How to replace steel with FRP
By Claudio Subacchi

Cost effective use of FRP to give flexural strength to concrete products / structures

Topics:

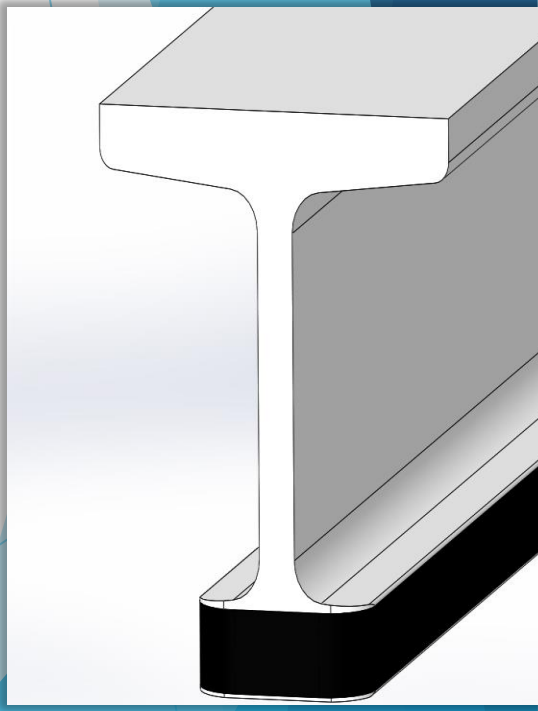
- This FRP consisting of, and Mechanical Characteristics (that are different than Steel)
- Cost effective application to Precast Concrete products
- Cost effective application to Cast in Situ structures: PAT Pressure Activated Tendon

This FRP consisting of, and Mechanical Characteristics

- It is a “tape” of composite material (Basalt or Glass fiber + resin)
- The “tape” is produced at the time of use
- The “structural” part of the composite are the Basalt/Glass fibers; the matrix main scope is to ensure fiber filaments are sharing the tensile stresses, so very little resin is used
- Elastic Modulus is 5 time less than Steel, no or little significant creep
- Corrosion free, no “steel cover” is needed

Cost effective application to Precast Concrete Products 1/3

- The “tape” is wrapped in tension, to generate post compression in the concrete
- The “tape” is oriented to the tensile stress
- Low CO2 footprint

