

OES

Q8 MAGELLAN

High-end Optical Emission Spectometer

Innovation with Integrity

The Evolution of Perfection

Engineered for ultimate spark spectrometry

The genes are right: Q8 MAGELLAN is a well reputed, true high-end spark spectrometer for elemental analysis! It has taken the lead in many applications, being the only vacuum-spectrometer featuring new-generation photomultipliers, digital plasma generator, unlimited single-spark and time resolution, and a heavy duty, low-maintenance spark stand with co-axial argon flow. All ingredients to define the perfect metals analyzer.

The Q8 MAGELLAN is the continuation of this family line and marks a (r)evolutionary milestone in optical emission spectroscopy.

Next step to perfection

Q8 MAGELLAN now offers - besides well established technologies - additional innovations and benefits:

- improved optical properties
- enhanced analytical capabilities
- extended maintenance intervals
- one-button operation for quick and easy handling
- new instrument design
- simplified servicing

The Q8 MAGELLAN is the perfect symbiosis of accepted and new, tradition and innovation.



Figure 1
Steel plants and other demanding metal industries require high-performance spark spectrometers for process and quality control.

Applying Applications

The devil is in the details

... and this is why our engineers have looked into every single one of them. With surprising results: ease of operation with a pneumatic sample clamp, a self-centering spark stand plate, or the possibility to perform an analysis without touching mouse or keyboard. And many more engineering innovations are there to discover...

A sense of fresh air in the spark stand – co-axial argon flow

The co-axial argon flow design represents the culmination of our efforts to further improve performance. Argon is focused directly on the burnspot, where it is needed. This allows the use of ArgonStop®, a function to switch off argon flow during stand-by, saving on gas consumption, reducing start-up time, and dramatically improving the analytical performance, especially on small samples and thin wires.

A new flow cycle flush condensate out of the chamber, allowing you to run thousands of samples in many matrices without opening the spark stand plate.

Single or multi-base applications, trace analysis or alloys, Q8 MAGELLAN can be configured for virtually any metal analysis requirement. With the configureable analytical channels and the widest Rowland segment, it combines high flexibility with the proven advantages of a single-optic vacuum system.

Prepared for tomorrow's needs

A vast choice of applications is available for Q8 MAGELLAN. During factory calibration, internationally certified standards are individually sparked on every instrument. An expert evaluates the data to ensure the highest accuracy and analytical quality.

For more challenging requirements our team of application specialists help to develop new methods to meet your needs. The new and extended features of Q8 MAGELLAN offer improved results on known analytical tasks and open doors to new applications.



Figure 2
Q8 MAGELLAN covers any application: from primary metal production to metal processing to incoming material testing. From arsenic to zirconium, from sub-ppm to percentage levels, Q8 MAGELLAN meets complex requirements.

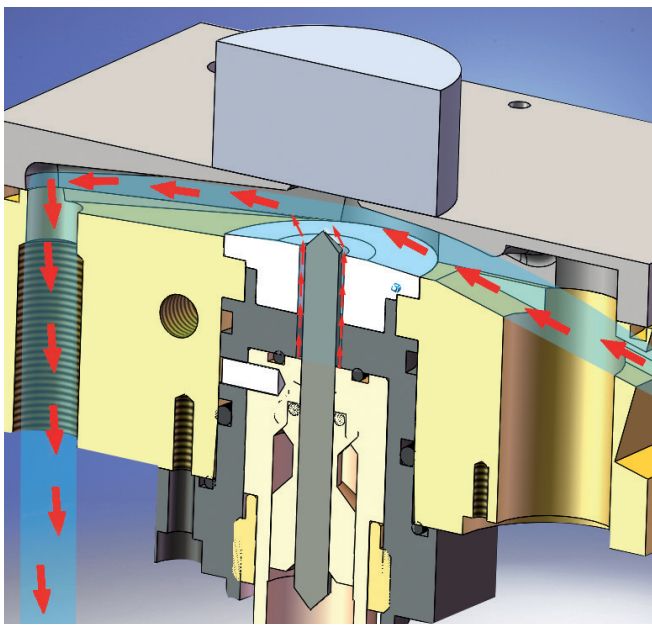


Figure 3
Co-axial argon flow: reduced consumption and minimized maintenance.

