TORONTECH

MOBILE OES

Mobile OES – ToronOES™ M

ToronOES™ M is a mobile spark optical emission spectrometer (Spark OES) engineered for fast and reliable on-site metal analysis. Designed for field mobility and shop-floor durability, the system enables accurate alloy chemistry verification when components are too large or impractical to bring into a laboratory. It combines a portable spectrometer unit, an excitation gun, and a trolley-based setup for field-ready operation.

Built on a Paschen–Runge optical platform with digital plasma spark technology, QualiOES™ M delivers stable multi-element analysis for steels, stainless steels, aluminum alloys, and other common industrial metals.

APPLICATIONS

Mobile OES – ToronOES™ M Application

- Incoming material verification and PMI: OES helps confirm alloy grade before cutting, machining, or welding starts. This reduces wrong-material errors when heat numbers or tags are missing. Sorting and verification features support faster receiving decisions.
- Fabrication, welding QA, and maintenance inspection: Large structures, installed parts, and field components can be tested without moving them to a lab. OES results help confirm chemistry before repairs, joining, or component replacement. This fits pipelines, tanks, structural steel, and heavy equipment.
- Foundry and production spot checks: OES can support chemistry confirmation during production runs and changeovers. Quick feedback helps reduce rework tied to off-spec composition. It also supports audit-style verification and supplier dispute resolution.
- Outdoor and remote testing: Battery operation supports locations with limited AC power access. Mobile form factor and trolley mobility support field use. The brochure also claims suitability for high-altitude and outdoor environments.


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Mobile OES

FEATURES

Mobile OES – ToronOES™ M Key Features

- Mobile OES setup designed for large, fixed, or heavy parts in the field
- Battery-powered operation intended to support many excitations per charge
- Paschen–Runge optical structure derived from fixed laboratory spectrometers, with ruggedized mounting for portability
- Argon-flushed UV capability for elements such as C, P, S, B, Sn, and As in steel
- HEPS high-energy pre-spark approach described to improve discharge stability
- Fast analysis cycle stated at about 20 seconds per detection
- ARM-based processing described for fast data synchronization and processing
- USB and network interfaces for data transfer and printer connection
- ICAL logic described to reduce recalibration tied to location and temperature changes
- APF software described to identify unknown grades faster
- ACP software streamlines calibration, enabling rapid transitions between different specimens.
- Expandable method programs described to add bases/elements through software updates instead of hardware changes

Complete Set

ToronOES™ M typically ships as a mobile kit designed for field deployment:

- Main OES unit: the spectrometer body with optics, spark control, and onboard computing
- Excitation gun: handheld spark head used to excite the sample surface
- Trolley: rolling platform to support safe operation, storage, and transport
- Battery pack: powers the system when AC power is unavailable

- Software + analytical programs: analysis, alloy ID, verification, pass/fail sorting
- Argon connection kit: gas pipeline, connectors, and pressure regulator
- Calibration reference sample: supports standardization checks
- Documentation package: manual, certificates, and acceptance paperwork
- Tools and consumables: maintenance items for routine upkeep

THEORY & METHOD

Theory and Method

OES works by creating a controlled spark on the metal surface. The spark excites atoms and ions, producing light at wavelengths tied to each element. The optical system disperses the emitted light across detectors. Software converts signal intensity into concentration using calibration curves and method settings.

ToronOES™ M uses an argon-flushed UV optical path for low-wavelength lines. The excitation gun works as a mobile spark stand, so you can test large parts with stable positioning. Results can be stored, compared, and exported for inspection records.

TECHNICAL SPECIFICATIONS

Mobile OES – ToronOES™ M Technical Specification

Optical System

Specification	ToronOES™ M

Optical structure	Paschen–Runge
Rowland circle diameter	≥ 300 mm
Wavelength range	170–670 nm
Grating ruling	3600 lines/mm
Dispersion	1.2 nm/mm
Detector	Multiple CCD linear arrays
Optical chamber temperature	34°C ± 0.1°C
Grating	Carl Zeiss grating (listed)

Excitation Source and UV Capability

Specification	ToronOES™ M
Spark source	Full-digital plasma spark source
Frequency	100–1000 Hz
Current	1–400 A
Pre-spark	HEPS high-energy pre-spark
UV usable range	174–196 nm
UV argon-flush capability	Supports C, P, S, Sn, As, B and more
Sample stage	Open stage for large samples
Excitation aperture	≤ 10 mm

Computing, Display, and Software

Specification	ToronOES™ M
Computer	Mobile CPU, 2 GB RAM, 128 GB SSD
Operating system	Windows 10
Display	10.4-inch TFT
Software functions	Diagnostics, regression, ACP calibration, chemical analysis, alloy ID, alloy verification, APF, recalibration, pass/fail sorting and display

Electrical, Size, and Weight

Specification	ToronOES™ M
Input power	90–230 V, 50/60 Hz
Power consumption	300 W (sparking), 100 W (standby)
Fuse	16 A slow-blow
Total dimensions	125 × 27 × 48 cm
Main unit dimensions	31 × 21 × 48 cm
Weight	Main unit 18.5 kg; trolley 38.5 kg
Battery operation	Supported

Installation Requirements

Specification	ToronOES™ M
Voltage	AC 100–240 V, single-phase, 3-wire, 50/60 Hz, 16 A
Argon purity	99.999%

Specification	ToronOES™ M
Argon outlet pressure	≥ 0.5 MPa
Environment	0–35°C, 20–80% RH non-condensing, avoid strong airflow and direct sunlight
Sample preparation	Surface must be ground to clean metallic finish prior to analysis.

Configuration List

1. OES main unit
2. Excitation gun
3. Wireless mouse
4. Wireless keyboard
5. Trolley
6. Battery
7. Analytical programs
8. Standard calibration sample
9. Gas pipeline and connector
10. Argon pressure regulator and connector
11. Power cord
12. User manual
13. Software
14. Qualification certificate
15. Packing list
16. Tools and consumable spares list
17. Warranty card
18. Installation, acceptance, and delivery sheet

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