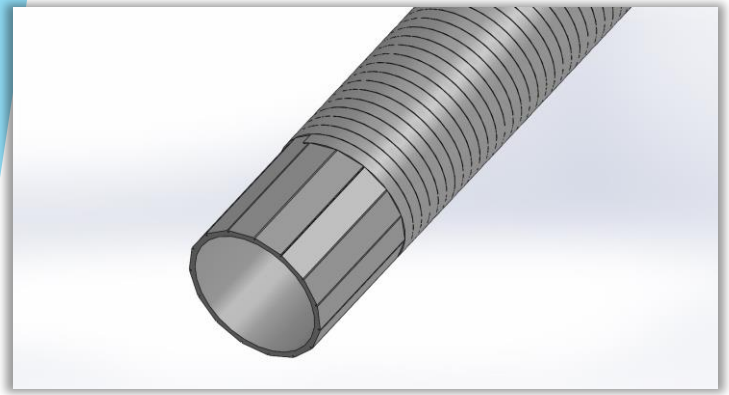


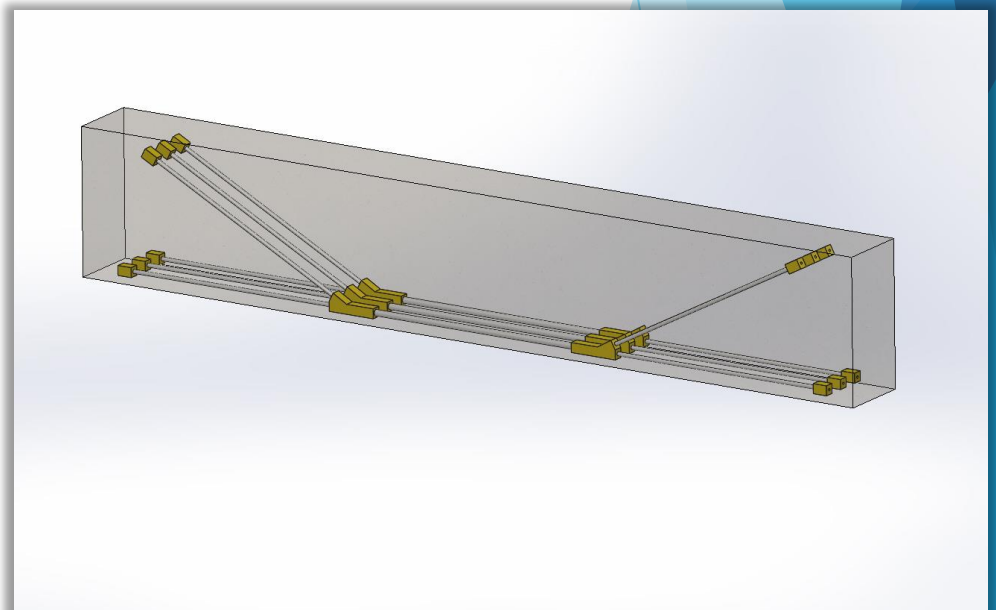
Cost effective application to Precast Concrete Products 2/3

Cost effective application to Precast Concrete Products 3/3

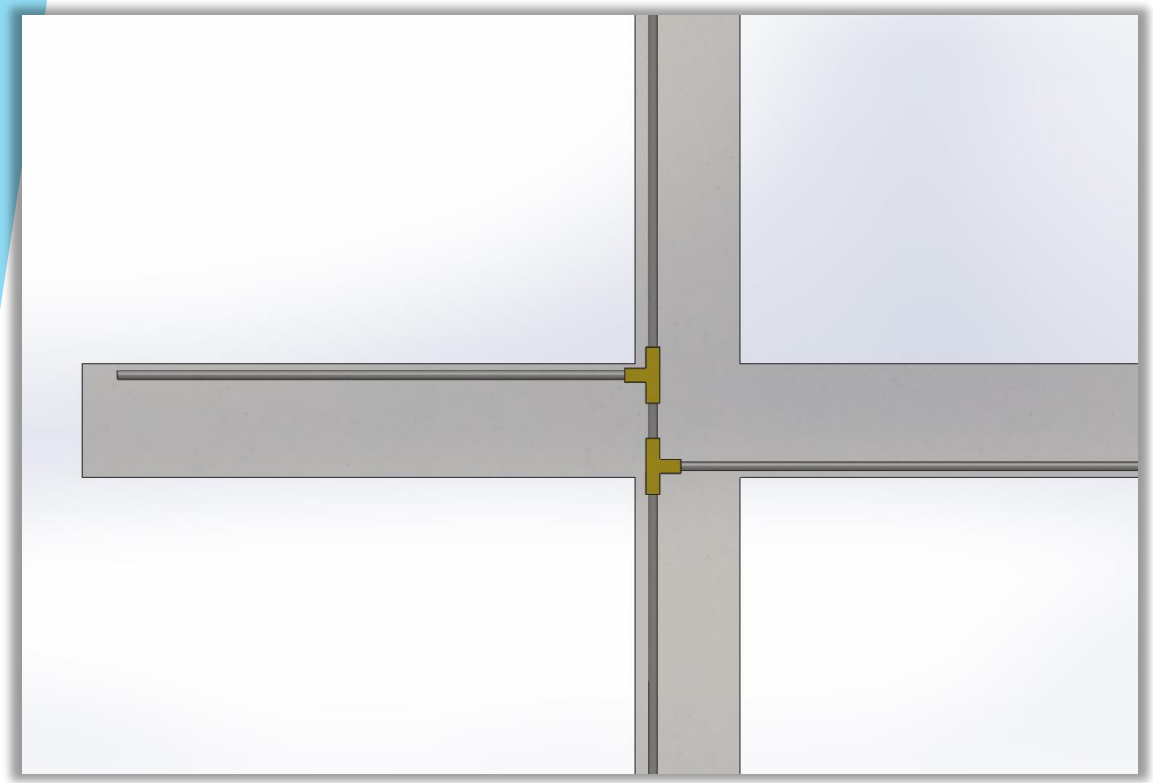
Cost effective application to Cast in Situ structures: PAT - Pressure Activated Tendon 1/3

