EXCELLENCE IN MONITORING & MEASUREMENT

– CONTINUOUS LEVEL MEASUREMENT

– POINT LEVEL MEASUREMENT

– INTERFACE LEVEL/DENSITY MEASUREMENT

– DENSITY MEASUREMENT

– MASS FLOW MEASUREMENT

– CONTINUOUS WEIGHT MEASUREMENT

RONAN

ENGINEERING COMPANY

MEASUREMENTS DIVISION

ACCURATELY MEASURING WHAT YOU DID NOT THINK WAS MEASURABLE

Ronan Engineering, founded in 1959, is a privately held Corporation with the exclusive purpose of manufacturing leading-edge instrumentation that provides measurements for process control in severe service environments. Sixty years of customer-focused research and development has enabled Ronan to provide industry-changing instrumentation that makes industrial plant operations safer and more efficient.

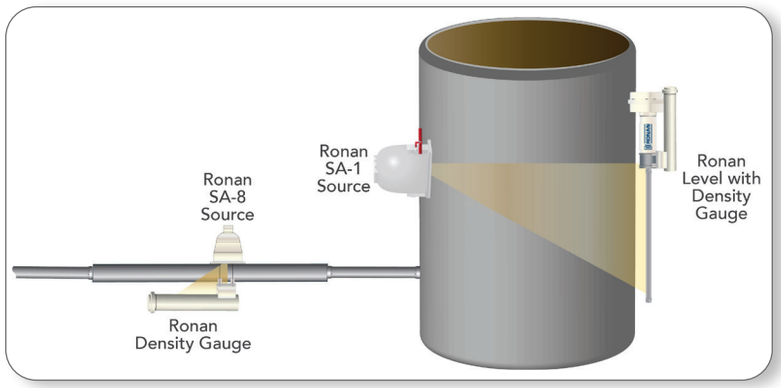
Over our company's history, we have established manufacturing, sales and service facilities in Florence, Kentucky; secured a regional sales and support center in Sunderland, Tyne & Wear, United Kingdom; and added Representative Companies around the world. Our worldwide network of Field Service Engineers and Applications Engineers are ready to assist with your measurement needs.

Ronan Measurements supplies the process control industry with leading-edge Radiometric Measurement Systems that provide non-contact measurement solutions for the harshest environments. We are the only company exclusively dedicated to manufacturing Radiometric Measurement systems.

Ronan offers the widest variety of Source Holder and Detector configurations on the market, including Source and Source Holders to meet every need, Detectors configurable to any shape or length, and a Transmitter that is compatible with all configurations and can be customized for special applications. Our Engineers work directly with you and your staff to customize the safest Radiometric Measurement system that also provides the most accurate results. With a philosophy of designing new products to be backward compatible, our customers have the confidence of an installed base of thousands of systems.

RADIOMETRIC MEASUREMENT

Radiometric Measurement provides a safe and efficient, non-contact method to measure liquids or solids in harsh process environments. The entire system mounts externally to the vessel or pipe and can be easily installed and maintained while the process is running without downtime, vessel modifications, risk of accidental release, or the need for specialty construction materials.



APPLICATIONS AND INDUSTRIES

Ronan instrumentation is used to make accurate measurements in even the most extreme process environments. Following is a list of measurement applications for which Ronan equipment is used:

- **Continuous Level Measurement** measures liquids or solids contained in a vessel, even one with an internal structure such as an agitator.
- **Point Level Measurement** detects and indicates the presence of material relative to a pre-selected level in process tanks, hoppers, chutes or vessels.
- **Interface Level and Density Measurement** is ideally suited for measurement of multiple stratified layers of process materials.
- **Density Measurement** is ideally suited for continuous density measurement of liquids, slurries, and solids contained in a pipe or vessel.
- **Mass Flow Measurement** makes mass flow calculations using the density system with an input from a volumetric flow meter into the density Transmitter.
- **Continuous Weight Measurement** is ideally suited for weighing materials on belt conveyors, screw conveyors, drag chain conveyors, and metal plate conveyors.

Radiometric Measurement is ideal for industries including:

- Mining and Aggregates
- Power
- Refining, Oil and Gas
- Chemical
- Metals
- Pulp and Paper
- Dredging
- Cement
- Glass
- Food and Beverage

Radiometric Measurement can accurately measure process material even when materials to be measured are caustic, corrosive, toxic, carcinogenic, explosive, or sterile; abrasive or highly viscous; held at extreme temperatures or under high pressure; in a process flow that is violent or constantly changing; contained in a vessel with an internal obstruction.

