


Non-invasive flow measurements of heat transfer media in concentrated solar power plants (CSP)

**Reliable flow measurement at extreme temperatures up to over 600 °C.
No impairment of plant availability due to non-invasive measuring technology.**

Measuring Task		Method	Medium	
	High temperature flow measurement	 Clamp-on ultrasound with Wavelnjector®		Heat transfer oils, molten salts

Features Measuring Task.....?

- Media: molten salts, synthetic heat transfer oils
- Pipelines: ~ DN80 to > DN800
- Material: steel
- Temperatures: ~ 160 °C to > 600 °C

In concentrated solar power plants (CSP), the heat generated from bundled rays of sunlight is used for heating a heat carrier, which dissipates heat from the solar collector field and feeds it to a heat exchanger, which heats a steam generator. Electricity is then produced as in a conventional steam power plant via a steam turbine and generator.

For the safe and efficient operation of such solar thermal power plants, knowledge of the flow rates in the flow and return is essential. Wetted measuring technology – whether it's according to the differential pressure method or with ultrasound – is exposed to very high levels of wear and tear under extreme operating conditions, which impairs the safe and efficient operation of these systems.



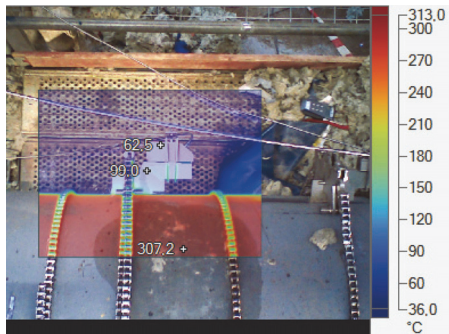
"Hot commissioning" in the truest sense of the word – at pipe wall temperatures of 400 °C.

Solution.....!

Non-invasive flow measurement with clamp-on ultrasonic technology from FLEXIM proves to be the superior solution in solar thermal power plants.

FLEXIM developed the Wavelnjector® for extreme temperatures. The patented transducer mounting device ensures optimum acoustic coupling of the ultrasonic transducers to the pipe, while at the same time thermally separating them. This extends the range of application of the non-invasive flowmeter technology to temperatures of over 600 °C.

The advantages of non-invasive flow measurement with FLUXUS® and Wavelnjector® are obvious: Since the measuring equipment is simply mounted on the outside of the pipe and there is no need to separate the pipeline, it does not have any effect whatsoever on plant availability. Another advantage of the inertia-free acoustic flow measurement lies in its extraordinary dynamics: Unlike wetted mechanical processes, FLUXUS® also records low flow velocities with high accuracy.



The Wavelnjector® separates the transducers thermally from the pipe and ensures optimum and permanently stable acoustic coupling at the same time

Advantages.....+

- Reliable high-temperature flow measurement of the heat transfer medium
- No impairment of plant availability due to non-invasive measuring technology, installation during ongoing operation
- No impairment of plant efficiency, non-invasive measuring technology does not cause any pressure loss
- No risk of leakage, no risk of contamination of the heat transfer medium
- No wear due to abrasion or deposits, no risk of clogging impulse lines, no measured value drift
- Exceptional measuring dynamics: from 1 cm/s to 20 m/s
- Flexible measuring technology simplifies storage: Only two pairs of transducers cover the entire nominal diameter range

info@flexim.com
www.flexim.com