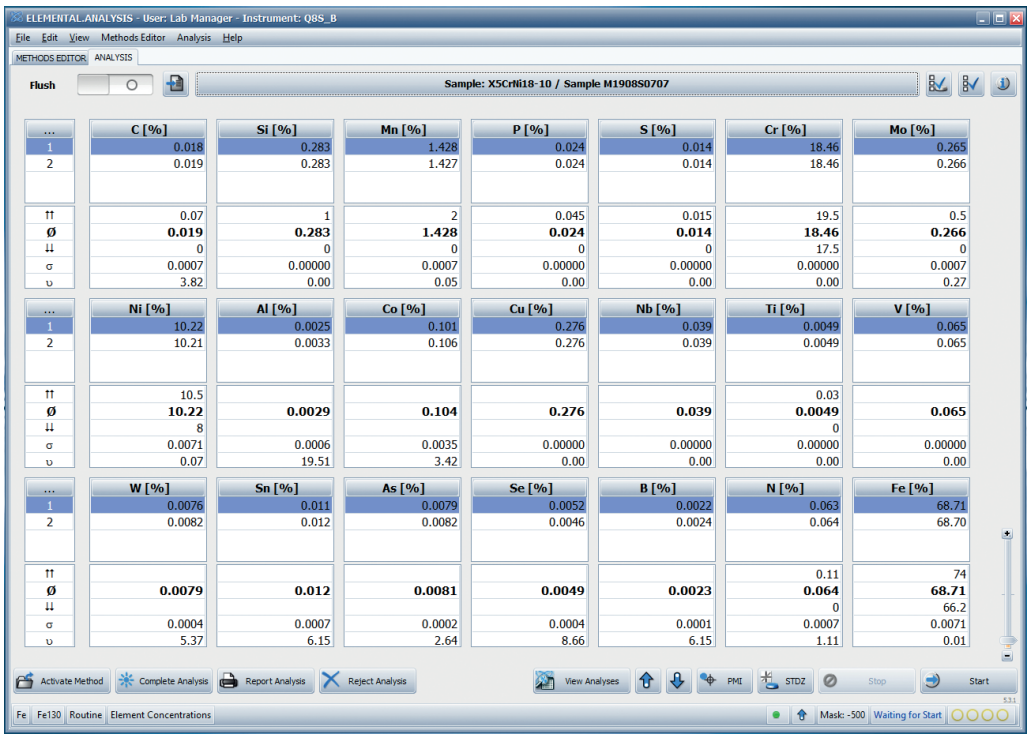
Next Generation: ELEMENTAL.SUITE

With Q8 MAGELLAN you can perform an analysis without touching the mouse or keyboard – but, maybe, the screen instead! Once you find out about the possibilities offered, and how simple it is to use, you will never want to use any other analyzer!

The analysis desktop of ELEMENTAL.SUITE not only gives you the results, average, and statistics but also color-coded information about the compliance of your sample with a given grade specification. The grade library offers internal/external limits, a match code, reference to international norms, and a version control.

The calibration software provides secure access to all calibration information. The same program is used during factory calibration and provides a full list of features from regression wizard to automatic calculation of inter-element effects.

For post-analytical data treatment the SQL database application provides everything you need: from archive to statistics, filters, views, reporting, Office export, AuditTrail and much more.



...	C [%]	Si [%]	Mn [%]	P [%]	S [%]	Cr [%]	Mo [%]
1	0.018	0.283	1.428	0.024	0.014	18.46	0.265
2	0.019	0.283	1.427	0.024	0.014	18.46	0.266
↑↑	0.07	1	2	0.045	0.015	19.5	0.5
Ø	**0.019**	**0.283**	**1.428**	**0.024**	**0.014**	**18.46**	**0.266**
↓↓	0	0	0	0	0	17.5	0
σ	0.0007	0.00000	0.0007	0.00000	0.00000	0.00000	0.0007
υ	3.82	0.00	0.05	0.00	0.00	0.00	0.27

