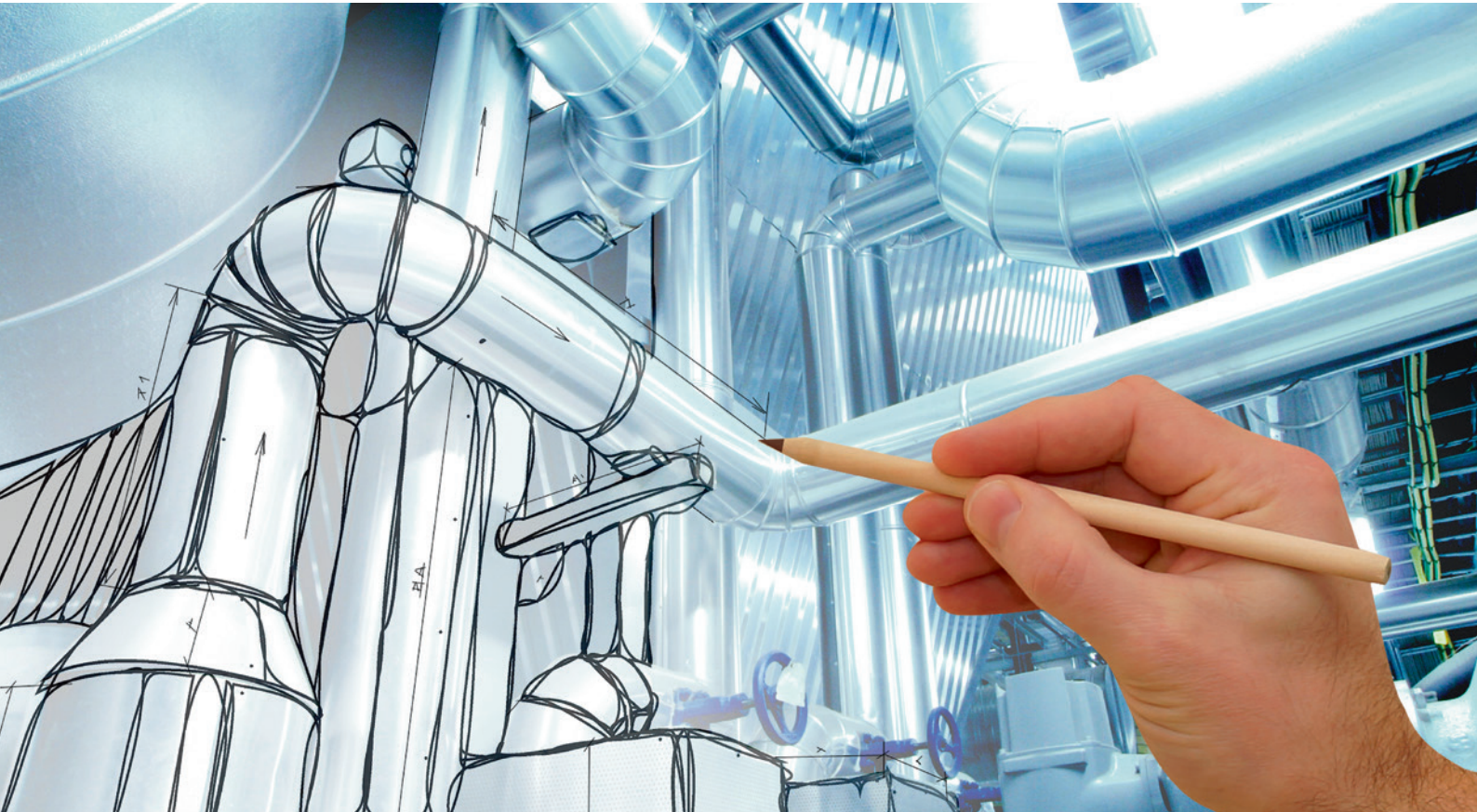




PANalytical
get insight



Epsilon Xflow

On-line elemental analysis
of liquids, designed for your
process





2420 C:\Oand 460089 v1.1.4

Voltage 25.00 XRF Current 50.0

15-03-17 04:35:45

Values	State
10 %	OK
25.00 kV	Closed
50.0 μA	Measuring
0.0 ppm	Off
0.0 ppm	Profile 2
645.4 ppm	10 %
0.000	25.00 kV
603	50.0 μA
33.3 °C	0.0 ppm
31.1 °C	0.0 ppm
3.4 kPa	645.4 ppm
3.0 %	0.000
3.0 °C	603

