

Q8 MAGELLAN

- High-end Optical Emission Spectrometer

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.



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 configurable analytical channels and the widest Rowland segment, it combines high flexibility with the proven advantages of a single-optic vacuum system.

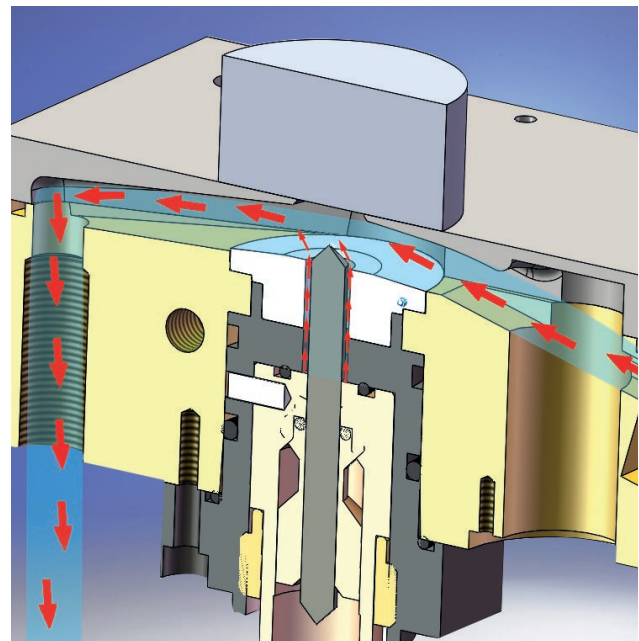
Prepared for tomorrow's needs

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.



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.



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.

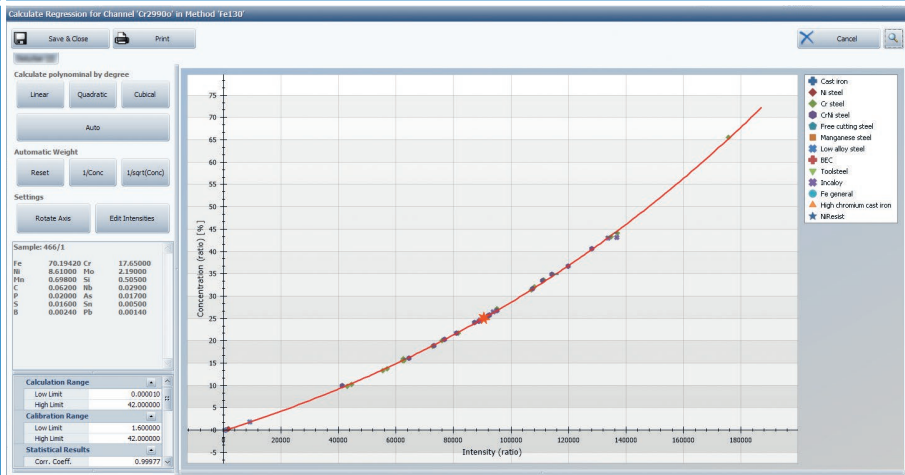
For post-analytical data treatment the SQL database application provides everything you need: from archive to statistics, filters, views, reporting, Office export, AuditTrail and much more.

The screenshot displays the ELEMENTAL.SUITE software interface. At the top, it shows the user 'Lab Manager' and instrument 'Q8S_B'. The sample being analyzed is 'X5CrNi18-10 / Sample M190850707'. The main area is a grid of tables for different elements. Each table has columns for '1' and '2' (likely different runs or conditions) and a 'TT' (Total) row. The elements and their values are as follows:

Element	1	2	TT
C [%]	0.018	0.019	0.017
Si [%]	0.283	0.283	0.283
Mn [%]	1.428	1.427	1.428
P [%]	0.024	0.024	0.024
S [%]	0.014	0.014	0.015
Cr [%]	18.46	18.46	18.46
Mo [%]	0.265	0.266	0.266
Ni [%]	10.22	10.21	10.22
Al [%]	0.0025	0.0033	0.0029
Co [%]	0.101	0.106	0.104
Cu [%]	0.276	0.276	0.276
Nb [%]	0.039	0.039	0.039
Ti [%]	0.0049	0.0049	0.0049
V [%]	0.065	0.065	0.065
W [%]	0.0076	0.0082	0.0079
Sn [%]	0.011	0.012	0.012
As [%]	0.0079	0.0082	0.0081
Se [%]	0.0052	0.0046	0.0049
B [%]	0.0022	0.0024	0.0023
N [%]	0.063	0.064	0.064
Fe [%]	68.71	68.70	68.71

At the bottom of the interface, there are control buttons: 'Activate Method', 'Complete Analysis', 'Report Analysis', 'Reject Analysis', 'View Analyses', 'PME', 'STD', 'Stop', and 'Start'. The status bar at the very bottom shows 'Fe 130 Routine Element Concentrations' and 'Mask-500 Waiting for Start'.

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.



The comprehensive calibration software of the Q8 MAGELLAN. Thanks to factory calibration most of the users have no need for it.

