



Economical Pipe Stress Analysis using Parametric Modelling and Design Standards

by:

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Abstract:

For the optimal mechanical and acoustic selection and recalculation of the component parts of a compressor unit, generally, it is necessary to use available technical software as well as the manufacturer's own programs. It is important that this software should allow the compilation of user tools. This paper will present the parameterizing of the mechanical designing of compressor components, such as straight pipes, pipe elbows, flanges and pressure vessels under various types of loads, such as internal pressure, dead weight, wind and shaking forces. Great emphasis will be placed on the modelling of pulsation dampers. In general, shell elements are used to model these. For the area around nozzles and supports, a 3D model is performed with the help of the submodel technique. In this way both structure stress and notch stress are obtained. These figures are important not only for the endurance strength and the fatigue limit analysis, but also for comparison with various rules and standards. The carrying out of modal and mechanical forced harmonic analysis will also be dealt with, as well as the questions of the excitability of a mode and the dependence of the mechanical structural natural frequencies on the prestress.