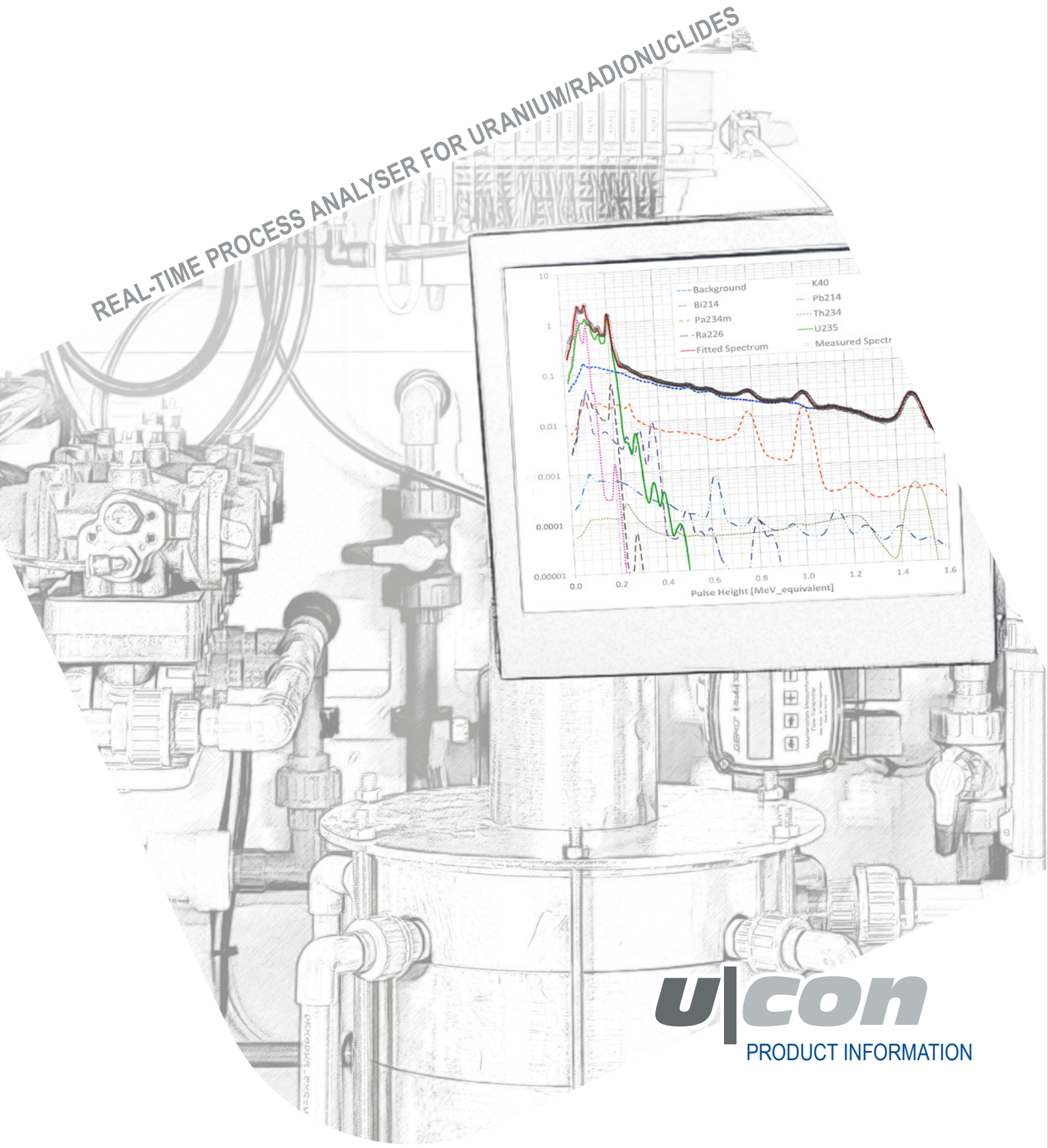
UMWELTLEISTUNGEN

REAL-TIME PROCESS ANALYSER FOR URANIUM/RADIONUCLIDES



u|con

PRODUCT INFORMATION

UMWELTLEISTUNGEN

u|con

Real-time process analyser for uranium and other radionuclides

UMWELT-UND INGENIEURTECHNIK GMBH DRESDEN (UIT), GERMANY, DEVELOPS INNOVATIVE SOLUTIONS IN THE FIELDS OF MINERAL RESOURCES AND METALLURGICAL PROCESSING, ENVIRONMENTAL MONITORING AND SPECIALIZED ENGINEERING.

THE U|CON SYSTEM IS A PATENTED MONITORING UNIT FOR THE IN-LINE, REAL-TIME MEASUREMENT OF URANIUM AND OTHER RADIONUCLIDE CONCENTRATIONS IN PROCESSING SOLUTIONS BY γ-RAY SPECTROSCOPY. IT CAN BE CONNECTED TO SEVERAL PROCESSING UNITS (PIPES, REACTORS, ETC.) WHILE A MULTIPLEXING SYSTEM ALLOWS SWITCHING BETWEEN UP TO TWELVE DIFFERENT INLETS.

