

Approach for Updating a Digital Factory Model by Photogrammetry

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Abstract : Factory planning has the task of designing products, plants, processes, organization, areas, and the construction of a factory. The requirements for factory planning and the building of a factory have changed in recent years. Regular restructuring is becoming more important in order to maintain the competitiveness of a factory. Restrictions in new areas, shorter life cycles of product and production technology as well as a VUCA world (Volatility, Uncertainty, Complexity & Ambiguity) lead to more frequent restructuring measures within a factory. A digital factory model is the planning basis for rebuilding measures and becomes an indispensable tool. Short-term rescheduling can no longer be handled by on-site inspections and manual measurements. The tight time schedules require up-to-date planning models. Due to the high adaptation rate of factories described above, a methodology for rescheduling factories on the basis of a modern digital factory twin is conceived and designed for practical application in factory restructuring projects. The focus is on rebuild processes. The aim is to keep the planning basis (digital factory model) for conversions within a factory up to date. This requires the application of a methodology that reduces the deficits of existing approaches. The aim is to show how a digital factory model can be kept up to date during ongoing factory operation. A method based on photogrammetry technology is presented. The focus is on developing a simple and cost-effective solution to track the many changes that occur in a factory building during operation. The method is preceded by a hardware and software comparison to identify the most economical and fastest variant.

Keywords : digital factory model, photogrammetry, factory planning, restructuring

Conference Title : ICDADDF 2020 : International Conference on Digital Architecture, Digital Design and Digital Fabrication

Conference Location : Rome, Italy

Conference Dates : January 16-17, 2020