Inputs	Contacts
P2	SF ID
1 2 3 4 5 6 7 8	DE C1 C2 C3 EH
	1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

Zirconium

Time	Zirconium
4:30	645
4:31	645
4:32	645
4:33	645
4:34	645
4:35	645

Cell temperature

Time	Cell temperature
4:30	30.0
4:31	30.0
4:32	30.0
4:33	30.0
4:34	30.0
4:35	30.0

Menu Login Alarms



Gain value by direct insight into your production process

Increasing competitive pressure and more stringent regulations drive the need for more efficient processes. Real-time process monitoring is the method to realize this. It ensures an optimal use of resources and consistent product quality.

PANalytical's Epsilon Xflow, an on-line analyzer for liquids, can help you to monitor liquid-based production processes. It is designed for the continuous analysis of the elemental composition of liquids, providing real-time insight in your daily operations. The ability to respond immediately to changing process conditions ensures highly efficient production and optimal quality of your product.

On-line monitoring provides fast and accurate control of essential process parameters. It saves time, prevents costly waste and ensures adherence to tight product specifications. The Epsilon Xflow analyzer, using energy dispersive X-ray fluorescence (EDXRF) technology, is equipped with the essential attributes to realize direct process control.

For stand-alone process control several essential output types are available, and remote access capabilities allow direct integration into your manufacturing execution system.

Epsilon Xflow

- Leading EDXRF technology
- Fast, simultaneous multi-element analysis
- Applicable for a wide range of liquid process streams
- Highly repeatable results enabled by the latest flowcell technology
- Interface to manufacturing execution systems
- Proven user interface for easy operation and maintenance
- Remote service and application support options

Which industries can benefit from Epsilon Xflow?

- Petrochemicals
- Polymers
- Environmental
- Mining
- Metals
- Food

Advantages of XRF analysis

- Fast response, robust, low maintenance, non-destructive and zero-waste
- Excellent repeatability and accuracy at low concentrations
- Simultaneous analysis of a wide range of chemical elements ranging from sodium to americium ($z=11$ to 95), like sulfur, iron, nickel, vanadium and calcium
- Flexibility to cater for many different process streams and process conditions

Turn-key solution customized to

Our specialists realize a complete solution according to your specifications. The offer takes care of different process requirements and parameters, and the full solution can include sample conditioning systems, waste management solutions, housing and/or sample recovery. The result is a turn-key solution, customized to your site and process needs.

1 The complete solution

PANalytical offers a full operating solution, starting from the sampling point, through to data integration in production processes.

- Sampling
- Process flow selection
- Sample conditioning
- Integrated validation
- Analog outputs for automatic process control
- Remote access
- Housing and shelter

2 Sample conditioning

Various conditioning options can be provided to make the sample suitable for the analyses such as:

- Particle filtration
- Cooling
- Heating
- Mixing

3 Compatible with a wide range of process conditions

The Epsilon Xflow solution can be constructed of materials able to cope with your specific process conditions with respect to: pH, pressure, temperature and more.

4 Integrated Epsilon 3^X performance

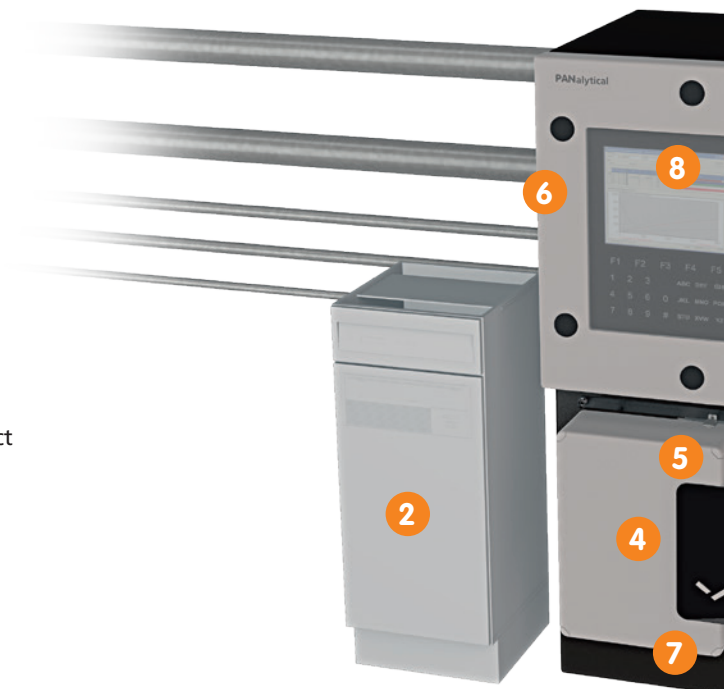
The proven and most advanced Epsilon 3^X X-ray fluorescence excitation and detection technologies are now incorporated in the Epsilon Xflow. A well-designed optical path, a wide range of excitation capabilities for light and heavier elements and a high-resolution SDD detector system contribute to the unique Epsilon 3^X performance.

