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## **SERVICE LIFE DESIGN OF CONCRETE STRUCTURES ACCORDING TO FIB MC2010 AND ISO 16204**

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### **Abstract**

In the present version of the European concrete related standards (EN 1992, EN 13670, EN 206), the design working life is defined as until “major repairs are necessary”. This is a qualitative definition not easily converted into a quantitative format an engineer can relate to. As a result, the perception of what it actually means, reflected in the national annexes to EN 206 and EN 1992, differs to a great extent as reported in various CEN Technical Reports. It is assumed that the owners of new concrete structures are equally confused when they demand a “50 years design working life”. It is not easy to predict the actual service life of a new structure as all inputs to such calculations includes uncertainties. Even within the same concrete specification, execution specification and exposure class, a large range of parameters must be expected. This is in full parallel with what is the case for structural design. Our colleagues dealing with structural design therefore left the concept with “allowable stresses” some 50 years ago. Today their calculations are based on characteristic values, Limit States and reliability considerations. In the late 1990s, the material community also started the process to develop a similar methodology for service life design of concrete structures. Notable milestones were the final workshop of the European network “DuraNet” in Tromsø in 2001, then the fib bulletin no 34 “Model Code for service life design” in 2006, the full fib Model Code 2010 and the implementation in international standards ISO 16204 “Durability – Service life design of concrete structure” in 2009 and ISO 2394 “General principles on reliability for structures” in 2015. For the moment, all the European concrete related standards are under a coordinated revision. All the major CEN committees have decided that the new requirements to concrete composition, execution and design to ensure the “design working life” shall be based on this new methodology. The presentation will describe this methodology and the current process in the various CEN committees.

**Keywords:** Service life design, EN 206, Limit states, fib MC 2010, ISO 16204.

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