

Article Abstract

Title:	Correlation between pipe bend geometry and allowable pressure in pipe bends using artificial neural network
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Abstract:	Determination of allowable pressure, which is one of the important criteria to evaluate the acceptability of pipe bends with shape irregularities, is complex as the analytical solution of the problem involves solution of complex differential equations. Artificial Neural Network (ANN) is used in this paper to determine the allowable pressure ratio for pipe bends with varied range of ovality and thinning/thickening, pipe ratio and bend ratio. A set of numerical data of pipe bends with shape irregularities obtained from ANSYS analysis is used in ANN to obtain a mathematical relationship between various design parameters of pipe bends namely pipe diameter, wall thickness, bend radius, ovality, thinning/thickening and the internal pressure load. The ANN result is in close agreement with the numerical output obtained from ANSYS.
Keywords:	Pipe bends, Pipe ratio, Bend ratio, Ovality, Thinning, Optimum finite element mesh, Artificial neural network