

عنوان مقاله:

Pressure Drop and Fluid Flow Modification inside the Main Steam Manifold of an Air- Cooled Condenser

محل انتشار:

چهارمین همایش بین المللی مهندسی مکانیک، صنایع و هوافضا (سال: 1399)

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خلاصه مقاله:

A numerical analysis is carried out on the existing main steam manifold of an air-cooled condenser, with unequal distribution of steam flow rate into seven branches. The purpose of this study is to decrease the local pressure drop at the Tee-junctions, in order to modify the flow field and equally distribute the steam flow between all branches. Doing so, a configuration of guide vanes is proposed to be installed in each Tee-junction. CFD results showed that the new design (with guide vanes) can effectively restrain the flow separation at the entrance of the Tee-junction, lowering the steam pressure drop. By careful design of the geometry of the guide vanes, mass flow rates of the steam leaving each branch are almost equal. One can also take advantage of reduced turbulent kinetic energy of the flow which is important in terms of lowering fluid-born vibration.

کلمات کلیدی:

Air-cooled condensers; Steam manifold; Guide vanes; Computational fluid dynamics

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