High pressure gas pipeline: measurements of safety-critical structure

NErVE
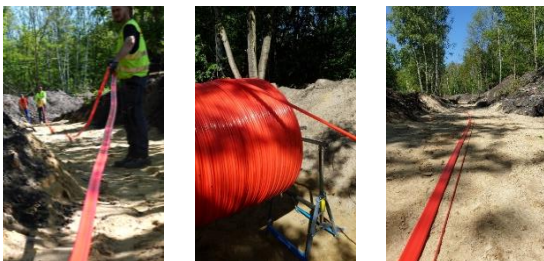nerve-sensors.com

ER & 3D: *Case Study*

The 500-mm diameter gas pipeline in question is located in a mining area, where extremely large displacements could appear. 180 m long section was equipped with a number of **EpsilonRebars** and **3DSensors**, installed both directly on the steel surface of the pipe as well in the surrounding ground. Reliable structural control of such safety-critical structures is necessary due to the extremely high consequences of failure. **Nerve-Sensors** allowed for precise control during long-term monitoring.

Benefits of application

- Detection of **all the local events,** including welds, turns and potential leakages
- Full knowledge of **strains, stress, displacements and temp.** over entire length
- Measurements during high-pressure **water-tightness test** and in **annual cycle**
- Reliable health monitoring for **risk management** of the safety-critical structure

Example results

Nerve-Sensors allowed for **measurements of strains, displacements and temperatures** over the entire gas pipeline section. All local events (including welds and turns) were clearly detectable during tightness tests and one-year monitoring. Sensors were read using different optical dataloggers at the same time. Also, a number of reference spot gauges proved the perfect accuracy and performance of Nerve-Sensors in difficult geotechnical conditions. Example results of temperature distributions from three subsequent months (April, May, June) are shown below.

⊕ **81 000** measurement points

📏 **1 620 m** of sensing path

NErVE **6 x** EpsilonRebar, **3 x** 3D

⏱ **load-tests** & **long-term**

🤝 project **partner**:

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