ITS CHEMICAL RESISTANCE OF BOTH HYDRAULIC MULTIPLEXER AND MEASURING UNIT MAKES IT IDEALLY SUITED FOR INDUSTRIAL APPLICATIONS IN METALLURGICAL PROCESSING WITH AGGRESSIVE MEDIA.

u|con, front open

u|con, back open

u|con flow-through cell with γ-ray spectrometer

TECHNICAL DATA

- Power supply: 400 V AC three-phase-current, 16 A
- Instrument air required for pneumatic ball valve control (6 bar)
- u|con link to central plant control system via Ethernet
- Fieldbus protocol Modbus/TCP
- Optional external LAN connection for remote support (e.g. software updates)
- Material specification of components for high chemical resistance:
  - Cabinet: glass fibre reinforced plastic
  - Pipes, fittings, measuring cell: PVC-U (optionally customized)
  - Hoses: EPDM (1/2")
- Cabinet dimensions: 210 x 90 x 90 cm
- Separation of hydraulic and electric-electronic components in different cabinet sections
- Leakage sensors in every hydraulic segment
- Safe (interlocked) valve control, NC (normally closed) principle

u|con, interfaces

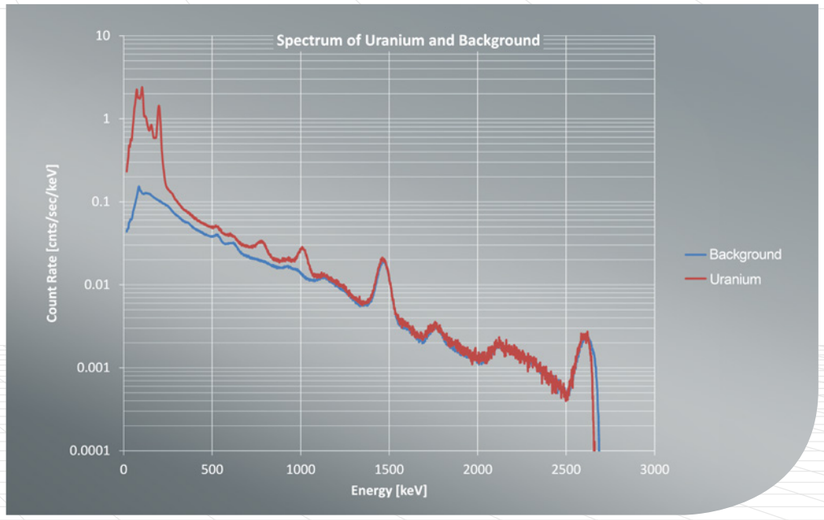
u|con

PERFORMANCE

- Measuring range for uranium: 1-100 mg/L to 100 g/L (lower limit of detection depending on solution matrix)
- Hydraulic multiplexing system for inlet control (base version for three inlets, upgradable to up to twelve)
- Background suppression by 10 mm Pb shielding (optionally customized)
- Remaining background measurement at times for reliable spectral decomposition
- Adjustable flow control to setup effective retention time within the measuring cell
- High-performance spectral analysis resulting in (absolute, calibrated) individual radionuclide concentrations

FUNCTION

- The control of hydrometallurgical processing of radioactive media (uranium recovery and refining, NORM removal from rare earth elements, etc.) can be significantly improved by measuring the concentrations in-line and real-time. The system ***u|con*** is based on a shielded by-pass flow-through cell with a central, high-performance γ-ray spectrometer (with advanced spectral decomposition features) that enables the simultaneous measurement of individual radionuclide concentrations including uranium (e.g. from heap leaching or in-situ recovery). The sensitivity (lower level of detection) for individual radionuclides depends on the radionuclide matrix in the solution. The method is ideally suitable for uranium in a wide measuring range after its extraction by selective leaching. The general data interpretation is subject to disequilibrium conditions of main decay chains of U and Th isotopes.
- The ***u|con*** device accepts the solution input from up to 12 processing units (pipes, reactors), controlled via a hydraulic pipe multiplexer. The switch from one inlet to another leads to a short idle time that is determined by the hydraulic retention in the flow-through cell. All ***u|con*** components (measuring cell with γ-ray spectrometer, hydraulic multiplexer, system control, spectral analyser) are housed in a cabinet. It can be configured and easily installed within a hydrometallurgical processing plant according to a customized setup. In order to consider the natural radioactive background, a specific measurement with pure water is performed at times. In addition to the spectral templates for all radionuclides considered, the measured background spectrum is explicitly used for the spectral decomposition that results in the actual radionuclide concentrations.
- ***u|con*** is usually integrated in the central plant control network to setup the measuring sequence, to transfer the data including diagnostic information online and to enable system maintenance.



Technology pro Environment

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The company belongs to General Atomics Europe
and as such is part of the global network of General Atomics

UMWELTLEISTUNGEN

Umwelt- und Ingenieurtechnik GmbH Dresden
Zum Windkanal 21
D-01109 Dresden
Germany

phone: +49 351 88646-00
fax: +49 351 8865774
info@uit-gmbh.de
www.uit-gmbh.de

The product information also describes optional extras.
The concrete scope of delivery is defined in each case with the offer.

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