APPLICATION NOTE Chemical

Flow measurement of demineralised water in a chemical plant

- Evaporation of feed water into steam
- Assessing the quantity of demi water required for steam production
- Clamp-on flow measurement without opening the piping

1. Background

A Swiss chemical company uses steam as a heat transfer medium in the production process. This process gas is generated from demineralised feed water (WBI). Purified water is the liquid of choice to prevent the piping of steam boilers from sedimenting and corroding, which may finally lead to short-circuiting and the collapse of the boilers in the long run.

2. Measurement requirements

In order to assess the quantity of demi water that is required for the steam generation, the customer looked out for a volumetric measurement of the WBI. The volume flow range of the feed water is 0...70 m^3/h. The stainless steel pipe has a wall thickness of 2.6 mm and an outer diameter of 139.7 mm. As the customer did not want to see the process disrupted, an inline measuring that requires the installation of a flowmeter in the piping was ruled out.

KROHNE

3. KROHNE solution

KROHNE recommended installation of the OPTISONIC 6300. The instrument is a combination of a clamp-on sensor and an ultrasonic signal converter. It was fitted on the outside of an ascending pipe to measure the volume flow rate of the feed water used.

The OPTISONIC 6300 was installed with a sensor distance of 97.2 mm. It has an optimisation loop in the installation menu to compensate for the wall thickness. The outside diameter of the pipe has been correctly programmed. As the electrical conductivity of demi water is very low, the ultrasonic clamp-on flowmeter was the suitable instrument.

Flow measurement of demi water with the OPTISONIC 6300

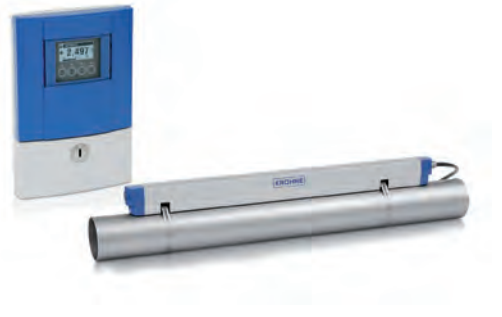
4. Customer benefits

The volume flow measurement of the OPTISONIC gives indication about how much WBI has to be provided on a regular basis, thus helping the chemical company to make sure the steam supply remains stable. The customer benefits from reliable measuring results without any process interruption or opening of pipes as the OPTISONIC 6300 sensor has integrated fixing units and transducers. An additional advantage was that the ultrasonic flowmeter is easy to install and doesn't require any special training. The chemical company has been using the OPTISONIC 6300 since 2006 without any need for maintenance.

5. Product used

OPTISONIC 6300

- Ultrasonic clamp-on flowmeter
- For monitoring flow at any location
- Ideal for temporary or check metering
- Easy to install
- No internal moving parts



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