

水斗式水轮机喷嘴及水斗应力和振形研究

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关键词: 水斗式水轮机 喷嘴 斗叶 三维建模 应力计算

摘要: 为分析水斗式水轮机转轮断裂失效原因,应用UG软件对转轮和喷嘴建立三维造型,并利用ANSYS软件对运行的单个斗叶进行应力分析,确定了斗叶的应力分布,得到最高应力值点在刃口处,通过模态分析得到了水斗式水轮机转轮和喷嘴的自振频率和振形图,为多喷嘴水斗式水轮机转轮水斗的强度设计和喷嘴的振动研究提供了依据。With the aim to find out the reason for rupture and inefficiency of Pelton turbine runner, a 3-D model for the runner and nozzle of Pelton turbine was established by UG software. The stress analysis of the running single bucket was conducted on by ANSYS software, and stress distribution and maximum stress value point were determined. The natural frequency and oscillation shape of the runner and nozzle of Pelton turbine were obtained by model analysis. The results provide references for the bucket strength design and the nozzle oscillation research of multi-nozzle and multi-bucket turbine runner.

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