X96S DENSITY SYSTEM

The X96S Density System is designed to deliver outstanding performance in a wide range of difficult applications and process conditions. Each system consists of a gamma source, detector and Ronan X96S Microprocessor. The detector measures the level of energy being emitted from the source and sends a proportional signal to the Microprocessor. The Microprocessor filters and correlates this signal to a density/percent solids measurement. The user can select from a list of units of measure for the desired reading.

The entire system can be easily installed while the process is running.

Ronan Microprocessor Features:

- System Integration via HART or Foundation Fieldbus
- Local display shown in HART format
- Optional local and/or remote eight-line display
- Flexible, modular design permits customization
- Isolated digital and analog I/O, software settable
- NEMA 4, 4X enclosure or rack-mount chassis

X96S Non-Contact Density System with Microprocessor

X96S NON-CONTACT WEIGHING SYSTEM

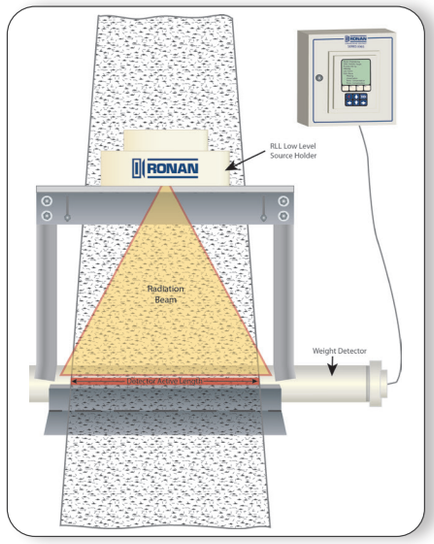
The X96S non-contact weighing system is an economical approach for solids weighing on belt, drag chains, and screw conveyors. Each system consists of a gamma source, frame, detector and Ronan X96S Microprocessor.

Applications:

- Solids non-contact measurement
- Variable or constant speed conveyors

Features:

- Low maintenance/no component wear
- Measurement not affected by dust, moisture, high temperature, corrosive, abrasive or toxic materials
- Multiple user-configurable outputs
- Auto-zero on empty conveyor
- Excellent measurement reliability due to proprietary filtering technology



X96S Non-Contact Weighing System

SOURCE & SOURCE HOLDERS

RLL Low-Level Source Holder

Be confident with Ronan Measurement Systems with all gauges meeting "As-Low-As-Reasonably-Achievable" (ALARA) guidelines. Source activity is customized depending on vessel and process parameters such as diameter, wall thickness, material, and measurement span to ensure optimum sensitivity, economy and safety while keeping the source activity to a minimum.

Ronan is the only manufacturer to offer the revolutionary Radiation Low Level (RLL) source holder. The RLL uses up to 100 times less gamma energy than comparable gauges and is the only source holder recognized by the NRC to be so safe that it does not require the stringent documentation, training or handling procedures of other systems. The RLL system can be used on applications up to 16" pipes with no reduction in source longevity.

Other features of the RLL Source:

- Source lasts as long as standard installation
- Generally licensed device, reduces paperwork and cost
- Does not require wipe testing, saving you time and money
- Does not require on-off shutter checks or radiation surveys
- No RSO, radiation training or factory assistance is required to install and use these devices safely as long as instructions supplied by Ronan are properly followed
- Device may be relocated by plant personnel, without a licensed person present

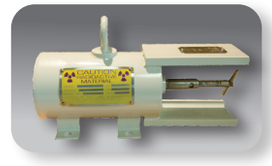
MORE RONAN SOURCE HOLDERS:

SA-1 and SA-8: External mount general purpose source holders

SA-4, SA-10, SA-15: Well mount source holders

GS-200 and GS-300: External or well mount source holders

GS-400: External mount fireproof source holder



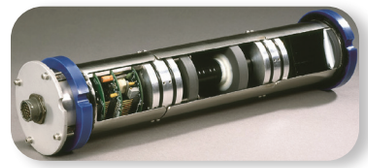
DETECTORS

Ronan offers a wide variety of detectors to meet any installation requirement. Having pioneered the use of solid crystal scintillation detectors more than 25 years ago, our worldwide installed base numbers in the thousands across a wide variety of applications. Ronan employs three types of scintillation crystals: Fill Fluid, Plastic, and Sodium Iodide for ultra-low-level fields.

