

100 m long section of smart highway reinforced with composite bars



EpsilonRebar: Case Study

The project involves a 100 m long section of a highway in Poland, which was reinforced with only composite bars, including EpsilonRebars from the Nerve-Sensors family. The entire experimental section was concreted without any dilatations, which is a pioneering approach in road engineering. Our DFOS-based monitoring system provided essential information on strain profiles and crack morphology, while also becoming structural reinforcement.



Benefits of application

- Key information about **crack morphology** along the entire highway section
- Double function of EpsilonRebars: **both sensing and reinforcing** at the same time
- Unique data for scientific analysis and improvement of design procedures
- **Reliable long-term control** of a new experimental section of the highway

Example results

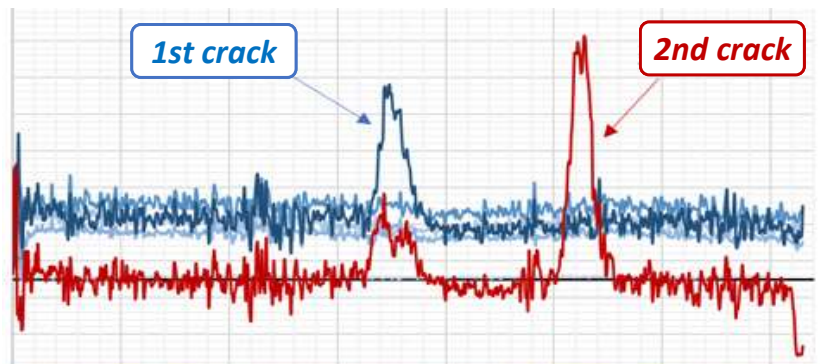
EpsilonRebars were installed in two lines along the entire length of the highway section, as well as at selected critical locations (including transvers direction). Two diameters of the sensors were applied in this project, corresponding to the design assumptions. Sensors had a double function in the structure: sensing and reinforcing at the same time. Measurements performed during long term monitoring allowed for detection of all the cracks formed during hardening of early age concrete – see example in the figure below.

 **28 000** measurement points

 **280 m** of sensing path

 **8 x** EpsilonRebar

 **long-term**



 project partner:

