



## APPLICATION NOTE Minerals & mining

### Measurement of mass flow and density in salt production

- Simultaneous measurement of mass flow, density and temperature
- External interference has no influence on measurement
- Environmentally friendly disposal of the lime/plaster mix

#### 1. Background

In salt production there are two methods of extracting the salt; dry mining and solution mining. Nowadays it is generally solution mining carried out with so-called bore hole probes. A salt manufacturer modernised its facilities in order to optimise production processes and reduce environmental impact. A lime and plaster mixture settles on the floor of the tanks holding the brine and it must be removed regularly. During removal it is important to only pump out and dispose of the lime/plaster mixture and as little brine as possible. Up to 70% of the further processing of brine is done today in so-called boiling salines.

#### 2. Measurement requirements

When pumping out the lime/plaster mixture, the exact separating point from the brine must be found so as not to dispose of the brine. To determine this, the density must be measured. The density of the mixture is approx. 1.3 kg/l, that of pure brine approx. 1.15 kg/l (l = Liter). In order to improve the environmental balance, the lime/plaster mixture may no longer be disposed of in lakes. Instead, the hollow spaces created during solution mining, for example, can be filled with the lime/plaster mixture.

## 3. KROHNE solution

For such applications, KROHNE provides compact OPTIMASS 7300 C mass flowmeters with a straight measuring tube, in various sizes. The devices come equipped with density and temperature measurement. The installation, start-up and operation of the devices is very easy. Electrical connection is facilitated by the compact design of the devices. The accuracy of the extremely quick density measurement is excellent. Now the exact separating point between the mixture and the brine can be accurately determined and the valves close as soon as pure brine with the preset density value is measured.



OPTIMASS mass flowmeters performing density measurement

## 4. Customer benefits

For customers in the mining and minerals industries, KROHNE's OPTIMASS mass flowmeters offer many advantages, including low investment and follow-up costs. Excellent long-term stability and repeatability ensure exact measuring results with the OPTIMASS 7300 C meters. The devices work extremely reliably. Because OPTIMASS 7300 C measuring devices can measure the mass flow directly, recalibration becomes unnecessary, even with varying process parameters. There is virtually no additional pressure loss due to the single straight measuring tube design of the mass flowmeters. This means that the required pump output is minimal.



## 5. Product used

### OPTIMASS 7300 C

- The only mass flowmeter with one straight measuring tube available in Stainless Steel, Hastelloy®, Titanium or Tantalum
- Minimal pressure loss
- Reliable measurement of mass and volume flow, density, temperature, concentration for liquids, even with solid content
- Any installation position, self-draining and easy to clean
- High measuring accuracy, even when process conditions change



## Contact

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