

Shear Strength of Steel Beams with Trapezoidal Corrugated Webs Using Regression Analysis

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Abstract

It was recognized from theoretical and experimental results that the shear buckling strength of a steel beam with corrugated web is complicated and affected by several parameters. A model that predicts the shear strength of a steel beam with corrugated web with reasonable accuracy was sought. To that end, multiple regression analysis (MRA) with a total of 93 collected experimental data points were used for modeling and predicting the shear buckling strength of a steel beam with corrugated web. Then mathematical models for the key response parameter (shear buckling strength of a steel beam with corrugated web) were established via MRA in terms of different input geometric, loading and materials parameters. MRA model having an R^2 value of 0.93 and passing the F- and t-tests were selected. Results indicate that, MRA could accurately predict the shear buckling strength of a steel beam with corrugated web with a minimal processing of data.

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