



# S6 JAGUAR

● Spectrometry Solutions

# S6 JAGUAR – Outstanding Performance. Impressive Versatility. Little Space.



S6 JAGUAR – Benchtop WDXRF with EasyLoad sample magazine or manual loading

**The S6 JAGUAR combines excellent analytical performance based on cutting edge technology with compact size and plug-and-analyze installation.**

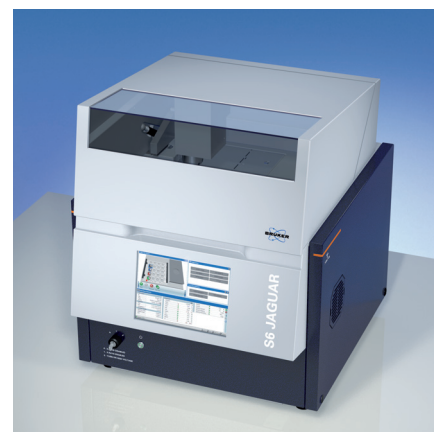
### **S6 JAGUAR – the industry-ready WDXRF analyzer**

The S6 JAGUAR offers more analytical power than any other compact WDXRF instrument. It features a new compact goniometer, closely coupled optics and 400 W direct excitation power. The S6 JAGUAR delivers excellent accuracy and precision based on the brand new HighSense XE detector with its ultimate linear range of two million cps. Its system components are well protected by our proven SampleCare technology, ensuring highest instrument uptime and lowest cost of operation, especially when running liquid or powder samples.

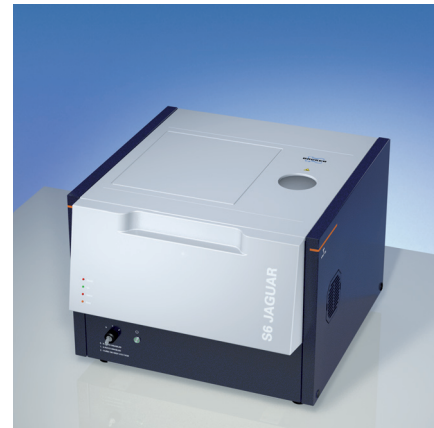
### **S6 JAGUAR – versatility for research and academia**

The new compact WDXRF goniometer with its HighSense technology enhances both, sensitivity and spectral resolution, providing the analytical flexibility and performance for academia and material research. With up to four sample masks for different sample sizes, up to four analyzer crystals, and two detectors, the S6 JAGUAR enables fast multi-element analysis for the entire concentration range from ppm to 100%. The standardless quantitation software SMART-QUANT WD, based on new powerful fundamental parameter algorithms, delivers accurate results even for unknown samples.

**S6 JAGUAR**  
offers full-blown  
WDXRF analytical  
performance in a  
compact benchtop  
system



S6 JAGUAR EasyLoad with 24-position sample magazine



S6 JAGUAR manual sample handling

 A periodic table highlighting the element range from fluorine (F) to uranium (U). The elements are color-coded: green for main group elements (F, Cl, Br, I, At, Sb, Bi, Po, At, Rn, Pb, Bi, Po, At, Rn, Fr, Ra, Ac, Th, Pa, U, Np, Pu, Am, Cm, Bk, Cf, Es, Fm, Md, No, Lr) and blue for transition metals and inner transition metals (H, He, Li, Be, B, C, N, O, F, Ne, Na, Mg, Al, Si, P, S, Cl, Ar, K, Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Ge, As, Se, Br, Kr, Rb, Sr, Y, Zr, Nb, Mo, Tc, Ru, Rh, Pd, Ag, Cd, In, Sn, Te, I, Xe, Cs, Ba, La, Hf, Ta, W, Re, Os, Ir, Pt, Au, Hg, Tl, Pb, Bi, Po, At, Rn, Fr, Ra, Ac, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Th, Pa, U, Np, Pu, Am, Cm, Bk, Cf, Es, Fm, Md, No, Lr).

