

The 2nd bridge in Germany equipped with embedded DFOS Nerve-Sensors



EpsilonSensor: Case Study

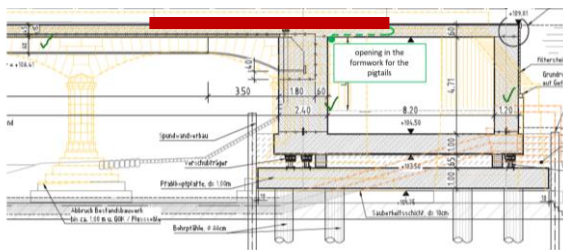
EpsilonSensors were integrated (embedded) inside the concrete slab of the bridge in question, and thereby the second smart object of this type was created in Germany. The DFOS-based monitoring system was designed to measure strain profiles in the concrete and detect all the microcracks formed during early-age concrete hydration. Reference spot thermistors were used to measure unregular temperature distributions and then to compensate for DFOS strain results.



Benefits of application

- Measurements of internal **strains of concrete** within the safety-critical area
- Integrated system for **crack (or microcrack) detection** and their width estimation
- Analysis of **thermal-shrinkage behaviour** during early-age concrete hydration
- Precise and reliable **data for structural assessment** during long-term monitoring

Example results



Three EpsilonSensors (ES) were installed by tightening them to the existing reinforcement. The measurements done the day after concreting allowed us to identify all microcracks formed due to the shrinkage of the constrained concrete.



- 📍 **23 000** measurement points
- 📏 **30 m** of sensing path
- NERVE **3 x** EpsilonSensor
- 🕒 **early-age conc. & long-term**

