EpsilonRebars as a Nervous System of hybrid footbridge in Nowy Sącz

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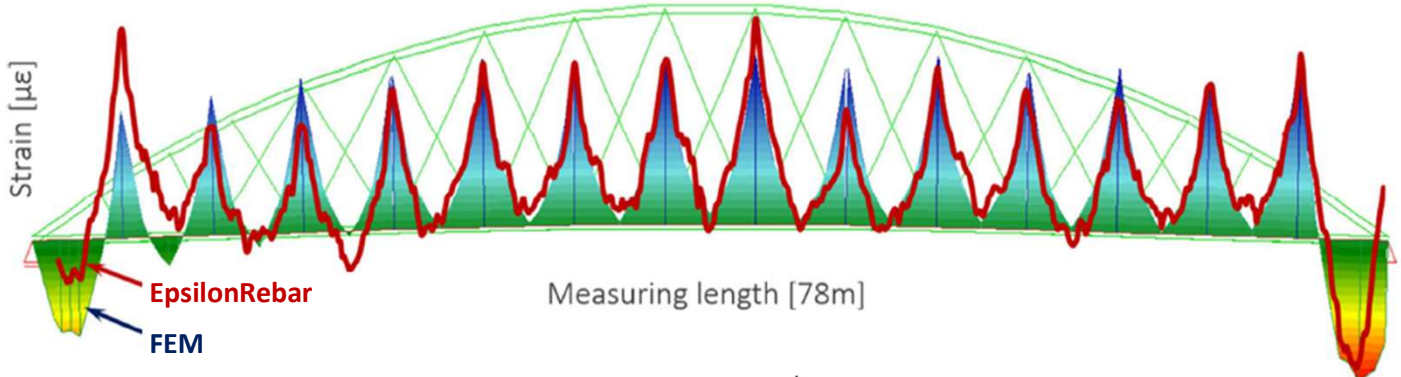
EpsilonRebar: *Case Study*

EpsilonRebars in the form of composite rods, being simultaneously the structural reinforcement for the concrete deck, were placed along the entire footbridge span of nearly 80 m. Thanks to the application of distributed optical fibre sensing technique, it was possible to perform measurements of strains, cracks, displacements (deflections) and temperatures during the hydration of early-age concrete (thermal-shrinkage strains) as well as during the load tests.

Benefits of application

- Full knowledge on **deformation state** along the entire length of the structure
- Ability to detect all **local damages**, including cracks
- Analysis of **bonding properties** between concrete and composite panels
- Verification of the **design assumptions** and **3D FE model**

Example results



Measurement results can be used for verification of theoretical assumptions made at the design stage as well as for calibration of the numerical model. We analyzed loads combination: slab dead weight + thermal-shrinkage strains after the first two weeks of hydration. Because of concreting the entire span without any dilatations, the knowledge on strain distributions (both in concrete and composite panels) was extremely important.

96 000 measurement points

almost **1 km** of sensing path

12 EpsilonRebars

load tests & **long-term**

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