Element range from fluorine to uranium

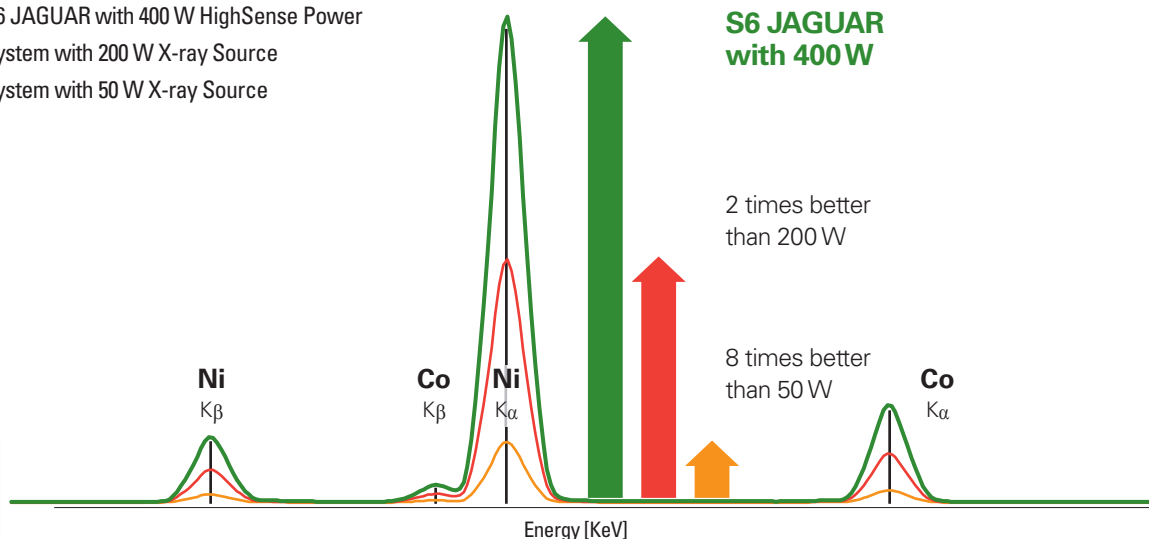


# Latest Innovation HighSense Technology for Higher Sensivity, Superior Flexibility and Better Results





- S6 JAGUAR with 400 W HighSense Power
- System with 200 W X-ray Source
- System with 50 W X-ray Source



### Higher sample throughput, enhanced analytical precision, and better trace element detection with 400W HighSense™ power compared to 200 W

- 50 % shorter measurement times and twice the sample throughput
- 30 % better analytical precision is provided with the 400 W
- The significantly higher sensitivity leads to more than 30% better detection limits
- Light element analysis is enhanced by more than 50% with full 400 W power at low kV



### Unrivalled analytical performance with the ultra compact HighSense™ goniometer

- Higher element sensitivity and excellent WDXRF resolution with the ultra-compact beam path
- Accuracy and precision due to the high-performance gears



### Perfect analytical flexibility with the 4-position crystal changer

- High analytical performance is provided with three crystals for the entire element range: XS-55, PET, LiF200
- Enhanced sample throughput and detection limits with optional choice of a fourth crystal



### Easy application setup with linear ranges of 2 Mcps with HighSense™ detectors

- Optimal detection of the entire element range with flow counter and HighSense XE
- From 100% down to the ppm range – straightforward single calibration
- Significantly reduced inter-element effects due to better energy resolution of HighSense XE



### High instrument uptime with SampleCare™

- Safe analysis of delicate samples with automatic sample recognition of the EasyLoad magazine
- Unique instrument protection due to contamination shields in front of the tube and goniometer
- Simple cleaning of chamber



### Flexible and efficient automated sample handling with EasyLoad™

- State-of-the-art sample handling with 24 positions max, 20 positions on a removable tray and 4 fixed positions
- 15-position for automated handling of larger, heavier or irregularly shaped samples
- Automation-ready with AXSCOM interface and port for sample feeding by belt or robot

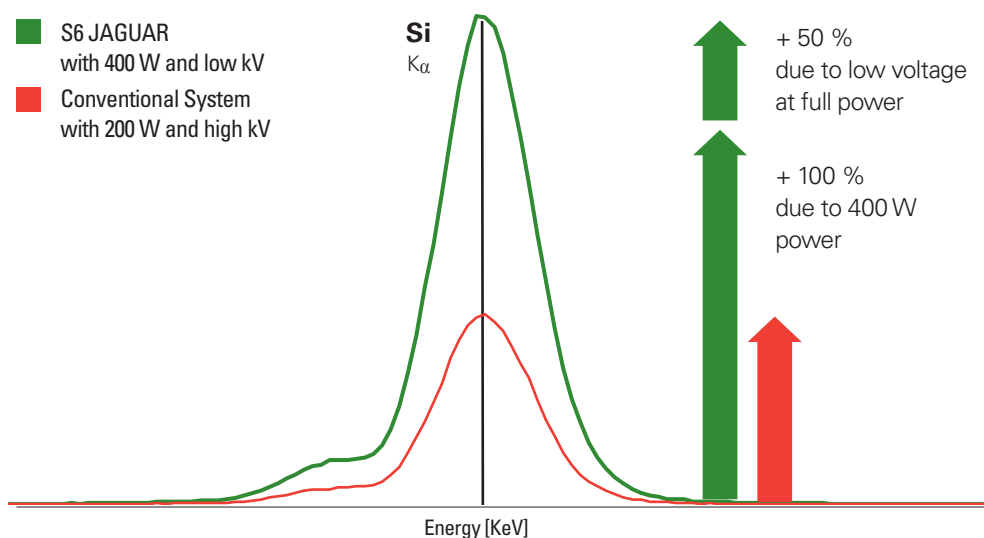


### Easy, intuitive and failsafe operation with TouchControl™

- IslandMode™ without external PC
- Remote access via TCP/IP
- Languages: English, German, French, Spanish, Italian, Portuguese, Russian, Chinese, Japanese, Bahasa

■ S6 JAGUAR  
with 400 W and low kV

■ Conventional System  
with 200 W and high kV



**S6 JAGUAR**  
offers about 3 times  
more intensity due to  
optimized excitation  
with low voltage  
at full power

**The HighSense**  
Detectors can easily  
cover all concentrations  
with linear count rates  
of 2 Mcps

## HighSense™ – More Power leads to Higher Precision and Faster Speed



Bruker's 400 W  
solution is twice  
as powerful as a  
200 W system  
and 8 times more  
powerful than a  
50 W system

### Increase sample throughput and quality of results – anytime at full power!

The major advantage of sequential WDXRF is that every single element is analyzed with optimal instrument parameters. And the S6 JAGUAR is the master of analytical flexibility: The direct excitation power of 400 W leads to excellent element sensitivity without compromise. Full power is available at 30 kV for light elements and 50 kV for heavy elements!

### Make the analysis of totally unknown samples simple, just with better detection!

Just applying high-power excitation is not good enough: The S6 JAGUAR with HighSense detector technology easily covers the entire concentration range with linear count rates of 2 Mcps in one calibration. The HighSense XE detector for heavy elements even comes with a two times better energy resolution than conventional counters, significantly reducing inter-element effects.



400 W HighSense X-ray tube



## Make the instrument a perfect fit, just by adding an additional analyzer crystal

Don't accept the standard: To cover the entire element range in WDXRF three analyzer crystals are required. But for challenging applications, a fourth crystal will make the instrument a perfect fit. The S6 JAGUAR's HighSense goniometer is equipped with a four-position crystal changer, enabling the upgrade of the S6 JAGUAR to higher performance for specific applications:

- Germanium to boost sample throughput for P and S, e.g. for ASTM D 2622
- XS-400 to add 35% more intensity for elements from K – Am
- LiF 220 for better resolution and trace element detection from V – Am

For lower limits of detection of heavy elements, the different filters in the five-position filter changer enhances the peak-to-background ratio!

