



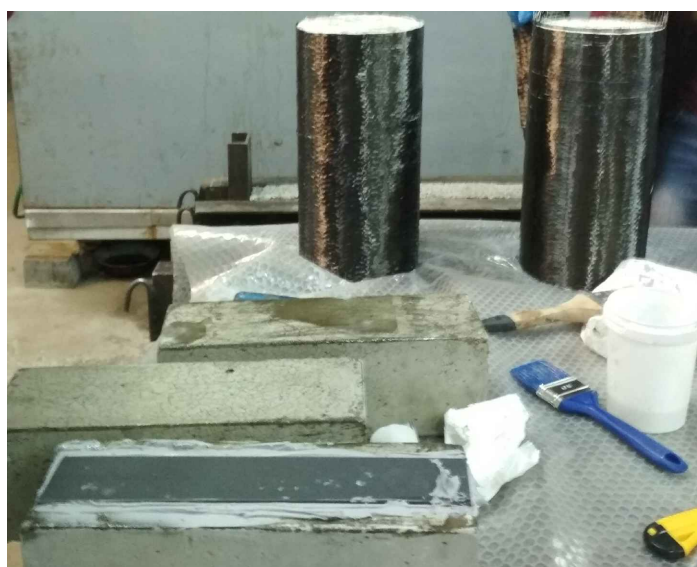
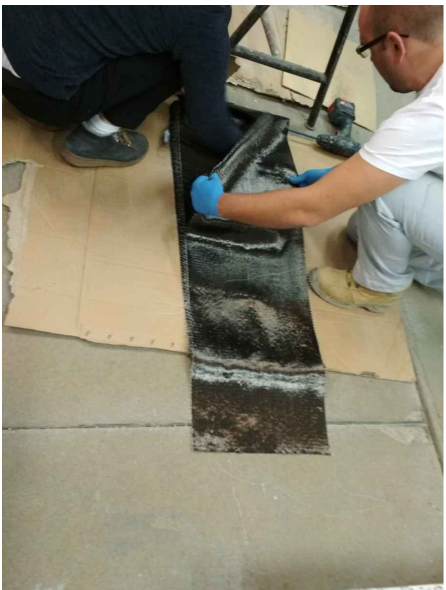
## *Design and use of externally bonded fibre reinforced carbon polymer reinforcement (CFRP EBR) for reinforced concrete structures*

In collaboration with MAPEI company and Technical University of Cluj Napoca during my Erasmus program.



### Objetives:

- The objective of this research is bringing the reader a broader idea of this new reinforcement technique for the reinforced concrete structures. This work tries to explain the considerations to take into account about requirements, materials and execution.



### Execution:

- When we have a repaired and cleaned surface of the concrete member, we start with the mixing preparation. In a bucket, we mix with the electrical mixer the epoxy resin and the epoxydic hardener in the correct proportion to create the adhesive. Then, we spread with the brush the adhesive in the area where will be the CFRP. The next step is put the CFRP strip over the beam, and then, the same with the CFRP fabric.
- We roller over CFRP to get a perfect adhesion to the concrete element. The next step is cover the CFRP with the adhesive and sprinkle sand over it. If we would want put another layer, only we would must repeat the previous steps.

### Metodology:

- To know the applicable regulations.
- To follow the recommendation guides of "International Federation for Structural Concrete" (14, 24 and 40)
- Theoretical and practical classes taught by the company MAPEI.
- Examples of calculations according to fib recommendations, checking the Serviceability Limit State, Ultimate Limit State and their respective conclusions..

### Practical cases studied:

- Beam simply support – Flexural strengthening
- Beam simply support – Anchored (Max. CFRP force and length)
- Beam simply support – Shear strengthening
- Circular column – Confined capacity comparison
- Slab one direction – Flexural strengthening

