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CFD analysis of a bulb turbine and validation with measurements from the BulbT project

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Abstract

In the present paper both steady and unsteady CFD analysis were performed to investigate the flow behavior in a bulb turbine. A study was carried out to assess the effect of runner tip and hub gap size on the turbine performance. Also special attention was paid to the turbine power break off at full load condition as well as the hysteresis phenomena on the turbine efficiency curve occurring in the same region. The unsteady calculations were performed only for some operating points of interest near the power break off region. The numerical results were compared with experimental data from the BulbT project.