## Match your needs with the unsurpassed analytical flexibility of the S6 JAGUAR

### Complex made simple with high resolution and HighSense technology

There is no doubt: The S6 JAGUAR with the HighSense goniometer and its high spectral resolution clearly separates neighboring lines and reduces severe line overlaps. Equipped with optimal analyzer crystals, the S6 JAGUAR easily measures complex sample spectra and masters difficult samples, such as minerals and ores in geological applications and metal alloys.

### The WDXRF spectrometer S6 JAGUAR manages even complicated applications with its unique HighSense technology



EasyLoad tray for 20 samples

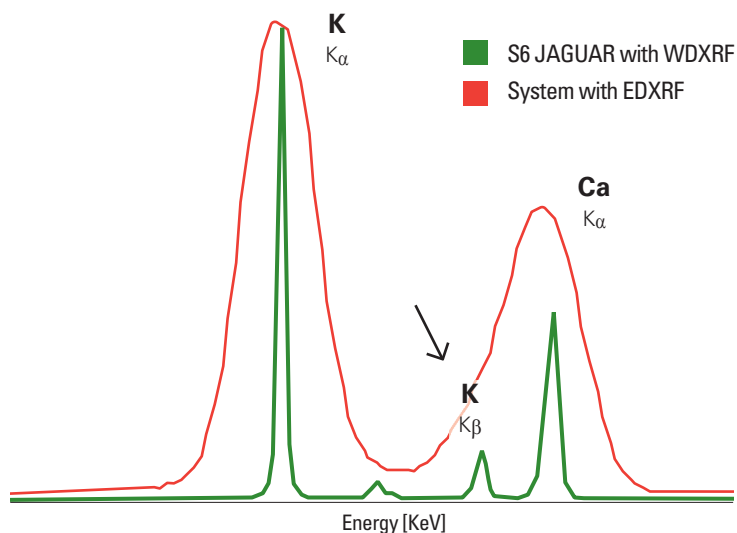


EasyLoad ONLINE for automation with two additional parking positions



S6 JAGUAR manual sample handling

## S6 JAGUAR with WDXRF provides a much better resolution than EDXRF

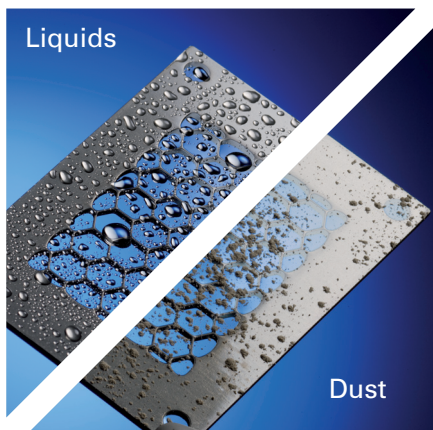




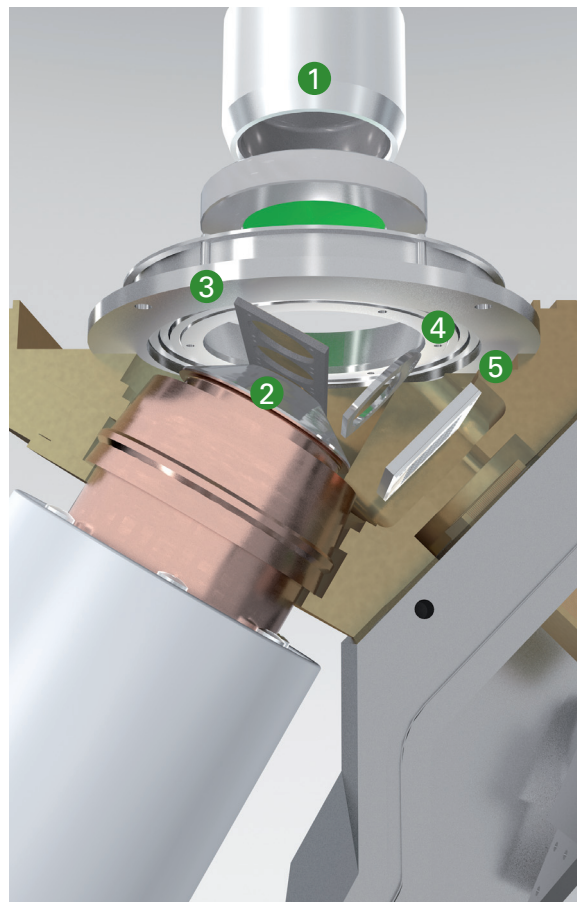


## SampleCare™ and TouchControl™ for Easy Routine Operation and Independent IslandMode™

Better protection  
increases uptime  
and reliability.  
When needed,  
cleaning is very  
simple.



SampleCare vacuum seal to protect against  
