

The effect of using software on the production processes of smart factory ceramic tiles (case study)

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•abstract:

The research discussed the impact of the application of some concepts of engineering and design of scheduling tool and modeling programs in solving problems of ceramic tile production in general, especially in smart factory operations systems, by taking advantage of the size of software and scheduling models, which we hope to expand their application and implementation in the ceramic industry sector. In Egypt, and the dissemination of the experience of its applications. Then the research presented a model of the production process that describes in detail the great development in the smart ceramic tile production process systems as a case study for one of the international companies in the industry and the ceramic sector, in which we focus on the development in the ceramic tile sector by making use of the developed scheduling systems; This is to model problems to find solutions digitally using computer programs. The research also clarified the importance of applying software and manufacturing scheduling systems in improving the quality of the ceramic product with the provision of scheduling models, and a case study of a smart factory for ceramic production that uses the digital approach and applies for smart programs on all its lines to produce ceramic tiles with all variables. The research also dealt with Industry 4.0 and its most important characteristics and benefits for making improvements in the industrial process, as well as addressing product life cycle management in smart factories through a smart powder factory for the ceramic body, innovations designed to improve process efficiency, and a smart production line that ensures forming, drying, decorative and fire lines for ceramic tiles and plates in the best possible conditions; To achieve the highest levels of quality, productivity, and operational flexibility. The research showed that the innovative large hydraulic presses in addition to the decoration technology deep Digital, is the latest in the industry, and that the new thermal machines (dryers and ovens) guarantee high-quality standards, and at the same time, reduce energy consumption and environmental impact, and that smart storage that allows production to be organized in batches, facilitates product change, and increases the efficiency of ceramic production. Depending on the work order, a wide range of machines offers to sort and pack for large tiles and slabs, as well as smart supply chains.

Keywords:

digital fabrication software; Ceramic tile; Case Study