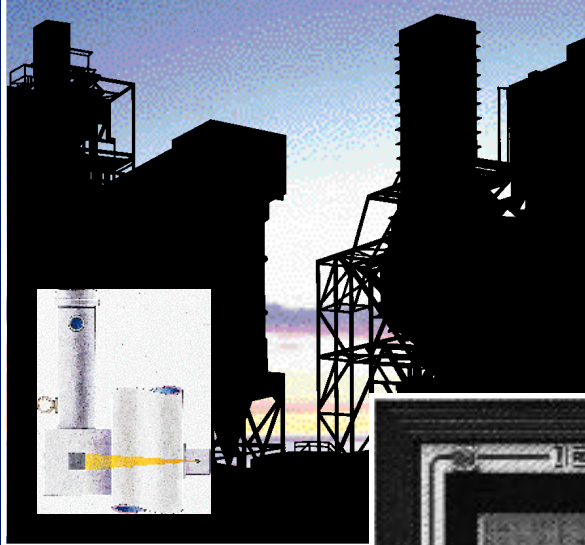
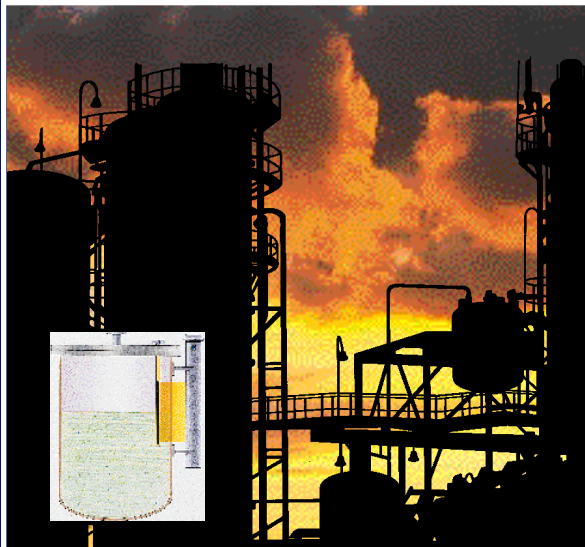




Measurements Division



ULTRA LOW Radiation Process Measurement
Level, Density, Weight

NON-CONTACT MEASUREMENTS USING *ULTRA LOW* GAMMA RADIATION SOURCES

Ronan Engineering has pioneered the field of using ultra-low gamma radiation sources for Level, Density, and Weight measurements. Newly developed high-efficiency scintillation detectors are designed to produce stable measurements on very low radiation fields. This detector technology coupled with experienced application engineering enables Ronan to offer non-contact measurement solutions, patented in some applications, *which do not require any nuclear licenses.*

LEVEL SYSTEM

Application solutions for point, continuous, and interface level measurements. All system components are not wetted to the process, capable to make measurements of extreme temperature, high pressure, corrosive, abrasive, and toxic processes. The System consists of a low energy gamma ray emitting source and detector. It is mounted, depending on vessel size, either externally to the vessel or in sealed wells inside the vessel. As the process fills the vessel, gamma energy can not penetrate the process so the signal is reduced to the detector. The signal is correlated to level, displayed, and outputted at the microprocessor. Measurement repeatability of +/- 1/2% of range.

DENSITY SYSTEM

Application solutions for density and mass flow measurements. All system components are not wetted to the process. The system consists of a low energy gamma ray emitting source and detector normally mounted external to a pipe. The gamma rays are directed through the process to the detector, with the more dense process blocking more energy than lighter process densities. This field is measured by the detector and communicated to the microprocessor for display and output, of the density, in selectable units. Measurement repeatability of +/- 1/2% of span.

WEIGHING SYSTEM

Application solutions for weighing systems on belt and screw conveyors. All system components mount around the conveyor, never contacting the process. This enables measurement of hot, sterile, abrasive, corrosive, wet, and toxic processes. The system consists of low energy gamma ray emitting source and detector mounted above and below the conveyor. Components can mount on horizontal or inclined conveyors often requiring no conveyor modifications. The measurement is obtained when mass increases between the source and detector reducing the energy at the detector. This signal is converted to Weight, Rate, and Velocity at our Microprocessor, displayed and outputted. Repeatability of +/- 1/2% of run time weight.

SYSTEM FEATURES

Microprocessor

- 48-Character, two-line liquid crystal display (LCD) back lit
- Menu driven, three-push button programming
- Dynamic tracking of process Fluctuation

Detector

- Various crystal options/designs
- Ronan proprietary gain compensation circuitry
- Designed to meet requirements of industrial environments

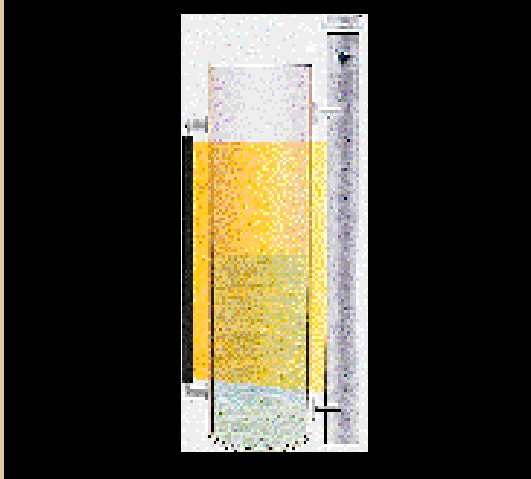
- Automatic source decay compensation
- Fields selectable time constant
- Off-Scale recovery in less than one second