powders and liquids



- 1 Grabber with automatic sample detection
- 2 Tube shield
- 3 Filter changer
- 4 Mask holder
- 5 Vacuum seal

## Running liquid samples, loose powders or pressed pellets? S6 JAGUAR handles them all!

Instrument uptime and low cost of operation are crucial to you. And you can rely on the S6 JAGUAR with Bruker's unique SampleCare™ technology.

The liquid sample detection of EasyLoad disables vacuum for liquids. Then, a shield protects the X-ray tube when loading a sample. Next, the vacuum seal protects the goniometer from spillage and dust by separating the sample and goniometer chamber. In addition, the vacuum seal lowers the consumption of helium for liquid analysis significantly.

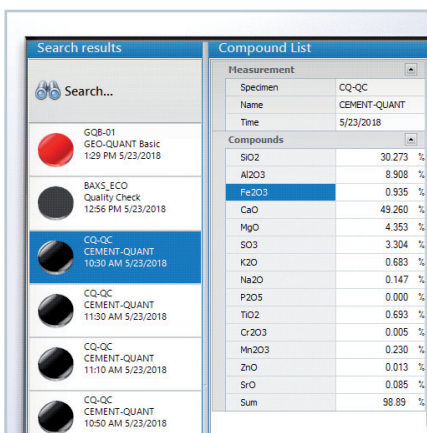
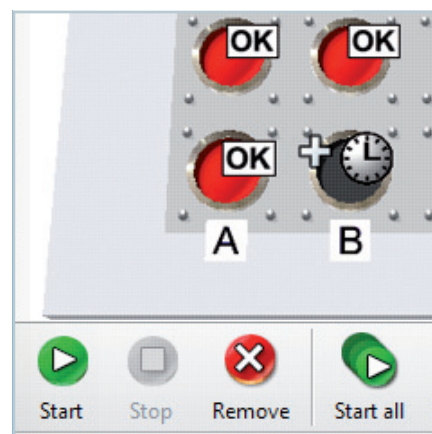
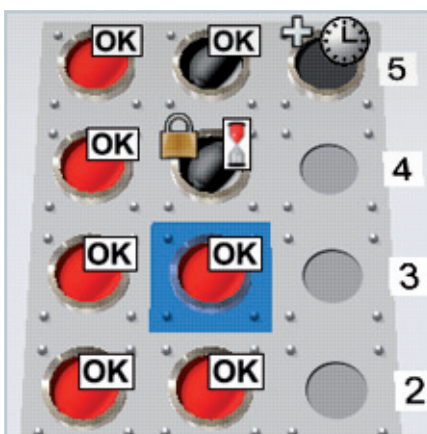
Thanks to TouchControl™, the operation of the S6 JAGUAR is easy and straightforward. TouchControl enables users with minimal training to run routine samples, while restricting access to the configuration and calibrations. An external PC allows for full instrument control through remote access. This combines ease-of-use with optimal data integrity.



