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Forecasting the tension of casting aluminum parts using artificial neural network

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Abstract
As Aluminum alloys have high strength to weight ratio, resistance to abrasion and corrosion and good electrical and thermal conductivity, are suitable for special attention in the industry. Nowadays, many aluminum castings parts are commercial alternative for other parts several factors have played a role in the quality of the casting produced that review and study of experimental in industrial scale, requires much time and cost. One of the ways that had known to accurately predict the behavior of these components, is usage of neural network theory. In this study, stress of casting aluminum parts has been studied and predicted by Artificial Neural Networks due to factors such as: melting temperature of the chemical composition. Training artificial neural network was carried through Multilayer Perceptron procedure. The comparison shows the proper implementation of the predicted values and experimental results and confirm the effectiveness of the method used.

Keywords*:* cast aluminum parts, artificial neural network, predict stress

Introduction
Most of the parts used in the industry are actually exposed to force or load. In such a situation, knowing the characteristics of the materials in which the parts are made of them to prevent the occurrence of a defect or destruction alteration is necessary. One of these characteristics is the mechanical properties of their mechanical behavior [1, 2]. The mechanical behavior represents the relationship between the shape of the material and the force entailed in it. Many engineering structures and systems must be designed in such a way to ensure that stresses (elastic) changes only occur in parts and components of the system as a result of stress. Therefore, knowing the extent of the tension in which the change in the shape of the plasticity begins in the piece or body, or in other words, consciousness of the point where the phenomenon of stress occurs, is necessary [1, 3]. Researchers used different methods to predict these characteristics and the knowledge of the yield stress, such as artificial neural network to estimate the yield stress.

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