

Prediction Of Particle Impact On An Archimedes Screw Runner Blade For Micro Hydro Turbine

Mu'tasim, M.A.N., Azahari, N.S., Adam, A.A.A.

Computational Analysis Group, Faculty of Mechanical Engineering, Universiti Malaysia Pahang, Darul Makmur, 26600 Pekan, Pahang, Malaysia

ABSTRACT

Energy is one of the most important sources in the world especially for developing countries. The subject study is conducted to predict the behaviour of particle due to erosion from the river through the Archimedes screw runner and predict the impact of particle toward blade surface. For this reason, computational fluid dynamics (CFD) methods are used. The three-dimensional flow of fluid is numerically analyzed using the Navier-Stokes equation with standard k- ϵ turbulence model. The reinverse design of Archimedes screw blade was referred with the previous researcher. Flow prediction with numerical results such as velocity streamlines, flow pattern and pressure contour for flow of water entering the blade are discussed. This study shows that the prediction of particle impact occurs mostly on the entering surface blade and along the leading edge of the screw runner. Any modification on the design of the screw runner blade can be analyzed for further study. © (2014) Trans Tech Publications, Switzerland.

KEYWORDS: Archimedes Screw; CFD; MHP; Particle prediction

DOI: [10.4028/www.scientific.net/AMM.465-466.552](http://www.scientific.net/AMM.465-466.552)