MARSCHELKE MESSTECHNIK

Knowing what's in it

Handling of radioactive waste requires care and responsibility. Destruction-free content inspection is a must. Marschelke Messtechnik is the expert in this area: Our drum measurement systems tell you, what is in a drum.

Together with our partners, we developed the Gamma Scanner, a drum measurement system with client-specifically customisable gamma spectrometry and dose rate monitoring, controlled by our proven and user-friendly Scanner 32 software.

The main highlights of the Gamma Scanner are: The system is designed in a modular manner, is easy to transport and does not require complex wiring. This saves time and money during operation.

Gamma Scanner drum measurement system made by Marschelke Messtechnik

Strong partners with experience in nuclear measurement technology

For 18 years, we have developed software and systems for nuclear measurement technology, specifically drum inspection systems for radioactive waste. Together with our partners, we offer ready-to-use systems, custom-designed according to our clients' needs.

Drum measurement system "light": In 2008, Marschelke Messtechnik developed the DL scanner for dose rate monitoring only on behalf of the Jülich Research Centre

Further development with gamma spectrometry: The Rapid Scanner introduced in 2010 contains a germanium detector with vertical slit collimator

It started with a collaboration with the Jülich Research Centre. In 1995, the Jülich Research Centre needed software to control a drum inspection system for radioactive waste. The scientists asked Dipl.-Ing Herwig Marschelke to program the software. Shortly thereafter, Marschelke Messtechnik developed their own control technology for drum measurement systems, which for the first time included not only software but also technical hardware components (CNC). The Jülich Research Centre then commissioned Marschelke Messtechnik to upgrade the existing systems with the new control technology. Today, Marschelke Messtechnik works on a regular basis for the Jülich Research Centre in the areas of software development and systems engineering.

Since 2008, our partner Engineering Office Bernd Neudörffer has expanded our product portfolio with special purpose machine engineering. With that, we offer our clients the full range of systems engineering services for new systems from a single source. Marschelke Messtechnik has developed and successfully launched more than a dozen drum inspection systems for clients from all over Europe and Asia.

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JÜLICH FORSCHUNGSZENTRUM

INGENIEURBÜRO FÜR SONDERENTWICKLUNGEN GERÄTEBAU und SYSTEME
Bernd Neudörffer

Technical data – Gamma Scanner

1. Rotating module

Turntable for 200- and 280-litre drums with up to 1000 kg overall mass

Turntable diameter [mm] 750

Payload [kg] 1000

Weight [kg] 400

Dimensions W × L × H [mm] ..... 770 × 810 × 400

Power supply [V AC] ..... 230 single-phase

Power consumption [VA] 200

Measurement technology, rotating module:
Scale: measuring range [kg] 1-2000
Bottom dose rate: different dose rate probes with TTL signal output possible, adjusted to measuring range

2. Vertical module

Lifting height [mm] 1020

Payload [kg] 500

Weight without germanium detector, collimator [kg] 500

Frame dimensions W × L × H [mm] ..... 770 × 1400 × 2100

Width including technology enclosure [mm] 1000

Power supply [V AC] ..... 230 single-phase

Power consumption [VA] 1000

Measuring technology, vertical module:
Spectroscopy: HPGe detector with lead collimator (cylindrical, slit) and electric or nitrogen cooling, design adjusted to application and measuring range
Dose rate: different dose rate probes with TTL signal output possible, adjusted to measuring range

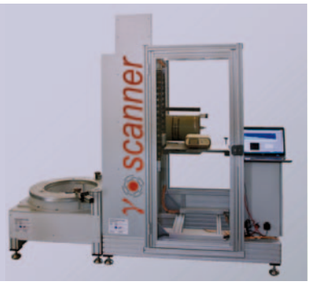
3. Software and computer

Operation with the drum measurement system software SCANNER 32

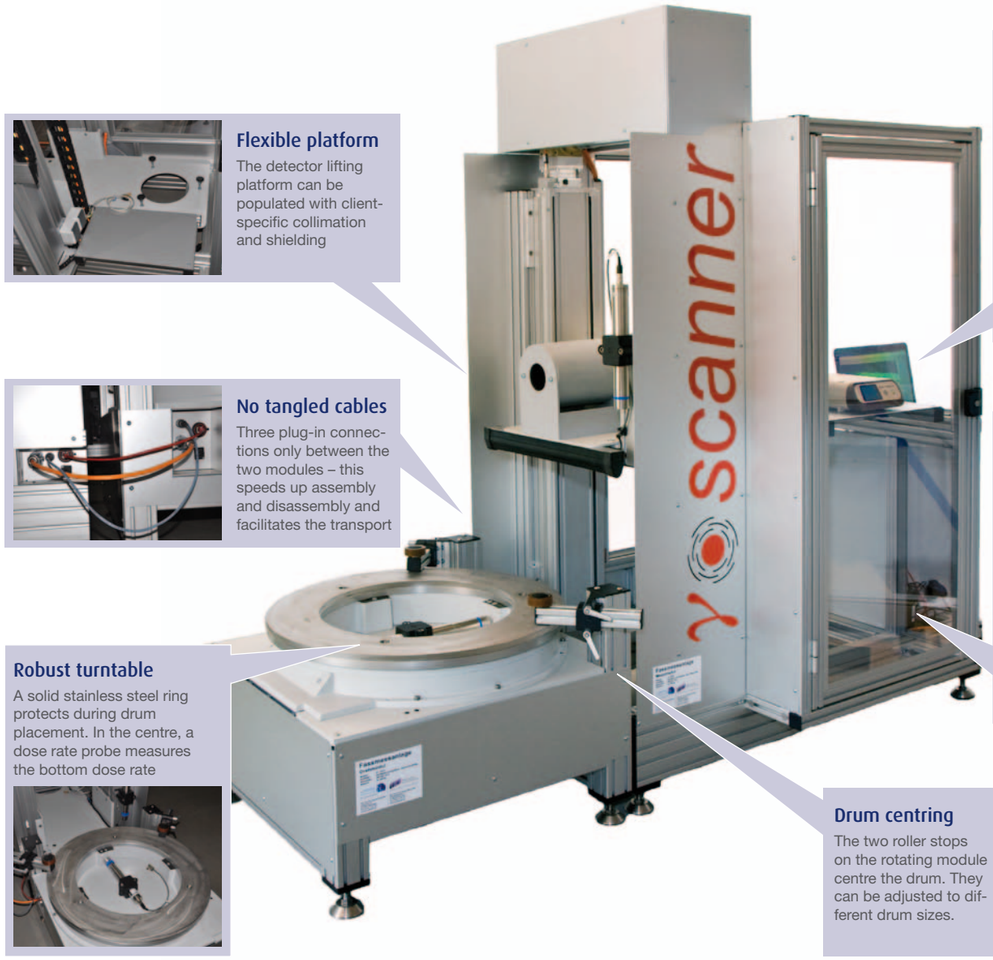
Operating system Windows XP®, Windows 7®, Windows 8®

