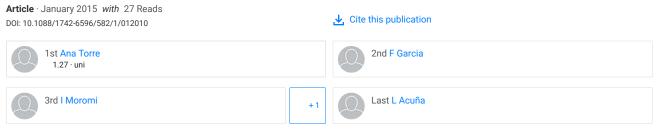See all ›
18 References

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1 Figure

Prediction of compression strength of high performance concrete using artificial neural networks

⬇ Cite this publication

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Abstract

High-strength concrete is undoubtedly one of the most innovative materials in construction. Its manufacture is simple and is carried out starting from essential components (water, cement, fine and aggregates) and a number of additives. Their proportions have a high influence on the final strength of the product. This relations do not seem to follow a mathematical formula and yet their knowledge is crucial to optimize the quantities of raw materials used in the manufacture of concrete. Of all mechanical properties, concrete compressive strength at 28 days is most often used for quality control. Therefore, it would be important to have a tool to numerically model such relationships, even before processing. In this aspect, artificial neural networks have proven to be a powerful modeling tool especially when obtaining a result with higher reliability than knowledge of the relationships between the variables involved in the process. This research has designed an artificial neural network to model the compressive strength of concrete based on their manufacturing parameters, obtaining correlations of the order of 0.94.