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Analyzing the Factors Effecting Ceramic Porosity Using Integrated Taguchi-Fuzzy Method

Authors : Enes Furkan Erkan, Özer Uygun, Halil Ibrahim Demir, Zeynep Demir

Abstract : Companies require increase in quality perception level of their products due to competitive conditions. As a result, the tendency to quality and researches to develop the quality are increasing day by day. Cost and time constraints are the biggest problems that companies face in their quality improvement efforts. In this study, factors that affect the porosity of ceramic products are determined and analyzed in a factory producing ceramic tiles. Then, Taguchi method is used in the design phase in order to decrease the number of tests to be performed by means of orthogonal sequences. The most important factors affecting the porosity of ceramic tiles are determined using Taguchi and ANOVA analysis. Based on the analyses, the most affecting factors are determined to be used in the fuzzy implementation stage. Then, the fuzzy rules were established with the factors affecting porosity by the experts' opinion. Thus, porosity result could be obtained not only for the specified factor levels but also for intermediate values. In this way, it has been provided convenience to the factory in terms of cost and quality improvement.

Keywords : fuzzy, porosity, Taguchi Method, Taguchi-Fuzzy
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