CFA concrete column: strains & shape analysis during mechanical load tests

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EpsilonRebar: *Case Study*

The subject of the project was to analyse strain distributions in CFA concrete columns during their hydration (early-age concrete) as well as during mechanical load tests. EpsilonRebars were used for this purpose. Because there was no reinforcement inside the columns, a special mounting process had to be designed and implemented. Nerve-Sensors allowed for detailed assessment of columns' technical conditions along their entire depth.

Benefits of application

- Distributed measurements of **strains** along the entire depth of CFA columns
- **Detection of local cracks** and microcracks formed during early-age concrete
- Analysis of columns' **shape, stiffness and force transfer** (interaction with the ground)
- Full deformation control during **hydration** and **mechanical load tests**

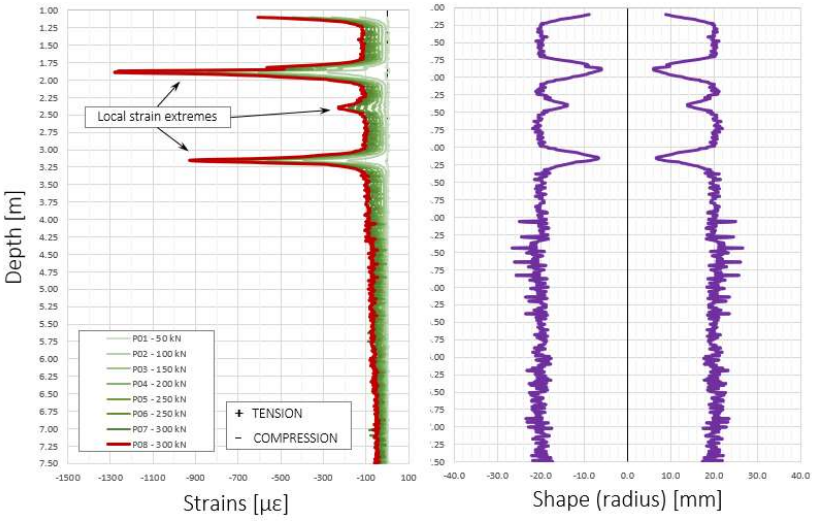
Example results

3 800 measurement points

19 m of sensing path

3 x EpsilonRebar

hydration & load tests

project **partner:**

The column in question was loaded using the means of the hydraulic jacket. The measurements were done step by step at selected force values. Detailed data analysis allowed for detecting localised events (like cracks) and to calculate the possible shape of the column along its entire depth. The example of this unique data in the form of strains and shape (column's radius) in-depth function is presented in the figures.