TouchControl operation of S6 JAGUAR, available for all configurations

## S6 JAGUAR – a great deal of reliability and efficiency with SampleCare and TouchControl

- 1 Full instrument control: Routine operation and instrument setup without external PC.
- 2 Select a position and the routine application, name the sample ...
- 3 ... and press "Start". Start single samples or batches

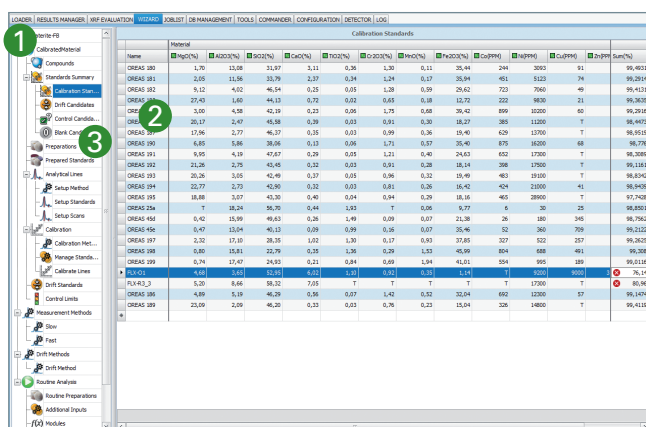


- 4 Instrument and sample status with full control of the Autosampler
- 5 Quick access to previous measurements via database search and direct printout

Bruker redefines Ease-of-use with the unique TouchControl and SampleCare.

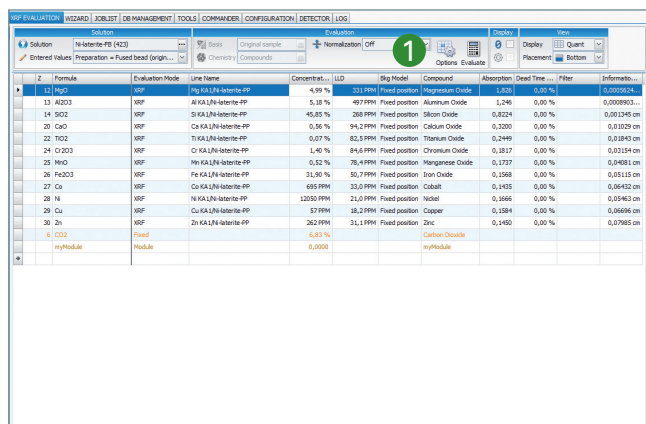
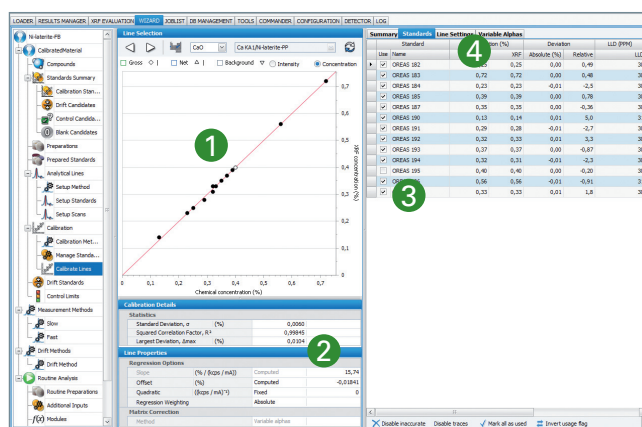
## WIZARD: Intuitive Application Setup – the easy way with SPECTRA.ELEMENTS

- 1 Step-by-step guidance for application setup, including Quality Control and Drift Correction
- 2 Standard definition with simple copy and paste functionality: Information about elements and their ranges is used to optimize measurement method and line overlap correction (Integrated Analytical Intelligence)
- 3 Definition of preparation method, including dimensions, mass and weight, for later individual calculation for every single sample



