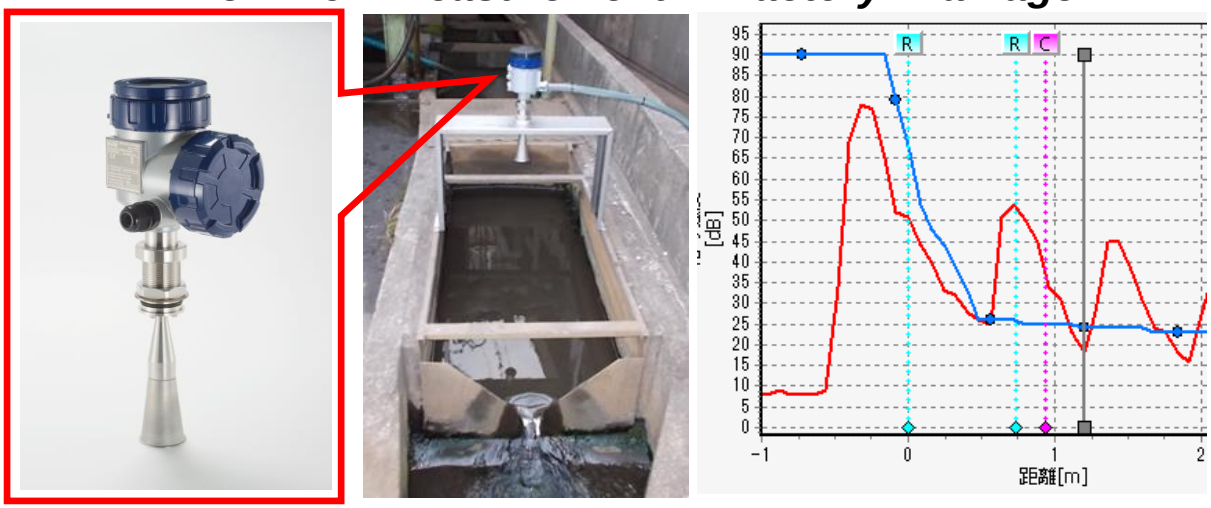
Radar Level Gauge Application Report 55

- Weir Flow Measurement in Factory Drainage-



The KRG-10 micropower impulse radar level gauge features accurate, non-contact, level measurement with simple installation over a target fluid.

Measurement of flows in open channel or weir systems, such as in this application, requires measurement of water outlet level. At this particular site, the KRG-10 radar gauge insures stable measurement of water level, unaffected by atmospherics.

Submerged pressure sensor systems are often used in these types of installations. The sensors detect the pressure exerted by the liquid's mass. Pressure is then converted to level measurement in accordance with preset densities.

Capacitance type level gauges are also widely employed in this application. This type of gauge detects electrical capacitance based on physical contact of the sensor (i.e. submerged length of probe) with the liquid to determine level.

These types of gauges are commonly applied in waterworks because of their relatively simple construction and design which involves direct sensor-liquid contact (wet installation). There are disadvantages however with these types of gauges. For example, channel bottom sediment may cause an increase in submerged pressure transducer measurement errors. The sensing elements of capacitance level gauges are also prone to substance adhesion, which may result in errors.

Ultrasonic level gauges are also frequently used as a non-contact means of level measurement. This type of gauge measures the round-trip transiting time of high frequency sounds to and from the surface of a liquid and converts this into distance. Ultrasonic level gauges however are easily affected by fog, vapor, pressure, temperature changes, and other environmental factors.

Radar level gauges which incorporate electromagnetic waves (microwaves) on the other hand, do not require direct contact with liquids, density parameters or complex capacitance comparisons. Microwave-based level gauges are also least affected by ambient conditions.

In addition, the KRG-10 radar level gauge offers HART 2-wire loop communication protocol so customers can change any parameter from a central computer station with PC and configuration software. The KRG-10's 4-key input menu display also allows parameter setting on site as an alternate method.

	MRG-10	Pressure	Capacitance	Ultrasonic
Non-Contact	○	×	×	○
Vapor (High Temp & High Humidity)	○ Least affected	○ Not affected	× Increased errors	× Increased errors
Temp. Change	○ Least affected	○ Not affected	○ Not affected	× Increased errors
Sediment	○ Not affected	× Increased errors	○ Not affected	○ Not affected
Durability	○ Isolated from ambient conditions	× Wet	× Wet	× Exposed to ambient conditions

[Application Data]

Typical User : Steel works
Target : Factory drainage
Location : Japan

[Installation Data]

Main Unit : Radar Level Gauge KRG-10
Antenna : 2 inch cone antenna
Range : 0~120m^3/h (0～0.7m)

For more detailed information, please contact your local representative.

Representative in your Area