Based on EDXRF technology the Epsilon Xflow has the flexibility to analyze all elements from Na-Am.

5 Safety guaranteed

PANalytical's highest priority is full X-ray safety of all instruments for users and their surroundings.

The Epsilon Xflow is designed according to the strict requirements prescribed by ATEX regulations for safe operation in explosive atmospheres.



your needs



6 Adaptable to different operational environments

The Epsilon Xflow can be placed in tough industrial environments. Air-conditioning, heating or shelter are available to cope with challenging weather or plant conditions to provide a long-term solution.

7 Straight forward maintenance

The flowcell is easily accessible for preventive and corrective maintenance when required. A flush option is available for remote cleaning of the flowcell window.

8 Control your process

The data output of the Epsilon Xflow can directly activate components like valves in the production process.

The Epsilon Xflow can be integrated easily into the manufacturing execution system and accessed from a central control room to monitor, control and steer production processes.

Benefits

- Excellent short- and long-term repeatability
- Low maintenance and remote access options
- Fast multi-element analyzer with low detection limits
- Processes monitoring and control via a direct interface to many manufacturing execution systems
- Customizable to your process conditions
- Chemical resistance to a wide range of liquids
- Designed for ATEX Zone 1 & 2 requirements



Industry



Petrochemicals

- Accurate blending of ultra low sulfur fuels
- Control real-time desulfurization processes to optimize margins
- Enable pro-active reaction to catalyst killers (Fe, Ni, V) to extend catalyst life-time
- Control the blending and production of lubrication oils



Polymers

- Accurate dosing of additives
- Monitor homogenous catalysts in polymerization processes
- Control PTA production processes



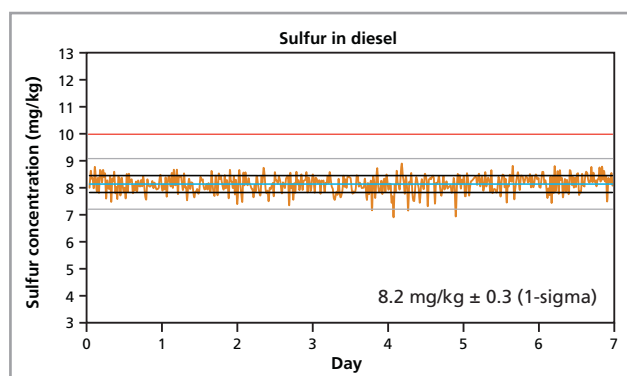
Environmental

- Monitor hazardous compounds in waste- and process streams
- Control the use of chemicals in wood preservation processes

Accurate blending of ultra low sulfur fuels

Environmental regulations, like Tier 3 in the USA or Euro VI in the European Union, set the permissible content of sulfur in road fuels to 10 mg/kg. Constant close compliance with regulations will maximize profit by minimizing the 'give-away' and preventing costly reprocessing.

The Epsilon Xflow is capable of continuously analyzing ultra-low sulfur diesel process streams with accuracy and precision, allowing for production closer to limit offsets and thereby reducing operational costs. The illustrated example demonstrates the capability of the Epsilon Xflow to analyze automotive diesel with excellent repeatability and accuracy over a significant period of time.