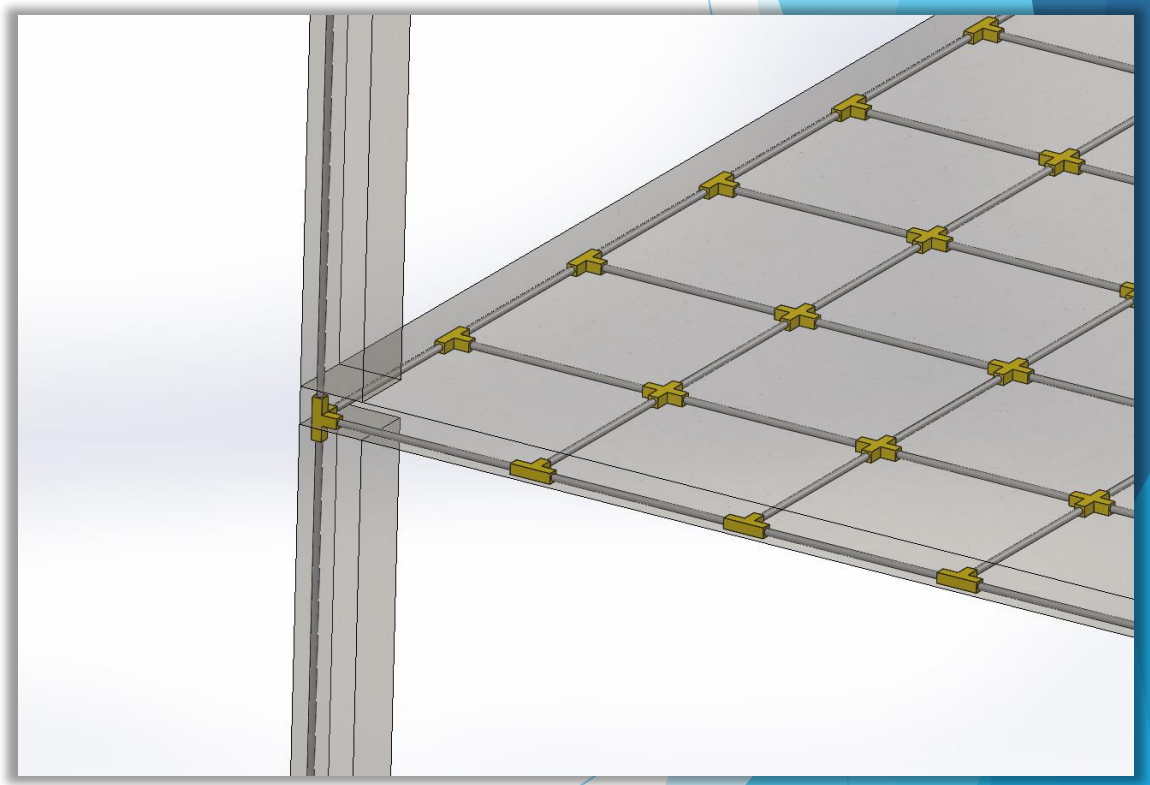
- A special tube wrapped with the tape is placed under pressure causing it to stretch
- After concrete casting and curing, the pressure is removed, and this causes a post compression in the concrete
- This post compression can be multi axial
- Low CO2 footprint



