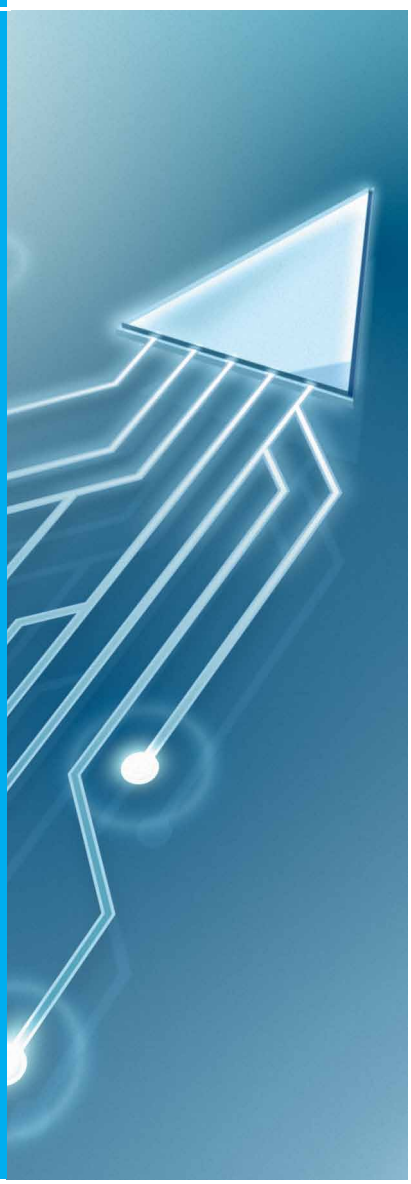
Leakage Detection System

Safe monitoring of critical cooling circuits





Endress+Hauser

People for Process Automation

Leakage Detection System for cooling circuits

Highly accurate and easy to commission

Requirements Unless quickly detected, expanding cracks or small water leaks in cooling system pipes can lead to stops in production, damage to plant or in the worst case, loss of life.

A system which effectively detects leakage is therefore not just one of the most important parts of a plant's process automation and control system, but more importantly, an integral part of a plant's safety policy. For this reason, the leakage detection from Endress+Hauser is designed in accordance with IEC 61511 and EN ISO 13849-1.

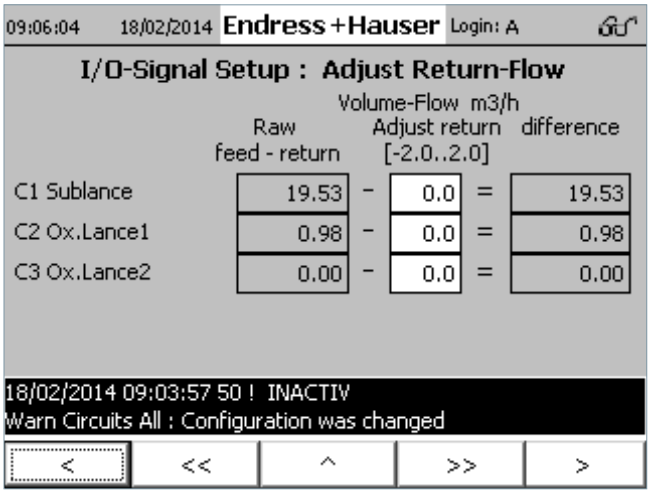
Detection The inlet and outlet flow rates of a cooling circuit are measured using best-in-class flowmeters from Endress+Hauser. The inlet and outlet temperatures are also measured by quick sense sensors mounted close to the flowmeters, which allow compensation of the temperature-dependent variation in coolant volumes. The compensation is based on a highly accurate 4th degree polynomial that describes the temperature dependent density of the water in the cooling circuit. This method ensures very high accuracy and good stability.

Commissioning and zero adjustment The leakage detection system offers simplified commissioning by guided configuration steps. The setup menu guides the user step-by-step, simplifying and speeding up the commissioning.

As every cooling circuit is different, the input and output ranges must be adjusted with the integrated I/O signal setup and range adjustment tool. Once the system is stable, the zero adjustment of the difference between the inlet and outlet flow ensures that the system can detect smallest differences in flow (≥ 0.3% under reference conditions). Additional signal tuning possibilities, such as signal averaging (smoothing)and peak filtering are available to optimally adapt the system to the specific process conditions.

Multiple alarm levels The system offers three different alarm levels:
- small flow deviation warning level – creates no safety alarm
- small flow deviation alarm level – safety alarm
- big flow deviation alarm level – safety alarm

The alarm limit and the delay time can be set individually for each alarm level. Each cooling circuit can be individually muted for a specific time to suppress alarms during the plant start-up procedure or while adjusting parameters or for other operations. The muting can be initiated via local operator panel or from the plant DCS system via Profibus DP.



