

The energy efficiency is one of the major objectives to be tackled in order to meet sustainable way of utilizing world's energy resources. In this study, energy efficiency of the turbomachinery, especially steam turbines, are carried out by investigating condensing flow yielding new information about loss mechanisms that condensation produces. This information can be used to design more efficient steam turbines and information can be also used to optimize the control of the power plant using steam turbines. Steam turbines are used for power generation in wide selection of power plants.

This research provides detailed analysis of flow field in condensing flow in steam turbines. Computational fluid dynamics is used for numerical study and experimental measurements will be made in laboratory and on-site facilities. Both homogenous and heterogenous nucleation will be present in condensing flows in steam turbines. Therefore, it is important to take into account both phenomena.