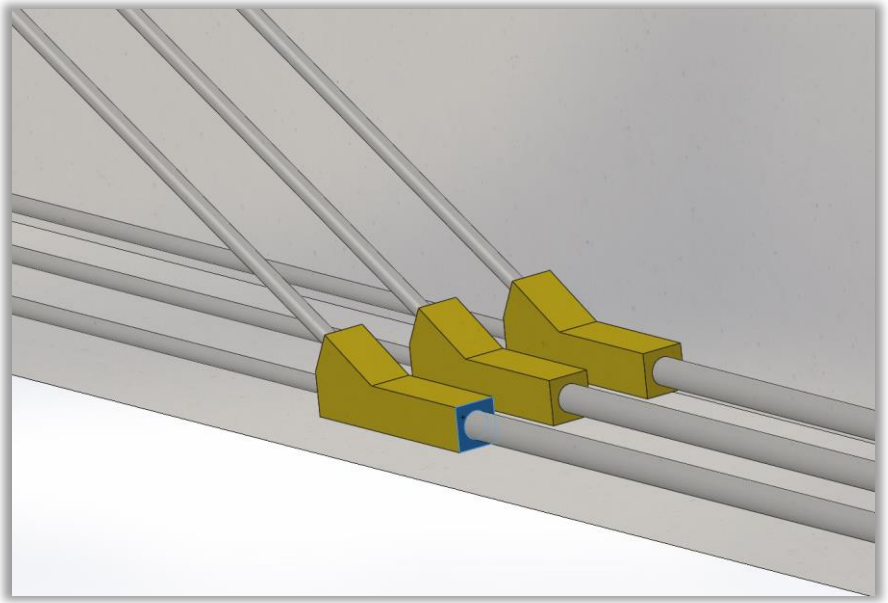


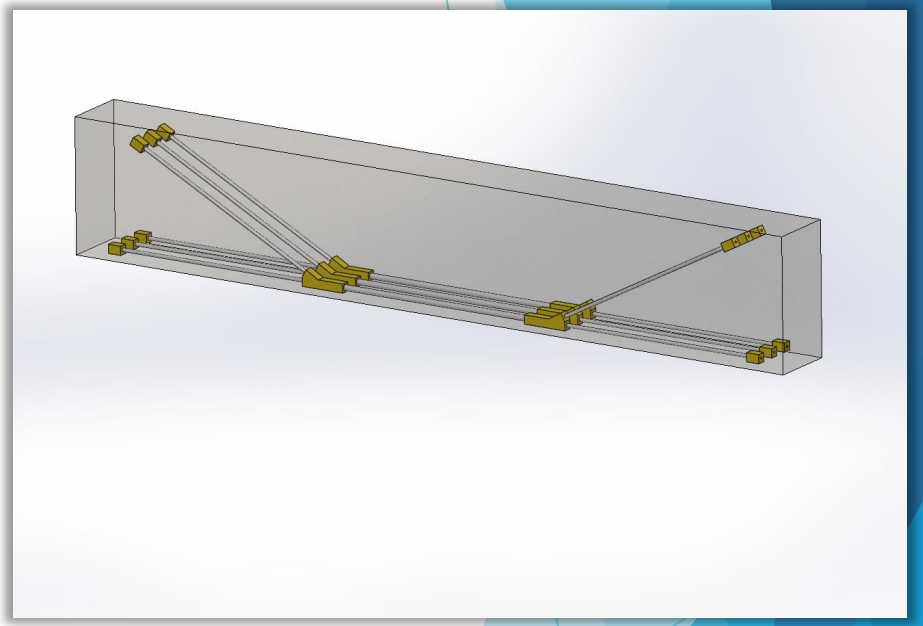
Cost effective application to Cast in Situ structures: PAT - Pressure Activated Tendon 2/3

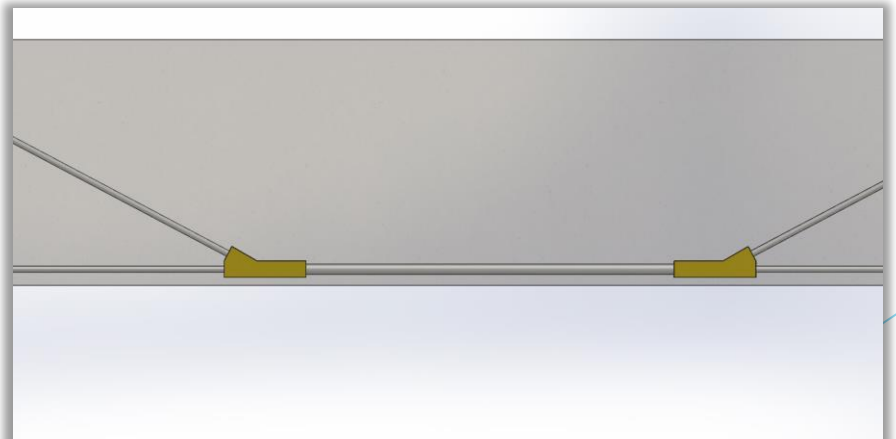




Cost effective application to Cast in situ structures: PAT - Pressure Activated Tendon 3/3







SMART CONCRETE TECHNOLOGIES

Enhancing the building material industry

FSC Technologies LLC - 4700 Millenia Boulevard, Orlando, Florida 32839, USA

tel +1 (515) 771-0473

Branch Office Europe: via V. Veneto 52, 43046 Solignano PR, Italy

tel +39 338 052 5728

info@fsc-tech.com - www.fsc-tech.com