Modelling of reinforced fibre reinforced concrete in Diana

One of the potential benefits from fibres in concrete is improved crack control. The licentiate work ”Fibres in reinforced concrete structures – analysis, experiments and design”, Jansson (2008), has focused on the cracking process in fibre- reinforced concrete with the aim to later on be able to predict small crack openings occurring in the serviceability limit state. To investigate the cracking process, 4-point-bending tests were performed in addition to finite element analyses of the tested beams. The finite element analyses were carried out using a fracture-mechanics approach with tension softening curves obtained from inverse analysis on wedge-splitting test results.

By using the bond-slip approach for the interaction between reinforcement bars and surrounding concrete in combination with a multi-linear tension softening curve (σ-w relationship), the results obtained seem promising for future work. The cracking was described with a total strain, rotating crack model using the smeared crack approach.

Jansson A. (2008): *Fibres in reinforced concrete structures, analysis, experiments and design*. Licentiate thesis, Lic 2008:3, Civil and Environmental Engineering, Chalmers University of Technology, Göteborg, 2008, 70 pp.