- Operate temperature 120 F Max.
- Permits small source sizes to be used
- Supplied in elongated lengths for continuous level and weight applications

- Dual isolated transmitter outputs (4-20 mA)
- Single or dual alarm outputs
- Multiple input capability

- More efficient than ion chambers
- Water cooled housing available
- Application proven designs
- Custom designs available for difficult applications

CONFIGURATION DRAWING AND FEATURES

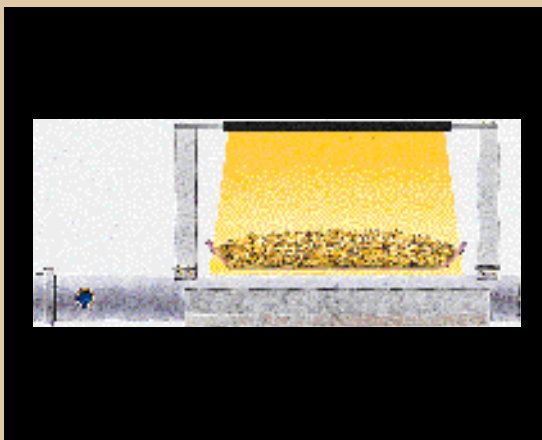
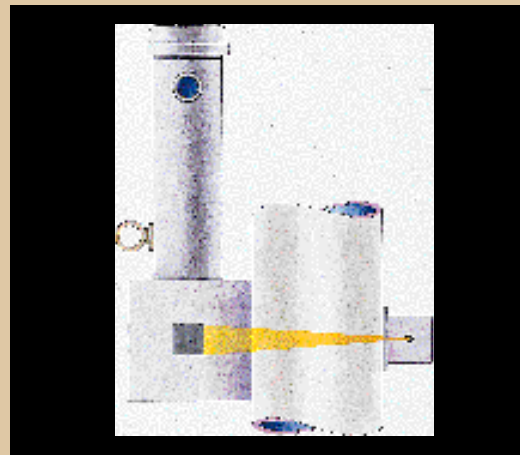


LEVEL MEASUREMENT

- Non-contact measurement
- Unaffected by:
 - Extreme temperatures
 - High pressure
 - Corrosive, abrasive, or toxic materials
 - Dust or moisture
- Dynamic tracking of process fluctuations
- Multipoint auto-calibration
- Gas density compensation
- Radiation discriminator
- Segmented linearization
- Selectable units

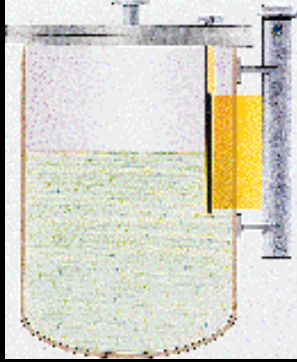
DENSITY MEASUREMENT

- Non-contact measurement
- Unaffected by:
 - Extreme temperatures
 - High pressure
 - Corrosive, abrasive, or toxic materials
- Dynamic tracking of process fluctuations
- Automatic linearization, logarithmic, or segmented
- Automatic re-standardization
- Selectable units
- Empty pipe protection

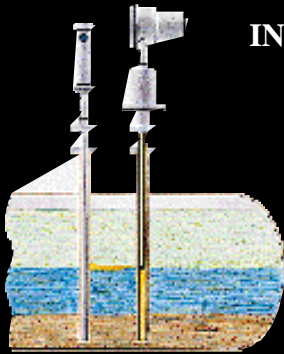
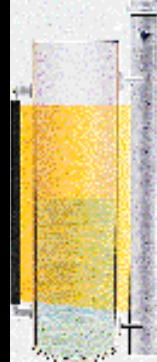


WEIGHING MEASUREMENT

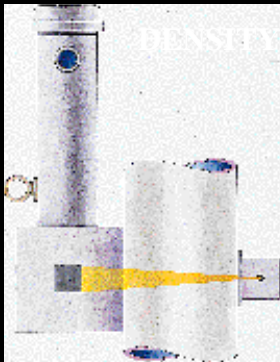
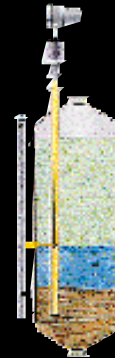
- Non-contact measurement
- Little to no conveyor modifications
- Measurements on horizontal, inclined, foraged belts, screw conveyors, and others
- Unaffected by:
 - Extreme temperatures
 - Corrosive, abrasive, or toxic materials
 - Dust or moisture
- Dynamic tracking of process fluctuations
- Auto-zero on empty conveyor



LEVEL SYSTEM



INTERFACE LEVEL SYSTEM



WEIGHING SYSTEM



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