FSM4S_10826

XXI International Congress of Theoretical and Applied Mechanics
Warsaw, Poland, August 15–21, 2004

Fluid Structure Interaction in Multiphase Mixing Vessel

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In this paper a problem of fluid-structure interaction in a mixing vessel is solved with weakly coupled fluid-structure interaction computational analysis. The computational fluid dynamics code CFX, based on the finite volume method, is used for determination of the multiphase flow field (water and air) in the mixing vessel. The results in form of pressure distribution are then applied to the blade model, which is then analysed with the finite element structural analysis system MSC.visualNastran for Windows. The resulting deformations and stresses are evaluated. The proposed procedure can be effectively used for optimization of structures with significant fluid flow influences.

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