

New technologies with commercial potential

Method of making low cost and high efficiency turbines by modifications of standard pumps

Reverse running of Pumps as Turbines, or more particularly running of Pump–Motor sets as Turbine-Generator units will have a major cost advantage, compared to the price of a Pump-Motor set.



Though, Turbine-Generator sets which are usually tailor made, the efficiency of water pumps run in reverse are rather low due to poor hydrodynamic characteristics caused as a result of reversing the flow. A pump is specified for a range of heads and flow is dependent on head, while

a turbine has to be specifically designed for a particular head and flow conditions. Thus the hydrodynamics are further altered reducing the efficiency.

This invention describes method(s) of obtaining high efficiency from such units with minor or relatively inexpensive modifications, yet retaining the low cost advantage due to large scale manufacture. This may be done by replacing the runner, with one designed and made to suit the flow in turbine mode, at a very nominal additional cost. In relatively large sizes further improvements can be obtained by modifying or changing the volute chamber as well to yield better hydraulic characteristics. This invention can be equally applied to the pumps alone or to pump-motor sets.

This invention can have wide application in low cost village hydropower.

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