



Application Case Study

Steam and Condensation

The Application

Geothermal power plants draw heated water from geothermal pockets in the crust of the earth. The water/steam is purified, run through turbines to generate electricity, and re-injected into the pocket to be heated again. The waste product from cleaning the water is typically brine and entrained solids such as dirt, sand, etc. This waste is pumped to collection ponds for future disposal.

The brine/waste collection ponds must be monitored so they do not overflow and so the plant personnel know when to empty them. Level detection is difficult because the liquid is corrosive and coats instrument sensors. Using non-contact sensing has historically been a problem because the waste material is still very hot and produces thick clouds of steam that billow about in the wind. Steam and wind interfere with sensing signals, condensation coats sensors and blocks measurement.



The Solution

The SOR® model U73/RDP echOsonix transmitter has the power and intelligence to handle environments with a great deal of steam and condensation. The low frequency (30 kHz) used by this product provides better penetration through water vapor and condensation than other ultrasonics. The U73/RDP also has the power to remain stable in adverse conditions and push through condensate on the sensor.

Steam tends to hamper ultrasonic signals. Water droplets both absorb and scatter sound energy. In open-air applications like this; crosswinds can complicate measurement as moving air will “bend” the ultrasonic signal. The U73/RDP produces more sound energy than other ultrasonics, which gives it the best chance for a return echo. It also uses adaptive gain to constantly adjust to the application condition and track the process more consistently.



The Results

The U73/RDP was mounted on scaffolding over the storage pond. The customer programmed the minimum basic parameters in the device (units, application type, low level and high level) and placed it in service. The U73/RDP performed flawlessly from the beginning. Both the customer and the SOR representative were astounded that no special calibration was required and the unit worked well “out of the box.” Even during the worst periods of steam and crosswinds, the unit never gave a level indication error of more than one inch (2.5 cm) over a range of five feet (1.5m).

The echOsonix transmitter provides unmatched stability and flexibility in tough applications. Customers will find this product is easier to apply, set up and use than other non-contact devices. The combination of high power, low frequency and adaptive gain provide a clear advantage for reliable operation in almost any condition.

Ordering Information

Electronics Model **U73-FL7J-00-30**
Remote 110VAC/24VDC Line-powered transmitter
4 x SPDT Relays adjustable over entire range
NEMA 4X Remote mounted electronics housing

Sensor Model **RDP-3A-00-50**
30 kHz Transducer for remote unit
3" NPT(M) Threaded process connection
50-foot cable (can be changed in the field up to 334 ft.)

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