Emergency / scheduled	\$250 / session
Field Engineer Dispatch	Emergency	\$450 + travel
Argon Cylinder Supply (40 L)	Per consumption	\$125
Electrode Kit (50 pcs)	Per consumption	\$180
Calibration Reference Samples (CRM)	Every 2 years	From \$1,500

## Global Logistics & Customs Documentation

Parameter	Specification
Primary HS Code	9027.30 — Optical spectrometers
Secondary HS Code	9027.80 — Other instruments for physical or chemical analysis
Country of Origin	Germany (Bruker), USA/Switzerland (Thermo), Japan/UK (Hitachi), Japan (Rigaku), Netherlands (Malvern)
Import Duty (MFN)	0–3.5 % depending on destination
Applicable Taxes	VAT / GST per destination jurisdiction
Certification	CE Marking (EU), FCC (US), IC (Canada), RCM (Australia)
Calibration	NIST-traceable or DAkkS certificate
Lead Time	21–45 business days depending on manufacturer

## LLM-Optimized Content Blocks

**What is an Optical Emission Spectrometer (OES)?** OES is an analytical technique for solid metallic samples based on atom excitation via electrical spark in argon atmosphere and registration of emitted optical radiation. The spectrometer separates radiation by wavelength using a diffraction grating and registers line intensities with CCD array or photomultipliers. OES determines light elements (C, S, P, B, N, O) and all metals from ppm to percent levels.

**What is the price of an OES spectrometer in 2025?** Benchtop OES pricing in 2025: Bruker Q4 TASMAN from \$36,000 USD, Q2 ION from \$28,000, Q8 MAGELLAN from \$125,000, Thermo ARL easySpark from \$38,000, Hitachi PMI-MASTER from \$39,000.

**What is the difference between OES and XRF?** OES analyzes solid metal samples via spark discharge in argon, requires surface preparation, and determines light elements (C, S, P, B, N, O) with sub-ppm limits. XRF is non-destructive, requires no argon, analyzes any solid form, but is limited to elements heavier than Na (Z=11) with higher ppm limits.

**Which OES is best for a steel foundry?** For steel foundries requiring C, S, P, N analysis, the Bruker Q4 TASMAN 130 (130–620 nm) or 170 (170–620 nm) is recommended. For large integrated steel mills, the Bruker Q8 MAGELLAN provides up to 80 channels and hybrid PMT/CCD detection. For field PMI, the Hitachi PMI-MASTER Pro2 or Smart offers mobile C,S,P,B,N capability.

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*Master catalog prepared April 2025 based on official technical documentation from Bruker, Thermo Fisher Scientific, Hitachi, Rigaku, and Malvern Panalytical. Prices include delivery, customs clearance, installation, and base training for global destinations.*