...	Ni [%]	Al [%]	Co [%]	Cu [%]	Nb [%]	Ti [%]	V [%]
1	10.22	0.0025	0.101	0.276	0.039	0.0049	0.065
2	10.21	0.0033	0.106	0.276	0.039	0.0049	0.065
↑↑	10.5					0.03	
Ø	**10.22**	**0.0029**	**0.104**	**0.276**	**0.039**	**0.0049**	**0.065**
↓↓	8					0	
σ	0.0071	0.0006	0.0035	0.00000	0.00000	0.00000	0.00000
υ	0.07	19.51	3.42	0.00	0.00	0.00	0.00

...	W [%]	Sn [%]	As [%]	Se [%]	B [%]	N [%]	Fe [%]
1	0.0076	0.011	0.0079	0.0052	0.0022	0.063	68.71
2	0.0082	0.012	0.0082	0.0046	0.0024	0.064	68.70
↑↑						0.11	74
Ø	**0.0079**	**0.012**	**0.0081**	**0.0049**	**0.0023**	**0.064**	**68.71**
↓↓						0	66.2
σ	0.0004	0.0007	0.0002	0.0004	0.0001	0.0007	0.0071
υ	5.37	6.15	2.64	8.66	6.15	1.11	0.01

Figure 4

Spectrometer software: From running measurements to auto-averaging, colored quality control display, results, to setting up TRS (Time Resolved Spectroscopy) and visualize single sparks: individual user-level definitions give every user what she or he needs.

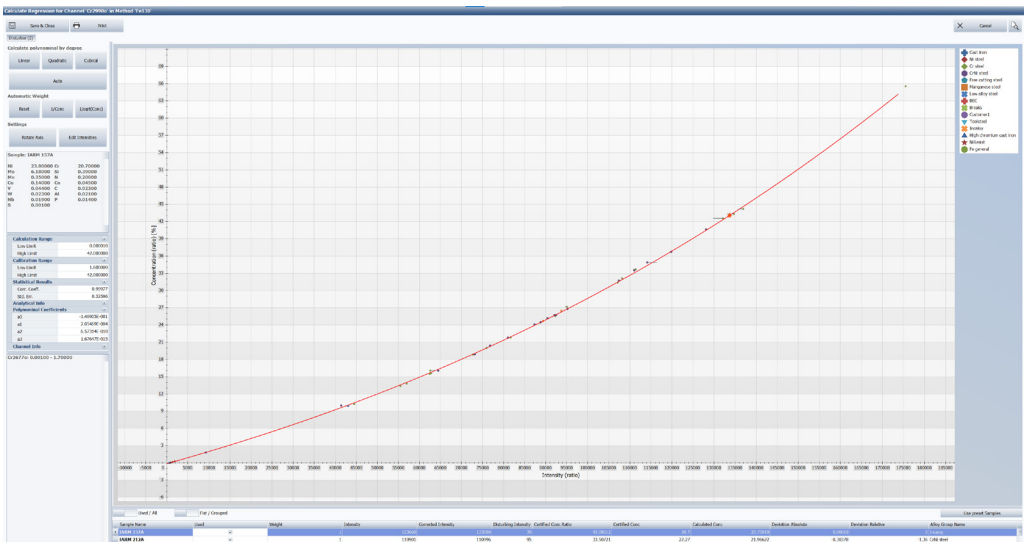


Figure 5

ELEMENTAL.SUITE features an intuitive yet powerful calibration and regression module that makes tasks like extending calibration limits, including your own reference materials into calibrations, easy and fast. Thanks to the factory calibration of every Q8 MAGELLAN, most users will rarely need to use it.