## WIZARD: State-of-the-art calibration for optimal results from single to multi-element methods

- 1 Interactive optimization: On-the-fly calculation and display of calibration curve
- 2 Summary of calibration details, including offset and slope.
- 3 Tabulated calibration overview for every individual reference sample, including intensities, reference and calculated values, counting statistics and detection limits
- 4 Automatic line overlap corrections and completely new fundamental parameter model, including variable, theoretical and empirical alpha matrix corrections

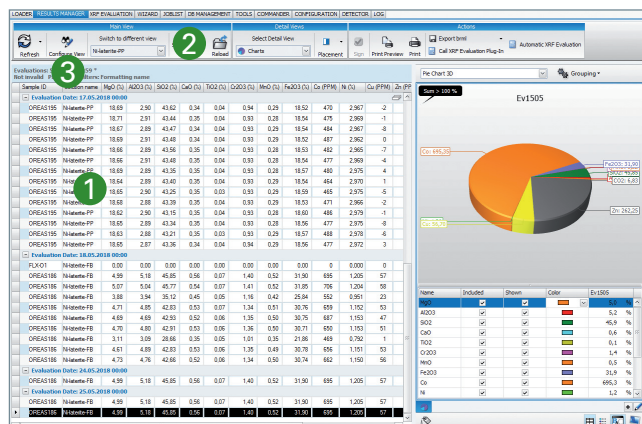


## EVALUATION Plug-In: Master your results with the intuitive interactive evaluation

- 1 Re-evaluation of individual samples and batches with new input including results from the fully integrated SMART-QUANTWD solution:
  - Adjusted compounds
  - Modified the evaluation type of every compound
  - Change the chemical species of a compound
  - Updated calibration

## RESULTS MANAGER: Extended reporting for every need

- 1 Reporting of every single detail, including element concentrations, intensities, sample preparation parameters and line settings for individual samples or batches
- 2 Quick and powerful database search for every recorded sample
- 3 Reporting tool for all instrument data and all solutions including the fully integrated SMART-QUANTWD





# SPECTRA.ELEMENTS & SMART-QUANT WD Element Analysis with Integrated- Analytical-Intelligence™



## **SPECTRA.ELEMENTS combines user-friendliness with functionality: Analytical performance with a simple mouse click**

The Wizard: Creating your solution could not be easier. No floating windows, just one well-organized window shows all powerful calibration options. The software dynamically updates the calibration curves whenever changes are applied.

The Loader easily manages every job from a single routine sample to a large series. And the powerful Results Manager puts you in full control of your analysis results!

Evaluate and get a detailed understanding of your sample: The EVAL plug-in offers interactive evaluation with all the functionality you need.

## **SMART-QUANT WD – Integrated-Analytical-Intelligence™ for best results without calibration**

SMART-QUANT WD is the standardless solution for the analysis of solids, fused beads, pressed pellets, loose powders, and liquids without standards in your lab! It delivers reliable elemental data from Na to U with concentrations from 100% down to the ppm range. Based on WDXRF scans, it works with the completely new Fundamental Parameter (FP) engine!

