

## The Modification of the Mixed Flow Pump with Respect to Stability of the Head Curve

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**Abstract :** This paper is focused on the CFD simulation of the radial pump (i.e. mixed flow pump) with the aim to detect the reasons of Y-Q characteristic instability. The main reasons of pressure pulsations were detected by means of the analysis of velocity and pressure fields within the pump combined with the theoretical approach. Consequently, the modifications of spiral case and pump suction area were made based on the knowledge of flow conditions and the shape of dissipation function. The primary design of pump geometry was created as the base model serving for the comparison of individual modification influences. The basic experimental data are available for this geometry. This approach replaced the more complicated and with respect to convergence of all computational tasks more difficult calculation for the compressible liquid flow. The modification of primary pump consisted in inserting the three fins types. Subsequently, the evaluation of pressure pulsations, specific energy curves and visualization of velocity fields were chosen as the criterion for successful design.

**Keywords :** CFD, radial pump, spiral case, stability

**Conference Title :** ICCFD 2015 : International Conference on Computational Fluid Dynamics

**Conference Location :** Amsterdam, Netherlands

**Conference Dates :** May 14-15, 2015