CONTINUOUS LEVEL MEASUREMENT OF BLACK LIQUOR & SOAP

Ronan Measurements Division supplies the process control industry with leading-edge Radiometric Measurement Systems that provide non-contact measurement solutions for the harshest environments.

RONAN'S CONTINUOUS LEVEL RADIOMETRIC MEASUREMENT SYSTEM

Application

The EPA mandates that mills have effective Best Management Practices (BMPs) with the principal objective to prevent losses and spills of spent liquor and other by-products such as turpentine and soap (EPA 821-R-97-011). One key element of the required engineering review in the BMP is that "Continuous, automatic monitoring systems are needed to detect and control leaks and spills of spent liquor, soap and turpentine."

Problem

Continuous Level Measurement of black liquor and soap offers some unique challenges. It is highly alkaline and the soap tends to separate out from the liquor, forming a foamy layer on top; this layer can vary from a few inches to several feet. Technologies such as DP, Ultrasonic, Radar and Capacitance have all had inconsistent results due to either the foam interface or the dirty and sticky nature of the process itself. Inconsistent level measurement can result in soap overflow which is a reportable environmental incident.

Solution

Because the Ronan Continuous Level gauge is non-contact, it is immune to the coating and offsets seen from the make-up of the process. Measurement is achieved through the emission of low-level gamma photons which are transmitted through the tank and detected by scintillation detectors. The amount of photons detected is inversely related to the masses of the black liquor and soap. The X96S software has the ability to detect and accurately measure the liquor/foam interface and to also measure the level of the foam.

Summary

The Ronan continuous level system is an easily installed, accurate system with very low maintenance requirements which does not involve the expense of exotic materials like Hastelloy®. With the X96S system, the user can be assured of meeting the monitoring requirements in their BMP.

Multiple Effect Evaporators
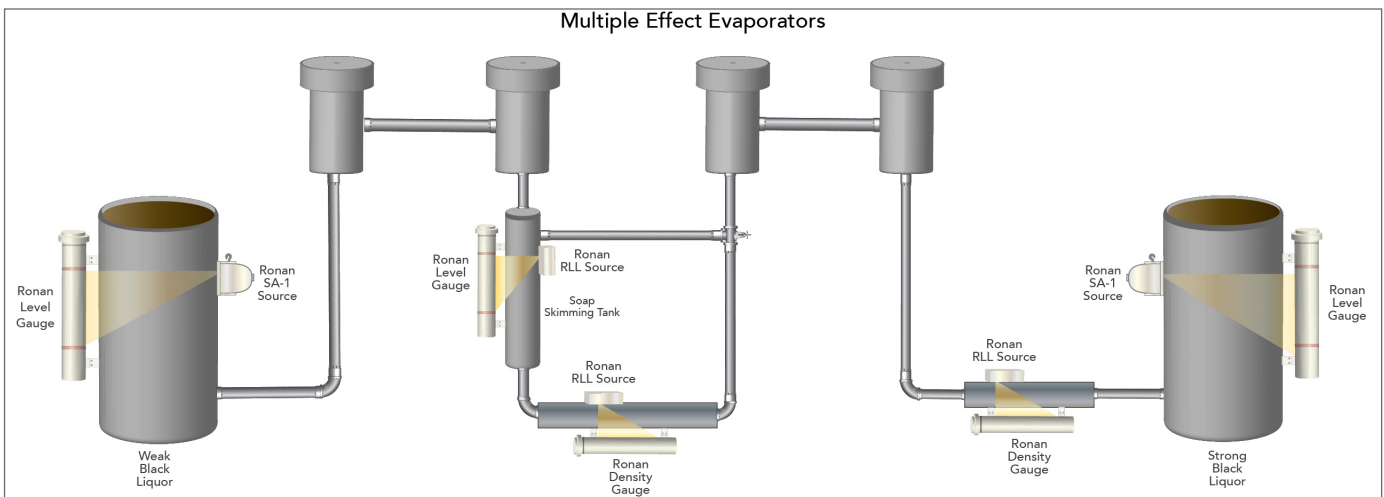
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RLL Low-Level Source

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 gauge can be relocated by your personnel, without a licensed person present. The System, using the RLL Source, can accurately measure pipes up to 16" with no reduction in accuracy. (Licensed Sources are available for applications with larger pipes.)

Other features of the RLL:
– 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 or move devices

Scintillation Detector

Ronan pioneered the use of solid crystal scintillation detectors more than 20 years ago, and now has an installed base in the thousands across a wide variety of applications worldwide. Ronan employs two types of crystals, Scintillating Plastic Crystals for standard applications and Sodium Iodide scintillating crystals for ultra low-level fields. Scintillation Detectors provide efficient detection, enabling the use of lower-level sources. Ion Chamber detectors are also available for extremely high vibration applications.

X96SI/R Radiometric Transmitter

The X96SI/R is compatible with all Ronan scintillation detectors. The new integrally-mounted transmitter includes a patented optical coupling that allows the transmitter and detector electronics assembly to be easily mounted to any detector configuration. The transmitter can also be remotely mounted in the field or control room. Fully Ethernet capable, configurations, software updates, and data logging can be completed easily through the user's PC using a standard web browser. The X96SI/R is available in explosion proof, weatherproof or stainless steel housing. The system is backward-compatible to enable you to easily upgrade existing systems to newer transmitter technology.

Ronan Transmitters are compatible with any I/O including: Ethernet, HART, Profibus PA and Fieldbus, USB port, 4-20 mA or 0 – 10 v.d.c., Relay(s) output, and Transistor type.

State-of-the-art transmitter-based electronics provides precision gauging. The system is menu-driven for simple programming. Built-in intelligence provides a range of features including:

– Automatically compensates for vapor density changes, foam or
  gasses, process build-up
– Automatic source decay compensation
– Auto calibration
– Radiation discrimination
– State of the art dynamic tracking of process fluctuations
– Data logging and event recording
– Adjustable time constant
– Empty pipe alarm

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EXCELLENCE IN MONITORING AND MEASUREMENT