



Brine Make-up & Storage Systems

Salt Level Indication in Underground Briners

Using a Brine Concentration Monitoring System

OVERVIEW

In above ground vertical briners, salt level indication is traditionally provided by a “bob” style device which travels down from the dome of the vessel, through the brine, to the top of the salt bed. The distance traveled is translated into the height of the salt bed in the form of a digital readout and 4-20 mA signal. This method is reliable because within a vertical-cylindrical vessel, the shape of the salt dome is reliable.

Underground briners are horizontal, low profile, long, and salt distribution is typically at four locations. Obtaining an accurate salt level measurement with a “bob” style device can be a hit-and-miss proposition ... at best.

The use of our torroidal conductivity sensor to monitor “brine concentration” provides a highly reliable method of *salt level indication*. When proper brine liquid level is maintained and there is sufficient salt, the brine being supplied to the day tank, or directly to process, will always be “saturated”. When brine concentration drops, it is an indication that the salt level is low and it is time to schedule the next salt delivery.

WHEN CONCENTRATION DROPS

Because it is possible to have a **confluence of circumstances* that can create a temporary drop in concentration when the salt level is *not* low, it is recommended that the concentration be checked 30 minutes after the initial “low concentration” indication. (*if the rate of brine delivery exceeds design and sufficient time for conversion of salt and water into saturated brine is not provided, then something less than saturated brine can be delivered to process ... this can generally be remedied by increasing the depth of the “valve open” water inlet setting on the water level control sytem) If the concentration remains low, it is time to order the next salt delivery. If there is sufficient brine in the briner to supply process until the next salt delivery, then it is recommended that the water inlet valve be closed to prevent dilution of the brine. After delivery, open the water inlet valve.

INSTALLATION

The Brine Concentration Monitoring System is installed inline in the briner outlet piping. Generally, it is conveniently located where the controller can be viewed and the inline sensor assembly maintained. There are relays that can be connected to visual and/or audible notification devices (not included). There is a 4-20mA repeater that can be connected to a PLC.