
Single-sourced pump and sensor technology for OEM customers

Single has been designing, producing and selling temperature control equipment for more than 40 years. Over time the company with its 100 employees has specialised in temperature control in production processes, supplying devices which provide correspondingly heated water (20 to 200°C) and/or oil (150 to 350°C). The manufacturer occupies a leading position in the market for process thermostat thanks to its product range and its application expertise.. "Product runs of 1 are by no means the exception for us" emphasises managing director Frank Spork.

TOPIC:

Single-sourced pump and sensor technology for OEM customers

LOCATION:

Germany

COMPANY:

Single

The Situation

"Plenty of pumps can supply water at normal temperature. The applications we deal with however often require higher temperatures - and we need special designs that will operate at 180°C. Corrosion is also a key issue and so stainless steel equipment is essential. For this reason we use Grundfos pumps for many applications", explains Spork. To be more precise, multiplex high-pressure CRI and CR series pumps and MTH multiplex submersible pumps. A particularly popular model is the special Air Cooled Top CR unit which can operate in temperatures of up to 180°C.

Single's process thermostats differ from conventional devices amongst other things in their precise process control. Frank Spork: "To control temperature, you need to know the flow rate. Only the combination of temperature- and flow monitoring offers the user high process reliability."

The Grundfos Solution

Having previously relied on conventional flow sensors Single now makes full use of the benefits of 3-in-1 sensors from

Grundfos. The development named the 'Direct Sensor' is a micro-mechanical semiconductor sensor (MEMS, Micro-Electro-Mechanical System). Grundfos produces these sensors (which conform to purity level 10) in its own wafer production centre.

The 3-in-1 sensors detect the flow, the pressure or the differential pressure and simultaneously generate a temperature signal. The simultaneous measurement of the temperature means that its effect on the pressure measurement can be immediately corrected. With the help of a microprocessor, the measurement signals are calibrated and processed at which point they are available in analogue or digital form.

The real innovation is the 'direct' measurement onto a silicon chip. Unlike conventional sensors which are exposed to the media either in expensive casings or unprotected, an impervious surface coating made of amorphous metallic glass permanently protects the sensor chip, even against aggressive media. This new type of sensor technology not only allows a very compact design, it is also extremely robust. The almost direct contact with the media also guarantees a rapid response time, accurate measurement with a broad bandwidth and a high reproducibility rate.

The Outcome

The conventional sensors used previously were unsophisticated in comparison with Grundfos technology and relatively expensive (by a factor of 2) yet provided less accurate measured values. Spork: "Grundfos was therefore an easy decision for us!" Single uses Grundfos flow sensors not only in its thermostats but also in the water distributors it supplies for tool machines: "That means the user can test and monitor far more accurately than previously how much water is flowing around each system."

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