## **SMART-QUANT – the toolbox for every sample – easy to operate and powerful for best results**



Mining



Refinery



Cement



Glass & Ceramics



Metals



Research



Pharma



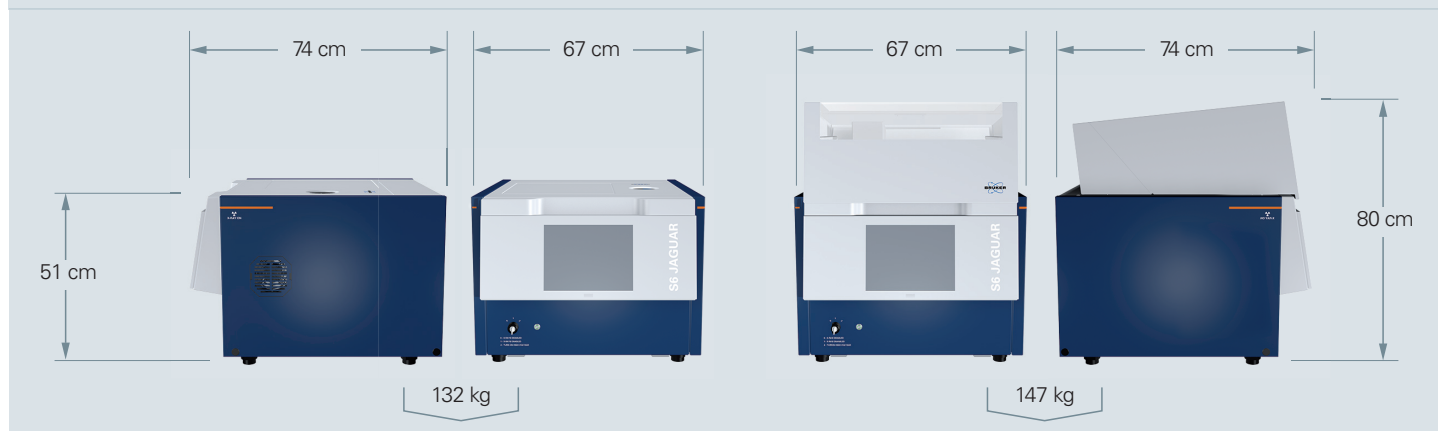
Food



Academia

## Features and Benefits

	Specification	Benefit	
HighSense™ X-ray Power	400 W 50 kV max. 17 mA max.	Analytical performance (better precision and detection limits), optimal heavy element analysis and light element analysis with low kV, high mA at full power	
Sample Sizes	Mask diameter: 34 mm standard Optional additional sample masks: 28 mm, 23 mm, 18 mm	Maximum intensity and analytical flexibility for a variety of different sample diameters	
Primary Beam Filter *)	Automatic 5-position beam filter changer	Better detection limits due to enhanced peak-to-background ratio	
	SampleCare™ tube protection	Tube shield at sample loading	
Analyzer Crystals	XS-55 for F – Mg PET for Al – Cl LiF200 for K – U	Analytical flexibility for the entire element range	
	Ge, XS-400 *), LiF220 *)	Better detection limits, higher analytical precision, better spectral resolution	
Detectors	Proportional counter	High sensitivity for light elements	
	HighSense XE for Ti – Am	Linear range: 2 Mcps, two times better energy resolution	
Vacuum Pump	Included, 265 mm x 180 mm x 489 mm	Low cost-of-operation	
Helium Purge *)		Liquid analysis.	
TouchControl™	Intuitive user interface (optional) Free language selection	Failsafe operation and reduced operator training	
Temperature Control Unit	Included, no additional chiller 466 mm x 190 mm x 630 mm	High analytical precision, better temperature stability	
Power Supply	100 – 240 V, 50/60 Hz, max. 1 kVA	Standard wall plug	
Safety	DIN EN ISO 9001:2008, 2006/42/EC (CE-certified Machinery directive), 2014/35/EC (Electrical equipment), 2014/30/EC (Electromagnetic Compatibility), German Type Approval and Vollschutz according to BfS RoV pending, Fully radiation-protected system; radiation <1 µSv/h (H*), Compliant to ICRP, IAEA, EURATOM		
S6 JAGUAR Manual	S6 JAGUAR EasyLoad	S6 JAGUAR EasyLoad ONLINE	S6 JAGUAR 15 Position XY-loader
Manual sample loading	24-position XY-loader for 51.5 EasyLoad rings	22-position XY-loader for 51.5 EasyLoad rings	Autochanger for two-part sample cups



\*) optional



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