

SMART.WI. the first digital expansion joint



Field of application

District heating pipeline network, Germany
3 expansion joints for angular rotation DN 600, main supply line

Technical data

A SMART.WI.Kit was applied to every expansion joint, capturing and analysing the essential system data. The kit consists of:

- Sensor system (measures media temperature, medium pressure and expansion joint deflection)
- Electronical measurement unit (sturdy and weather-resistant)
- Secure interface to SMART.WI.Cloud (Edge), data transfer via NB-IoT

Background

The energy transition introduces structural changes in grid usage and the load of pipeline components (Decommissioning of large fossil fuel power plants, decentralised in-feed and thus stronger fluctuations in the pipeline network).

To be able to guarantee reliability, a comparison takes place between the actual operating conditions and the usage scenarios calculated for the design.

Objectives

- Avoiding the unplanned failure of individual components
- Interpretation of changed loads in residual service life

The advantages

- Information about critical events and status via the SMART.WI.Portal
- In case of problems simple data acquisition / data set in the Cloud
- Cause analysis on the basis of real operating data
- Successor part design appropriate to real operating conditions
- Improved planning of measures to be implemented



The SMART.WI.Kit is fixed directly to the anchoring. For this reason it can be fitted to already installed expansion joints, sometimes even during ongoing operation.



The measurement electronics and data transfer facility are applied externally especially for hot and insulated pipelines.