20 minutes per measurement point



solutions

Mining

- Monitor and react to changes in *in situ* leaching processes
- Check mine wastewater compositions
- Real-time analysis of liquors and reagents during ore processing



Metals

- Monitor yield in precious metal recovery
- Analyse the depletion of plating baths and powder coatings



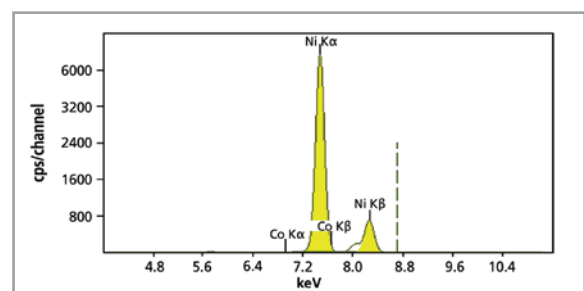
Food

- Accurate dosing of nutrients in food and feed streams
- Control the salt concentration in food streams



Real-time analysis of liquors and reagent during ore processing

To extract metals like copper, nickel or uranium from ores, aggressive and mostly highly acidic liquids are utilized. The Epsilon Xflow can cope with these challenging process conditions and still offer the required accuracy and stability over longer periods of operation. This is demonstrated by analyzing an H_2SO_4 leaching solution, containing nickel, with the Epsilon Xflow. The illustrated example clearly indicates the capability of the Epsilon Xflow to handle these highly acidic solutions. The on-line analyzer offers users direct and accurate feedback of the leaching process, enabling real-time monitoring of mining process operations.



71 measurements at 45 °C

Element	Average (wt%)	1-sigma (wt%)
Si	7.4	0.03
Ni	10.8	0.03

About PANalytical

PANalytical's mission is to enable people to get valuable insight into their materials and processes. Our customers can be found in virtually every industry segment, from building materials to pharmaceuticals and from metals and mining to nanomaterials. The combination of our software and instrumentation, based on X-ray diffraction (XRD), X-ray scattering, X-ray fluorescence (XRF) and near-infrared (NIR) spectroscopy as well as pulsed fast thermal neutron activation (PFTNA), provides our customers with highly reliable and robust elemental and structural information on their materials and is applied in scientific research and industrial process and quality control.

PANalytical employs over 1,000 people worldwide. The company's headquarters are in Almelo, the Netherlands. Fully equipped application laboratories are established in Japan, China, the US, Brazil, and the Netherlands. Supply and competence centers are located on two sites in the Netherlands: Almelo (X-ray instruments) and Eindhoven (X-ray tubes), in Nottingham, UK (XRF applications and standards), in Quebec, Canada (fusion sample preparation) and in Boulder CO, US (near-infrared instruments). A dedicated research activity is located on the campus of the University of Sussex in Brighton (UK).

PANalytical is active in all but a few countries of the world with a worldwide sales and service network that ensures unrivalled levels of customer support.

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The company is certified in accordance with ISO 9001 and ISO 14001.

Visit www.panalytical.com for more information about our activities.

PANalytical is part of Spectris plc, the productivity-enhancing instrumentation and controls company. Since 1 January 2017 PANalytical has merged its activities with Malvern Instruments, a UK-based provider of materials and biophysical characterization technology and also an operating company within the Materials Analysis segment of Spectris.



Expertise

We take care of your analytical challenges

Industry's largest pool of specialists to create analytical solutions that are crucial for your processes and add value to your business and activities.

- On-site training
- Training courses
- Performance optimization and validation
- Analysis services and customized reference materials
- Multi-laboratory standardization

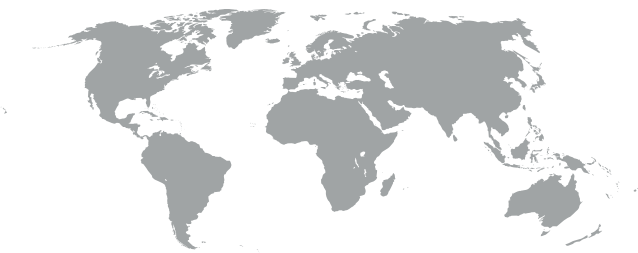
Support

Service for a life time

Worldwide network of experienced engineers to ensure rapid response and maximum uptime.

- Phone and remote support
- Preventive maintenance and check-ups
- Flexible Care Agreements
- Performance certificates
- Hardware and software upgrades
- Local presence
- Local stock of spare parts

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