

## Engineered cementitious composites for strengthening masonry infilled reinforced concrete frames - DTU Orbit (08/11/2017)

### Engineered cementitious composites for strengthening masonry infilled reinforced concrete frames

The results of the second part of a comprehensive experimental program, aimed at investigating the behavior of masonry infilled reinforced concrete (RC) frames strengthened with fiber reinforced engineered cementitious composites (ECC) used as an overlay on the masonry wall, are presented in this paper. The proposed strengthening technique aims at increasing the lateral strength of infilled RC frames and maintaining the integrity of masonry infills during loading, which is an important seismic parameter for these elements. Material tests were conducted first for ECC in order to assess its distinctive mechanical properties such as tensile stress-strain behavior and multiple cracking. Thereafter, three 1/2 scaled one bay, one story RC specimens were constructed and tested under quasi-static lateral loading. The obtained results are presented and discussed in terms of the strength, stiffness, and the cumulative absorption capacity of the tested specimens. Furthermore, the obtained backbone curves are idealized and the drift limits usually considered in seismic design are specified. The obtained results indicate that the proposed ECC-strengthening technique can effectively increase the lateral strength and energy absorption capacity of the infilled frame, prevent brittle failure modes in the infill wall, and provide a reasonable system overstrength.

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