

Monitoring of pressure tunnel

Industries: Geodesy / Construction
Application type: Monitoring

Description

The Swiss company Sol experts charge the test track in OWDST (head water pressure tunnel) while the injections for passive bias are monitored automatically. The task was three sections with five sampling lengths to automatically monitor and exceed limits an alarm lamp to set, so that the injections are stopped in mid-operation. The profiles have been arranged at a distance of about 20 meters. The usage of Dimetix Laser Sensors are ideal for harsh environments due to their robustness and precision measurements.

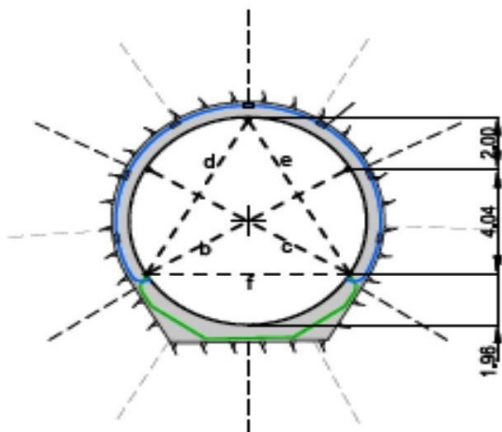


Fig 1: Axis of the tunnel

pressure is applied in the annular gap between the spray concrete lining and the concrete shell. To harden and seal a consolidation, an injection is carried out beforehand in the surrounding mountains through holes and single packers.

Passive bias of penstocks

The penstocks are performed with a non-reinforced concrete inner shell of thickness 0.5 meters. To accommodate the corresponding tensile stresses in the concrete lining (internal pressure), a passive bias of the concrete shell is required. For this purpose, an injection

Customer advantage

- Easy installation thanks to the visible laser
- Operation in the largest temperature range (-40..+60°C) possible
- Measuring ranges up to 100 m on natural surfaces
- Measuring ranges up to 500 m on reflective foil
- Accuracy ± 1 mm
- Repeatability ± 3 mm
- Maintenance-free operation



Fig 2: Pressure runnel under construction



DIMETIX APPLICATION EXAMPLE

AE-0202

Dimetix Sensors – the solution for applications with high precision requirements

Thanks to the clearly arranged product portfolio the evaluation of a suitable Dimetix distance laser sensor is simple and uncomplicated.

Dimetix sensors offer numerous features, which are integrated in each and every device as standard, including, among others, various interfaces like SSI, RS-422/485, RS-232 and 2 digital outputs.

Optionally, the Industrial Ethernet interfaces PROFINET, EtherNET/IP and EtherCAT are also available. Furthermore, all devices are IP65-protected and impress with a weight of less than 500 grams!

Particularly noteworthy, however, is the accurate measurement of 1 millimeter over distances of up to 500 meters, even under the most extreme conditions. This is possible with the sensors of the types DPE, DEN and DEH.

No less interesting are sensors of types DAE, DAN and DBN. Preferably, they can be used for projects which do not require a range over 500 meters or are cost-sensitive.

	DPE-10-500	DPE-30-500	DEN-10-500	DEH-30-500
PARTNUMBER	500630	500636	500637	500638
SPECIFICATION				
Typical accuracy $\cong \pm 2\sigma$	± 1 mm	± 3 mm	± 1 mm	± 3 mm
Mensurierung range on natural surfaces	0.05...~100 m	0.05...~100 m	0.05...~100 m	0.05...~100 m
Measuring range on reflective foil	~0.5...500 m	~0.5...500 m	~0.5...500 m	~0.5...500 m
Max. measuring rate	250 Hz	250 Hz	50 Hz	50 Hz
Operating temperature	-40...+60°C	-40...+60°C	-10...+50°C	-10... +60°C

	DAE-10-050	DAN-10-150	DAN-30-150	DBN-50-050
PARTNUMBER	500633	500632	500634	500635
SPECIFICATION				
Typical accuracy $\cong \pm 2\sigma$	± 1 mm	± 1 mm	± 3 mm	± 5 mm
Mensurierung range on natural surfaces	0.05...~50 m	0.05...~100 m	0.05...~100 m	0.05...~50m
Measuring range on reflective foil	~40...50 m	~40...150 m	~40...150 m	
Max. measuring rate	50 Hz	50 Hz	50 Hz	10 Hz
Operating temperature	-40...+60°C	-10...+50°C	-10...+50°C	-10...+50°C