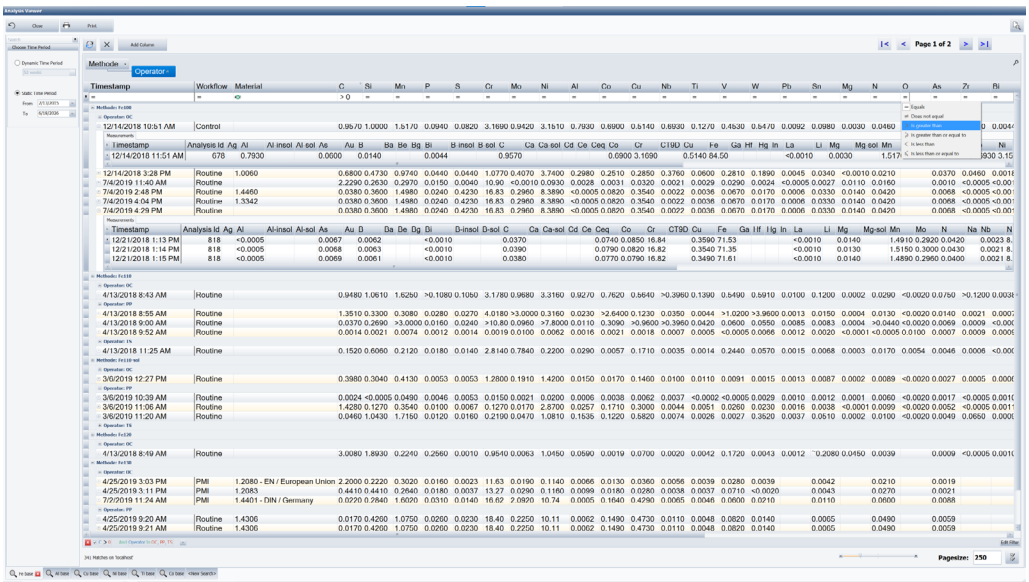


Figure 6

The powerful Analysis Viewer integrated in ELEMENTAL.SUITE is a fast and comfortable tool for all your data management and post-processing needs. Thanks to diverse filtering, sorting, and grouping options within savable queries, the desired information is always available, rendering a separate LIMS system virtually unnecessary. Nevertheless, individual data records can be exported directly from the Analysis Viewer into higher level QC systems, used in reports, or annotated.

Innovative Technologies

Benefits

- Your investment in Q8 MAGELLAN will quickly pay back:
- Low detection limits due to PMT+TRS+digital source
- Innovative analytical techniques
- Simple, yet comprehensive software package including spectrometer software, calibration, and SQL database
- Long service and maintenance intervals due to oil-free vacuum system
- Low operation costs due to Argon Stop
- excellent long-term stability
- Innovative service concept with online support and preventive maintenance
- Low total cost of ownership (TCO)

The best of the best

PhotoMultiplier Tubes (PMT) are the detectors of choice for demanding metal analyses. The lastest generation PMTs are not only much smaller, but they also outperform previous generations: Higher dynamic range, higher sensitivity, and extremely low dark current are the PMTs key features.

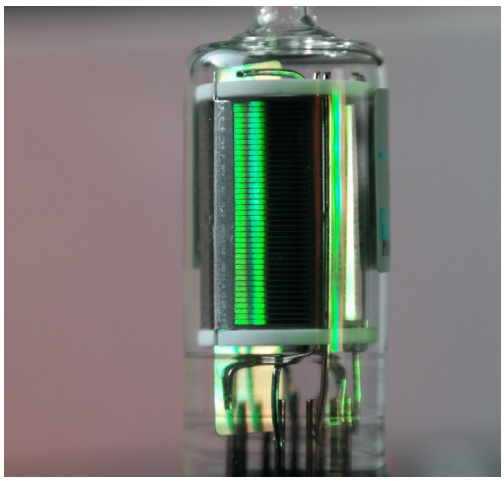
At the same time, the PMT requires less space in the optical system. This improves optimum line selection without compromise. Good to know that PMTs are also world famous for their longevity, designed for decades of high performance.

The detector, of course, is only one component in an optical system. In order to benefit most from the PMT, we have optimised our vacuum optic. A new mounting concept makes optical assemply fast and allows for simple line additions.The new, small PMTs combined with an extended Rowland segment keep together the best wavelength coverage in this instrument category.

Q8 MAGELLAN is the ultimate optical emission spectrometer with 100% PMTs, a no-compromise system even in multi-matrix and multi-channel configurations.



Figure 7
No-compromise optic layout: 100% PMTs for even complex multi-matrix, multichannel applications.



