

Exploring the potential of post-tensioning in structural design

Dienstag, 14. Mai 2024

17:00 Uhr – [HÖNGGERBERG, HIL E3](#)

Gleichzeitig Zoom-Übertragung:

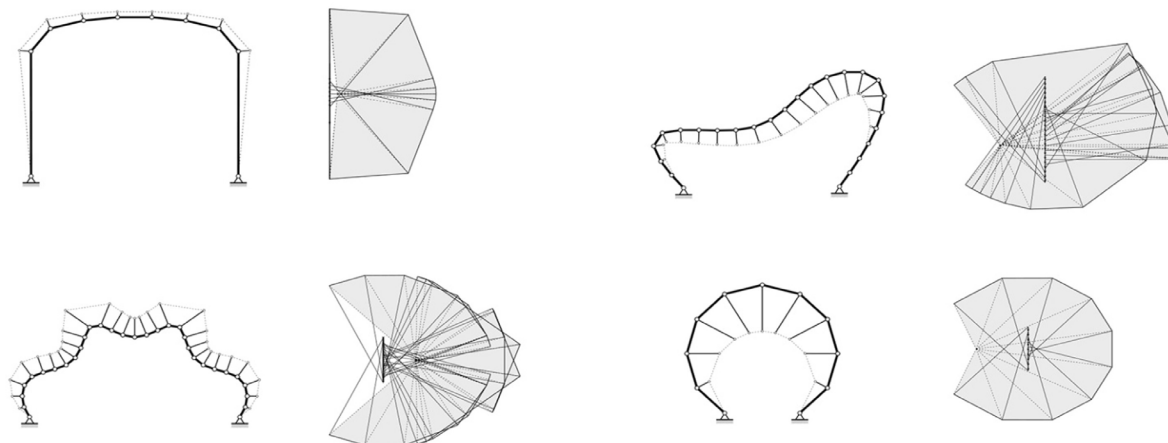
LINK: [LAUNCH MEETING - ZOOM](#)

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This talk explores the possibilities offered by post-tensioning as powerful tool of innovation in structural engineering. To support this idea four different topics of on-going research are presented:

1. Post-tensioned masonry structures: this research claims the high potential of masonry as a primary load-bearing material when combined with post-tensioning. Design and construction of a reduced-scale arch footbridge are presented.

2. Post-tensioned free-form structures: non-structural design criteria often prevent the selection of a material-efficient bending-free shape. This research illustrates how external post-tensioning can convert any geometry into a bending-free one. This opens up new possibilities for designs that combine high-efficient solutions with architectural freedom.

3. Post-tensioned responsive footbridge: external under-deck post-tensioning has proven to be an effective solution to introduce intermediate supports in footbridges to decrease their spans. However, the maximum system efficiency is only achieved for a specific loading. This research presents the possibility of using a responsive external post-tensioning system, where the responsive behaviour is materialized through an actuator located between the beam and the post-tensioning system.

4. Post-tensioned HPFRC roadway bridges: this research adopts a comprehensive approach, encompassing conceptual analysis, material development, and experimental testing to study the potential application of High-Performance Fibre Reinforced Concrete (HPFRC) in girder for roadway bridges. Results are promising and highlight the potential of this material to change traditional bridge design for medium-span bridges.

In summary, post-tensioning offers to the designer the ability to control the structural behaviour and, as a natural consequence, may provide a considerable level of innovation in structural engineering.