DIA - Analyses management system [Bruker Elemental GmbH]

Start Formats Basicstables Configuration Help

List Qualities Analyses table formats Edit filter

Welcome Analysis Management

Date	Time	Samplert	Quality	Method	Type	C [%]	Si [%]	Mn [%]	P [%]	S [%]	Cr [%]	Mo [%]	Ni [%]	Cu [%]	Al [%]	Ti [%]	Mg [%]	Ca [%]	N [%]	V [%]	W [%]	Co [%]	Ni [%]	
18.02.2018	15:07:52	Fe110		Fe110	Single me.	0.0044	0.0044	0.0095	0.0011	0.0012	0.0016	0.0016	0.0023	0.0018	0.0032	<0.0002	<0.0001	0.0001	<0.0010	0.0006	0.0057	0.0015	0.0017	
18.02.2018	15:07:52	Fe110		Fe110	Single me.	0.0150	0.0039	0.0092	0.0011	0.0008	0.0010	0.0019	0.0021	0.0015	0.0028	<0.0002	<0.0001	0.0001	0.0024	<0.0005	0.0054	0.0014	0.0017	
01.02.2018	15:11:58	Fe110		Fe110	Single me.	0.0032	0.0014	0.0100	<0.0005	<0.0005	<0.0005	0.0014	0.0023	<0.0005	0.0014	<0.0002	<0.0001	<0.0010	<0.0005	<0.0020	0.0025	0.0010		
01.02.2018	15:11:58	Fe110		Fe110	Single me.	0.0032	0.0014	0.0100	<0.0005	<0.0005	<0.0005	0.0014	0.0023	<0.0005	0.0014	<0.0002	<0.0001	<0.0010	<0.0005	<0.0020	0.0025	0.0010		
01.02.2018	14:56:12	Fe100		Fe100	Single me.	<0.0005	<0.0100	<0.0100	0.0023	<0.0010	<0.0050	<0.0100	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0100	<0.0050	<0.0010	
01.02.2018	14:56:12	Fe100		Fe100	Single me.	<0.0005	<0.0100	<0.0100	0.0023	<0.0010	<0.0050	<0.0100	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0100	<0.0050	<0.0010	
13.10.2017	19:19:06	Fe110		Fe110	Single me.	0.0130	0.2320	0.8480	0.0073	0.0026	0.2310	0.0350	0.6560	0.0650	0.0250	0.0360	0.0096	0.0003	0.0035	0.0058	0.0100	0.0097	0.0033	
13.10.2017	19:19:06	Fe110		Fe110	Single me.	0.0007																	0.0031	
13.10.2017	19:19:06	Fe110		Fe110	Single me.	0.0007																	0.0034	
13.10.2017	19:19:06	Fe110		Fe110	Single me.	0.0010																	0.0033	
13.10.2017	19:19:06	Fe110		Fe110	Single me.	0.0010																	0.0033	
13.10.2017	19:02:08	Fe110		Fe110	Single me.	0.0010																	0.0006	
13.10.2017	19:02:08	Fe110		Fe110	Single me.	0.0010																	0.0006	
13.10.2017	19:02:08	Fe110		Fe110	Single me.	0.0010																	0.0006	
13.10.2017	19:02:08	Fe110		Fe110	Single me.	0.0010																	0.0006	
13.10.2017	19:01:46	Fe110		Fe110	Single me.	0.0010																	0.0006	
13.10.2017	19:01:46	Fe110		Fe110	Single me.	0.0010																	0.0006	
13.10.2017	19:01:46	Fe110		Fe110	Single me.	0.0010																	0.0006	
13.10.2017	09:35:41	Fe110		Fe110	Single me.	0.430																	0.0031	
13.10.2017	09:35:41	Fe110		Fe110	Single me.	0.430																	0.0031	
13.10.2017	09:35:41	Fe110		Fe110	Single me.	0.430																	0.0031	
13.10.2017	09:35:41	Fe110		Fe110	Single me.	0.430																	0.0031	
30.09.2017	15:00:49	Fe110		Fe110 MCI Setup	Single me.																		0.0028	
24.08.2017	12:39:49	Fe110		Fe110	Single me.	0.170																	0.0160	
24.08.2017	12:39:49	Fe110		Fe110	Single me.	0.170																	0.0165	
24.08.2017	12:39:49	Fe110		Fe110	Single me.	0.170																	0.0151	
24.08.2017	12:39:49	Fe110		Fe110	Single me.	0.170																	0.0152	
24.08.2017	12:39:49	Fe110		Fe110	Single me.	0.170																	0.0147	
24.08.2017	12:39:49	Fe110		Fe110	Single me.	0.170																	0.0146	
24.08.2017	12:39:49	Fe110		Fe110	Single me.	0.1718	0.2742	0.2704	0.0313	0.0412	1.0620	0.0248	5.5066	0.0595	0.0397	0.3206	<0.0001	<0.0001	0.0054	0.0520	1.3290	0.0064	0.0146	

