Minutes WG5 - Effect of carbonation on corrosion of concrete with SCMs
Ghent, April 12th 2018

Expected achievements

- STAR on carbonation induced corrosion
- Best practices in assessing corrosion rate / limit state

Scope: What Systems do we consider? -> Link to WG1/2/6

- First proposal : CEM I(reference), CEM II/A-LL (Limestone), CEM III/B (slag), CEM IV/A or B (FA), AAS

What to assess:

- Passive film formation in different systems?
- pH evolution during carbonation
- Depassivation : relevant parameters
- Corrosion rate depending on exposure moisture conditions
- Potential role of sulfides (e.g. high slag content blended systems) in carbonation corrosion
- Limit state <-> spalling/cracking -> WG 3(Modelling)
- Lab vs. on-site

How to assess

a) Parameters
    a. Various cements (above)
    b. Real concrete (cores from..) – lab concrete – mortar – not paste
    c. Natural vs accelerated carbonation (or natural vs. accelerated corrosion?) (cracking)
    d. Preconditioning after carbonation / saturation (this is crucial for the corrosion rate!)

b) Experimental setup
    a. .. brainstorming
    b. Measurement setup, what and how
    c. Monitoring ….

Next steps:

1. Review the literature and compile expertise from the contributing members and prepare a STAR --> Highlight the open questions and areas that need more research (*STAR on carbonation induced corrosion*)
2. Find common agreement, which electrochemical parameter shall be measured with which set up to enable judgement on carbonation induced corrosion. So, one intention to perform a kind

of round robin test, was to show the variability of electrochemical parameters and how to deal with it. (*Best practices in assessing corrosion rate / limit state*)

Labs: Ueli/Fabrizio/Sylvia/Javier/Cesar/Marijana/Andres -> Round Robin Tests after defining procedure

Additional participants, to be confirmed: Kei-ichi Imamoto, Colleagues from US: Burkan Isgor from Oregon State University or Francisco Presuel-Moreno (http://www.eng.fau.edu/directory/faculty/presuel-moreno/)

Video Call to finalize proposal in the next 4-8 weeks (Doodle) ?