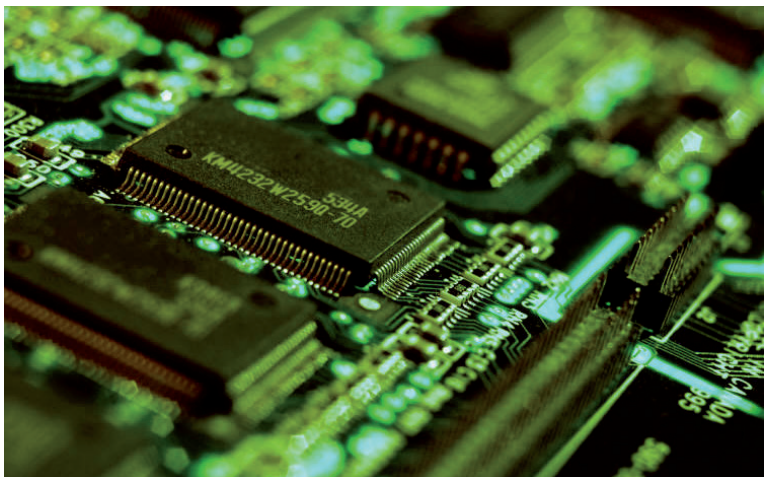


Figure 8
To take advantage of the outstanding features of the PMT detectors ... ... the Q8 MAGELLAN includes a high-speed read-out with extremely low electronic noise.

Strength in numbers

In the Q8 MAGELLAN the fast and sensitive detector is matched with an equally powerful read-out. Combined these features help to provide you with lower detection limits, improved precision, outstanding long- term stability, and a long system lifetime.

The Q8 MAGELLAN´s single-spark detection improves performance by statistical means, allows for algorithms like soluble/insoluble determination, helps to quantify inclusions, and many more innovative analytical techniques.

A digital, maintenance-free source generator helps to create a stable plasma. This allows for synchronisation with the read-out and enables the use of timeresolved spectroscopy. Source parameters can be software-optimized to hit use the optimal excitation parameters for any analyte.

Unlimited, free combination of all excitation and read-out conditions offer unseen opportunities to improve the analytical performance for many applications.

Get to see a Q8 MAGELLAN soon. Find out how it can solve your analytical needs and provide added value to your metals processes.

At your service



Although each Q8 MAGELLAN has the ability for remote online support, we also like to talk to you personally. Call our local service or the headquarters in Germany. We will be pleased to assist you with any questions you may have about your Q8 MAGELLAN.

Technical Data

Optical System	Paschen-Runge mount: 750 mm Wavelength range: 110 nm – 800 nm Photomultiplier detectors Single-vacuum optic
Read-out System	Time-resolved reading of single sparks Individually adjustable integration windows for all analytical channels with simultaneous acquisition of each single spark Scalable and microprocessor controlled read-out system Integrators are matched to detector characteristics High-speed data aquisition board with a sampling rate up to 250 kHz
Instrument Control	Use of LAN (TCP/IP) between PC and instrument as well as for all instrument internal communication
Source	Digital generation of any discharge curve Current curve by programmable logic modules Maintenance-free, inductive ignition, integrated emergency stop Maintenance-free, inductive ignition Discharge time 10 µs to 2 ms max. 200 A peak current max. 1000 Hz spark sequence
ELEMENTAL.SUITE	Analysis software with integrated single spark evaluation Material quality monitoring with dynamic internal and external limit check Material identification of unknown samples Integrated analysis management using SQL data base Comprehensive statistic evaluation, SPC charts (option) Email-supported reporting system Integrated systems for diagnosis and maintenance via internet or telephone provide efficient service at short term
Electrical Data	230 V -15% / +10% or 115 V -15% / +10% (50/60 Hz) 950 W during measurement, 350 W standby 16 A slow blow fuse or 25 A slow blow fuse
Weights & Dimensions	970 x 1050 x 1350 mm / 38 x 41 x 53“ (W x H x D) Weight 300 kg / ~ 660 lbs.

Bruker AXS is continually improving its products and reserves the right to change specifications without notice.
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