Detail of analysis

Save Cancel New value Audit trail Preview Print Formal name

Edit View Output

Item name	Value	Item name	Dimension	Value	Internal limits	External limits
Aluminium	%	Aluminium	%	0.00300		
Arsen	%	Arsen	%	< 0.00050		
Bor	%	Bor	%	0.00020		
Borat	%	Borat	%	< 0.00100		
Kohlenstoff	%	Kohlenstoff	%	0.00980		
Calcium	%	Calcium	%	< 0.00010		
Car	%	Car	%	0.00040		
Cobalt	%	Cobalt	%	0.00140		
Chrom	%	Chrom	%	0.00130		
Kupfer	%	Kupfer	%	0.00170		
Eisen	%	Eisen	%	100.0		
Magnesium	%	Magnesium	%	< 0.00010		
Mangan	%	Mangan	%	0.00000		

The analysis database application is fast and safe, a comfortable tool for all your post-analytical data treatment demands. With its networking capabilities you may see what's going on at the instrument from any PC in your network.

Innovative Technologies

Benefits

- Your investment in O8 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 AutoCleaning
- 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)

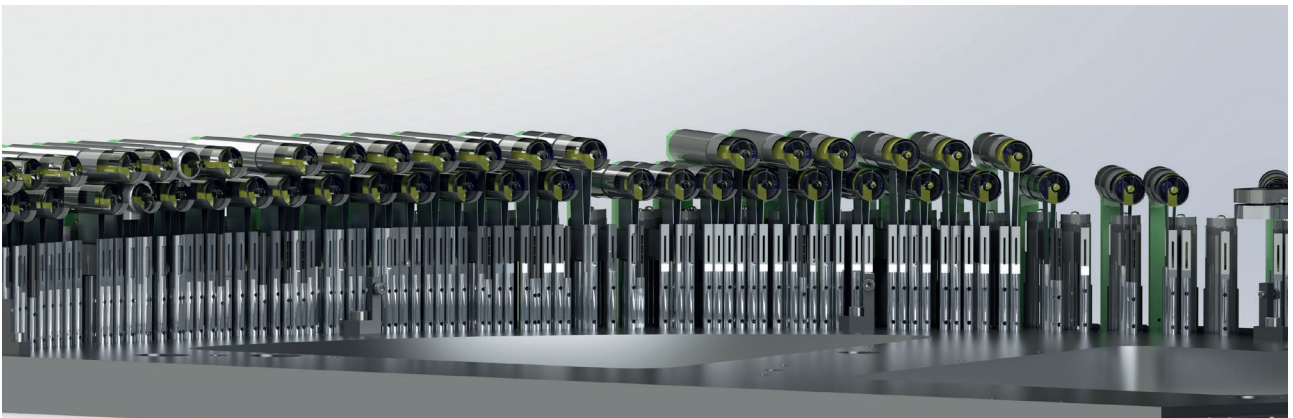
The best of the best

PhotoMultiplier Tubes (PMT) are the detectors of choice for demanding metal analyses. The latest 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.

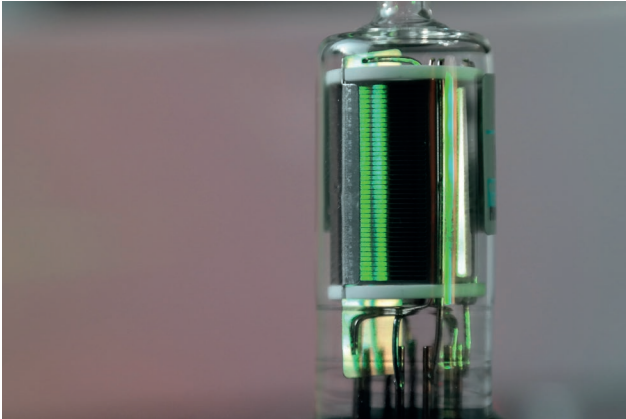
At the same time, the PMT requires less space in the optical system. This improves optimum line selection without compromise. Good to know that PMTs are also world famous for their longevity, designed for decades of high performance.

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 assembly 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.

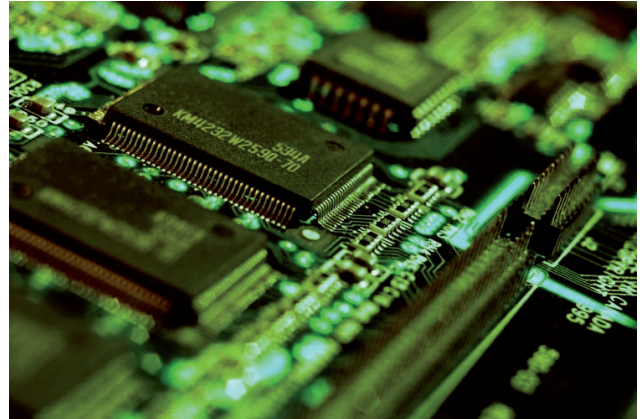
O8 MAGELLAN is the ultimate optical emission spectrometer with 100% PMTs, a no-compromise system even in multi-matrix and multi-channel configurations.



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



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

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