

Successful Non Contact Density Measurement of Lime Slurry

There are many applications where extreme process conditions prevent the use of conventional measuring techniques.

One such recent project was successfully resolved by EMC at a Pulp and Paper application in New Zealand for the density measurement of Lime Slurry on a DN125 recirculation pipe.

Lime Slurry is highly abrasive and a non-contact system was necessary to provide wear and maintenance free operation.

The Endress+Hauser Gammapiilot M FMG60 provided the ideal solution. It offers continuous, non-contact measurement through the steel pipe wall, using the radiometric measuring principle, together with temperature compensation for density measurement.

Radiometric Measurement

The Gammapiilot M FMG60 is a compact transmitter designed for non-invasive limit detection, level, interface layer, and density measurement. Applications are many and include:

- Continuous, non-contact measurement in liquids, solids, suspensions or sludges, etc
- Extreme measuring conditions, e.g. high pressure, high temperature, corrosivity, toxicity, abrasion, hazardous locations
- Process vessels, e.g. reactors, auto-claves, separators, acid tanks, mixers, cyclones, cupola furnaces
- Food processing industry without additional requirements or approvals



Source Container and Gammapiilot M FMG60



Gammapiilot M FMG60 installation on a NZ Pulp and Paper application

General Features and Benefits

- Compact transmitter: one instrument for all measuring tasks
- Highest availability, reliability and safety, even for extreme process and ambient conditions
- Highest sensitivity and accuracy at lowest dose rates (ALARA principle)
- Optimum adjustment to the application via a variety of detectors
- Ex d, Ex e or Ex i current output for simple plant integration
- Stainless steel housing 316L
- SIL2 according to IEC/EN 61508 and WHG approval
- Gammagraphy detection
- Simple, menu guided on-site operation with 4-line text display or convenient operation, diagnosis and measuring point documentation with the supplied "ToF Tool Package"
- System integration via
 - HART
 - PROFIBUS PA
 - Foundation Fieldbus

EMC have experienced, trained staff in all aspects of Radiometric Measurement and will be pleased to assist with your application.

More information?

Circle Enquiry No: 0705

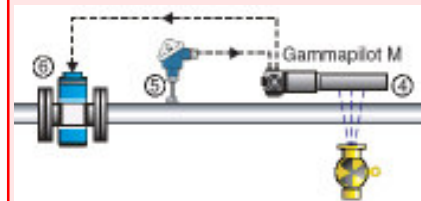
Contact: Chris Gailer / Howard Berry

Measuring principle

The radiometric measuring principle is based on the fact that gamma radiation is attenuated when it penetrates a material.

For Density or Concentration Measurement a gamma radiation source and a Gammapiilot M are mounted on opposite sides of a measuring tube (4).

Gammapiilot M calculates the density or concentration of the medium from the intensity of the received radiation.



If an additional temperature sensor (5) is connected, the Gammapiilot M accounts for the thermal expansion of the medium.

That means, it does not output the measured density directly. Instead it calculates the density which the medium has at a certain standard temperature defined by the user.

Furthermore, the density signal of Gammapiilot M can be combined with the signal of a volume flow meter (6), e.g. Promag 53. From these 2 signals it is possible to calculate mass flow.