

# EpsilonRebars as a Nervous System of hybrid footbridge in Nowy Sacz



## EpsilonRebar: Case Study

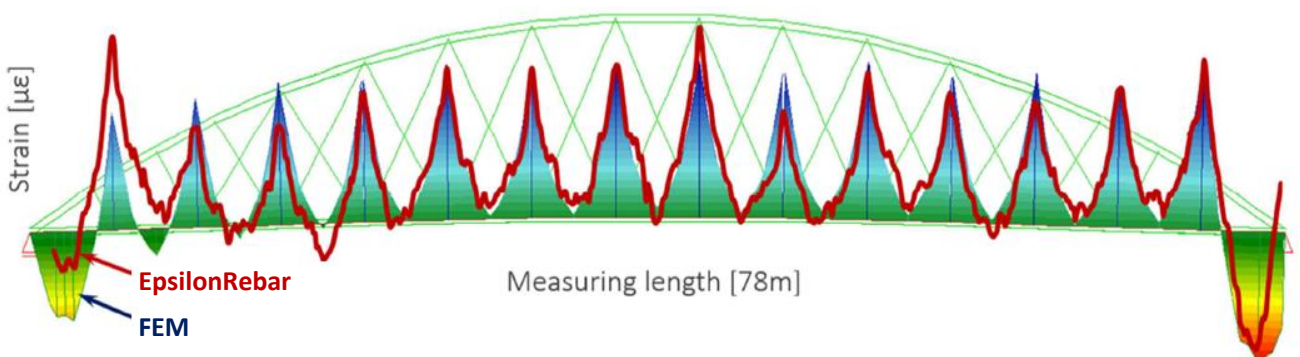
EpsilonRebars in the form of composite rods being simultaneously the structural reinforcement for the concrete deck, were placed along the entire footbridge span of nearly 80 m. Thanks to the application of distributed optical fibre sensing technique it was possible to perform measurements of strains, 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 thorough verification of theoretical assumptions made at the design stage as well as for calibration the numerical model. We analysed 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**



project partners:



POLITECHNIKA  
RZESZOWSKA  
Im. IGNACEGO ŁUKASIEWICZA