ORTEC® GammaVision®, version 6.08 or higher

Standard PC with network interface, mouse, keyboard, monitor or notebook No special industrial PC required, no plug-in cards or free USB ports required



Innovative drum measurement with the Gamma Scanner



Flexible platform
The detector lifting platform can be populated with client-specific collimation and shielding

No tangled cables
Three plug-in connections only between the two modules – this speeds up assembly and disassembly and facilitates the transport

Robust turntable
A solid stainless steel ring protects during drum placement. In the centre, a dose rate probe measures the bottom dose rate

Data on standard PC
A standard Windows PC or notebook is sufficient for system operation, measurement and data analysis

Operating voltage 230 V
No three-phase current is required for operation. The PC is connected via the Ethernet port and directly supplied by the system

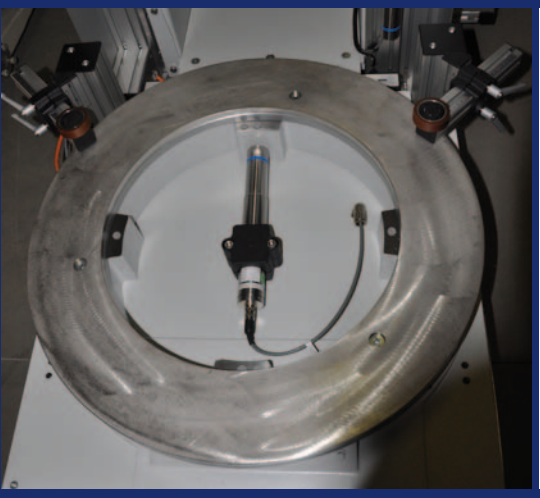
Drum centring
The two roller stops on the rotating module centre the drum. They can be adjusted to different drum sizes.

If you want to know what is inside a drum without opening it, you need good ideas. Lots of them went into the development of Marschelke Messtechnik's drum measurement system, Gamma Scanner. The Gamma Scanner is designed as a modular complete system to measure and inspect drums filled with radioactive waste. Scanner and software have been developed with the Jülich Research Centre, which was also the certifying agency.

With gamma spectrometry, dose rate monitoring and a scale, the drum inspection system is the perfect tool to determine a drum's nuclear inventory. Also, the Gamma Scanner is extremely flexible, as the system consist of two easy to separate and transport modules. Both the rotating and vertical modules can be moved by a forklift or a lifting car. The modules can be taken apart by separating three plug-in connections. Aluminium is used to build the measurement system which therefore is rather light in weight. The Gamma Scanner can be connected to a standard 230-voltage-electrical outlet. No three-phase power connector is necessary, nor is specific computer hardware, as the measurement data is transmitted via LAN to a standard Windows PC.

Variable drum centring on the turntable facilitates drum placement. This saves valuable time during operation. The centring rollers can be adjusted to different drum sizes. A solid stainless steel ring protects the rotating module and any contained technology against damage due to drum loading. In the rotating module, the integrated scale first registers the drum weight. Next, a dose rate probe in the centre measures the bottom dose rate and the CNC drive moves the turntable. The detector lifting platform can be populated with various options. Nitrogen- or electrically cooled germanium detectors with client-specific collimation and shielding are possible, as are other measurement systems. The vertical module enclosure as well as a safety strip with emergency-off function on the detector platform ensure occupational safety.

Marschelke Messtechnik is a one-stop-shop for the Gamma Scanner: We oversee the planning and delivery of all components by the manufacturers, as well as the operation launch on-site.



The software experts for industrial and nuclear measurement technology

For the last 20 years, Dipl.-Ing. Herwig Marschelke and Dipl.-Inf. Dirk Sauter here at Marschelke Messtechnik have specialized in software development and system control for industrial measurement needs. In addition to our high level of competence in the area of nuclear measurement technology, we focus on test and measuring systems for research, industry and medical technology.

Our strength at Marschelke Messtechnik is one-stop project development and management, from taking the first planning steps, to selecting the best measurement technology components, to developing specific software, to coordinating the various partners involved, to the final approval of a ready-to use system. We don't shy away from complex challenges. Just get in touch with us!

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