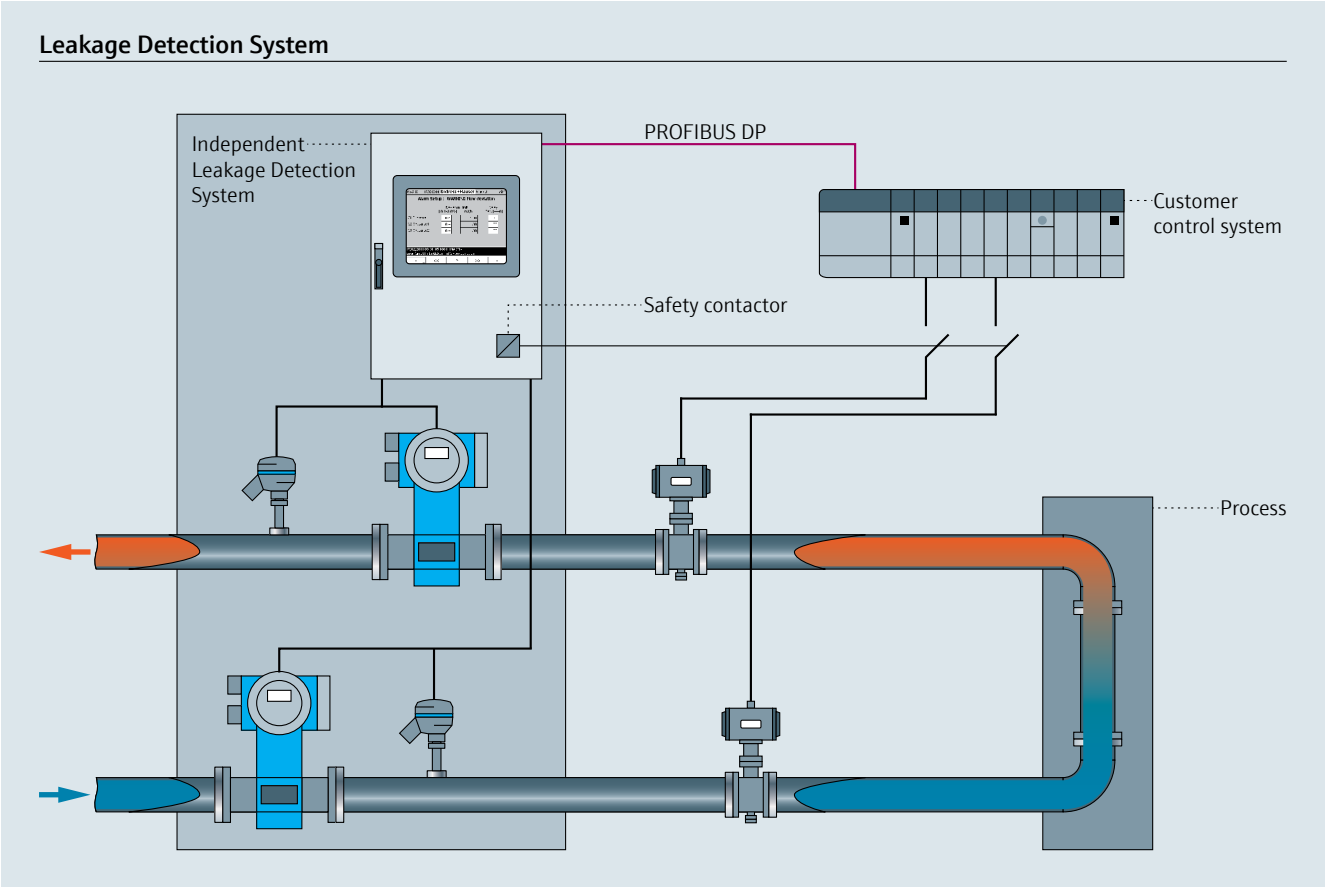
Integrated I/O signal setup: zero adjustment



Steel plant

Improve efficiency and safety:

- Available as safety system according IEC 61511 and EN ISO 13849-1
- Highly accurate measurement, compensation and comparison of inlet and outlet flow
- Integrated zero adjustment, I/O signal setup and tuning possibilities to detect smallest differences
- Multi-level safety alarm generation via digital output
- Fast, easy commissioning and setup of the system with the local touchscreen panel
- Integrated alarm suppression and muting function via local operator panel or from the DCS



Example of the Leakage Detection System configuration

Safety by choice – not by chance

- Best in class safety system according to IEC 61511 and EN ISO 13849-1
- Complete solution certified by independent, globally operating safety experts provides a high level of confidence in its reliability
- Completely independent Safety Instrumented System ensures highest safety standards

Requirements to the Leakage Detection System

- Accurate detection even of small and sneaky leaks
- Reliability to prevent false alarms
- Adaptability to different process and plant conditions
- Compliancy with applied safety regulations



Supplementary documentation

- Functional Safety – SIL
  Competence Brochure – CP01008Z/11/EN

Additional information

Web:
www.endress.com/sil

www.addresses.endress.com

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