FRP tendon anchorage in post-tensioned concrete structures

Strengthening of building structures by the use of various external post-tensioning steel tendon systems, is known to be a very efficient method. However, FRP as material in external post-tensioning projects has been investigated during the last decade. The advantages for this material are the high effective Young’s modulus and the high stress capacity in the linear elastic range of the material. The use of external tendons increases the requirements on the anchorage systems. This is in particular important when using un-bonded tendon systems, where the anchorage and deviators are the only force transfer points. The demand for high capacity anchorage tendons is fulfilled for steel tendons, but no competitive mechanical anchor has yet been developed for FRP tendon. A new small, reliable and more user friendly anchor has to be developed, before FRP tendons can be utilized with all of its capacity. Thus, several attempts of developing a mechanical FRP anchor have been made worldwide with promising results. Some of these attempts are presented in this paper together with an insight into a present research collaboration project at the Technical University of Denmark, Luleå University of Technology, Sweden, and COWI A/S, Denmark.

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