



Concrete moves...



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EUROPEAN READY MIXED CONCRETE ORGANIZATION

## **“DIGITAL CONCRETE: THE INTEGRATION OF PRODUCTION PROCESS IN THE INDUSTRY 4.0 ERA”**

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### **Abstract**

Concrete preparation roughly consists in the transformation of aggregates, cementitious materials, admixtures and water into a new material. Therefore, the process of concrete batching, mixing and delivering is strictly interlocked with the activities of the supply chain of aggregates, cement and admixtures, as well as with the organization of the jobsite where concrete has to be poured. The ongoing digital revolution named “Industry 4.0” will heavily affect the construction industry in the same way it is transforming other industrial sectors: it will definitively apply Artificial Intelligence to each and every phase of the process, starting from quarries uphill to the MEP integrated within the buildings. On the construction site the batching plant is the most intelligent equipment (being the only one driven by PLC + PC) within the concrete and construction process, therefore it is the Darwinian candidate to drive such technology (r)evolution. The scenario at the end of the digital (r)evolution will see digital BIM-based projects of any type construction, from skyscrapers to hydropower dams, providing the batching plants with the whole and detailed knowledge of what has to be built and with production programs through which the artificial intelligence will drive crushing plants, batching systems, mixing and delivery systems as parts of an integrated smart factory. Self-driving machines will move between self-operating plants within an optimized logistic plan, with a complete “cloud storage” of the whole construction and production data, which will back feed BIM models with “as mixed” reports available for the lifetime of the buildings. Digital readymix companies will only survive, while dinosaur plants will disappear...

**Keywords:** batching plants, mixing plants, concrete mixers, crushing plants, digital, BIM