SENSOR GUIDELINES

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Contents

1. Minimise organic content during commissioning

Organic Content within the media, in the form of grease, oil, lubricants or similar pollutants that may be related to the installation and commissioning of the system, can have an influence on the amount of foreign particles that build-up within the sensor measurement port. During commissioning of the system, it is recommended that the system in which the sensors are to be operational in is thoroughly flushed to minimise the presence of organic content. Flushing of the system may be performed while the sensor is mounted in the Flow Pipe, though caution should be exercised as not to exceed the maximum, specified flow limit of the sensor.

Likewise, the use of lubricants to assist in mounting the sensor in the flow pipe should also be avoided. Grundfos Direct Sensors are manufactured with a slip coating on the outer O-ring to aid mounting in the flow pipe. Therefore, the use of additional lubricants to assist mounting the sensor in the flow pipe is deemed unnecessary.

Grundfos recommends that the Total Organic Carbon (TOC) content of the media, be no greater than 25mg/L.

2. pH-Value of the cooling liquid

Generally, the particle composition of the sedimentation that can be present within a sensor used in closed-circuit heating applications is a combination of iron-oxide and calcium particles. Adjusting the pH-value of the filling media may be necessary to avoid excessive corrosion within the system.

Grundfos recommends that the system media have a pH-value greater than 8.

Media below this value should be treated to increase the pH-value which will help minimise the amount of corrosion within the system and the eventual presence of excessive iron-oxide particles.

3. Iron-Oxide content of the cooling liquid

As the amount of Iron-Oxide (Fe/O) particles present in the water has a direct influence on the amount of particles that are able to deposit in the sensor measurement port, it should be ensured that consideration be given to the causes of corrosion within the system that can lead to excessive Fe/O particles.

This can be effectively handled by addressing the pH-value of the media for prevention of excessive corrosion as well as flushing the system effectively.

Grundfos recommends that the Fe content of the media be no greater than 10 mg/L.

4. Total hardness of the cooling liquid

The sedimentation typically present in sensors used in heating applications is a combination of Fe/O and Ca. The sum of the calcium and magnesium ions in the filling water is influential on the amount of sediments present within the sensor measurement port in the initial operational phase after sensor installation. Consideration to the filling media's total hardness should be given during installation and commissioning.

Grundfos recommends that the total hardness of the filling media be no greater than 100mg/L.

5. Recommended values of water quality

Subject	Value	Unit
pH	>8	
Total Organic Carbon(TOC)	<25	mg/L
Suspended Solids(SS)	<25	mg/L
Iron(Fe)	<10	mg/L
Calcium(Ca) and Magnesium (Mg) – Total Hardness	<100	mg/L

6. Trouble-free operations

For trouble-free operation and optimal lifetime, the following should be taken into account:

- In general, the sensor is not a serviceable item:
  - Do not try to clean the sensor membrane
  - Do not tamper or splice the cable
- Evacuation by pressurised air or nitrogen may damage the sensor membrane
- Be aware of the maximum allowed system pressure
- Use the sensor only for the recommended installation – observe standard common practices for flow, pressure and temperature sensors and low voltage electronics
- Too high flow, typically 25% higher than qmax will lead to cavitation, which will destroy the sensor membrane
- In general, avoid flashing, cavitation and water hammer
- Freezing liquid will destroy the Sensor Membrane

7. Cleaning sensors

This is the recommendation given by Grundfos if at all we should try and clean the sensors.

"***In general, we do not recommend any cleaning of sensor as this could damage the sensors element if you need to clean then PLEASE DO NOT USE ANY SHARP OBJECTS OR BRUSHES TO CLEAN OR SCRUB ON THE SENSOR TIP!***

You can use Vinegar for clean as this will dissolve the calcium build on the tip, same process when you are cleaning a coffee machine. "

8. References

Design Guide Implementing Grundfos Sensors In New Products V02.00.00.pdf

Revision	Author	Date	Comments
1	MR	24-10-2017	Initial Version