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Multivariate Fuzzy Inference System to Modeling a Casting Process

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Abstract: Actually one of the most important processes in the industry is the casting process. This process allows the manufacturing of complex pieces mainly in the automotive industry. To manufacturing this type of pieces it is necessary to accomplish with some quality characteristics. In the most of these processes there is more than one quality characteristic. For this reason, if a model is built to analyze and predict these characteristics it is necessary that the model should be multivariate. In addition to the above we must be considering that the quality characteristics (output variables) must be correlated. To build the model of these types of processes we can utilize mathematical or statistical models but due to the complexity and uncertainty of the process it is necessary other types of models. These models can be made through intelligent systems, in particular by fuzzy inference systems due to the complexity and uncertainty of the process. The aim of this paper is compare the use of different membership functions in the construction of fuzzy inference system models to this process through R_q^2 .

Keywords: Fuzzy Logic, Modeling, Statistic Metrics