SCINTILLATION DETECTOR

Features:

- High detector efficiency
- Detector lengths up to 15ft active length; up to four detectors can be summed for a total measurement range of 60 feet (18.4 meters)
- Spring tension of PM tube - Maintains integrity of the signal path under vibration
- Ronan quality manufacturing-backed by a 3-year limited warranty

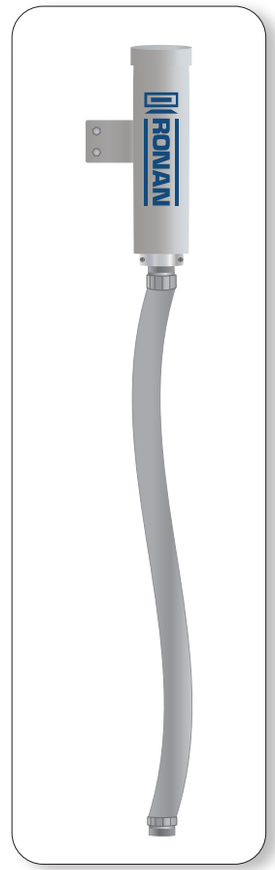


Scintillation Detector

FLEXDETECTOR™

Features:

- Detector lengths up to 23ft active length; multiple detectors can be summed for long measurement ranges
- Lightweight construction
- Ronan quality manufacturing-backed by a 3-year limited warranty

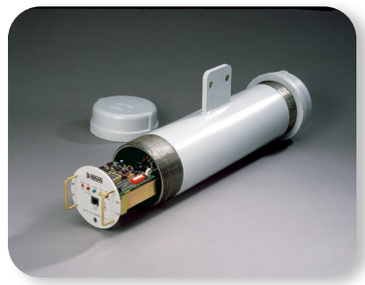


FlexDetector™

GEIGER MÜLLER DETECTOR

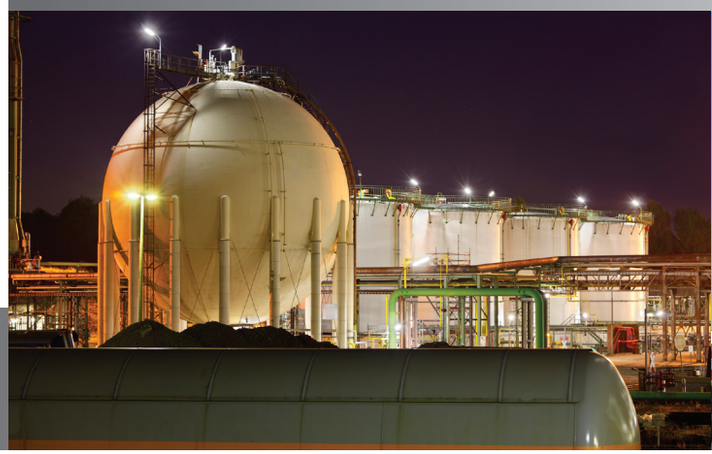
Features:

- Rugged construction withstanding severe conditions
- Low cost for critical point alarm requirements



Integral Detector

LEADING THE WAY WITH INNOVATIVE PRODUCTS



TRANSMITTERS compatible with all Ronan scintillation detectors

X96SI – EXPLOSION PROOF

Ronan's X96SI is an integrally mounted transmitter. Fully Ethernet capable, configurations, software updates, and data logging can be completed easily through the user's PC using a standard web browser.

X96S – GENERAL PURPOSE OR WEATHERPROOF

Ronan's X96S is a remotely mounted transmitter which can be easily programmed to work with any detector configuration. Push-button front for easy programming

Both of Ronan's transmitters are menu-driven for simple programming. Built-in intelligence provides a range of features including:

- Automatic compensation for vapor density changes, foam or gasses, process build-up
- Automatic source decay compensation
- Radiation discrimination
- Dynamic tracking of process fluctuations
- Data logging and event recording
- Empty pipe alarm

Ronan Transmitters are compatible with the following I/Os: Ethernet, Foundation Fieldbus, HART, USB port, 4-20 mA or 0-10 VDC, relay output, and transistor type.

TRAINING

Ronan's product training courses are designed to help you engineer, operate, maintain, and manage your radiometric systems to achieve peak plant and process performance, as well as greater uptime and profitability.

- 40-hr. Radiation Safety Officer Certification Course
- 8-hr. Safety Class
- 4-hr. Basic Radiation Safety Awareness
- 2-Day Safety Course
- Technical Training

RONAN SERVICE

Our Global network of factory certified Field Service Engineers are trained not only on Ronan products, but also on your applications. They bring expertise to help you determine the optimal configuration for your application to ensure accuracy and safety. Ronan Service Representatives are available to help you with:

- Installation and Start-Up
- Personalized Training
- Preventative Maintenance
- Service Agreements
- Wipe Tests
- Radiation Auditing
- Source Disposals

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Ronan Representatives
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RONAN
ENGINEERING COMPANY

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