

灯泡体支撑件对贯流泵水力性能的影响 Influence of Supporting Shape on the Hydraulic Performance of Bulb Tubular Pumps

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关键词: 灯泡贯流泵 支撑件 数值模拟 装置效率

摘要: 灯泡体支撑件(包括进人孔和底部支承)是贯流泵装置内部重要的过流部件,本文采用CFD方法对贯流泵装置内部流场进行数值模拟,对不同支撑件形状进行了比较分析和优化,并与试验结果比较。结果表明,进人孔和底部支承的形状对泵装置的水力损失和水流流态的影响都比较明显,合理的支撑件形状可以改善流态、减少水流环量,提高泵装置效率。Bulb tubular pumps have small hydraulic loss and high pumping system efficiency, which especially suit to the low lift head, large discharge and long running time situation. Bulb supporting units which including manhole and bottom supporting are important flow-passage components of bulb tubular pump. The turbulent flow in a bulb tubular pump with different supporting shapes was simulated by CFD method. The results of the calculation indicated that the shape of supporting has a marked influence on hydraulic loss in the discharge passage and flow pattern. Therefore, reasonable shape of supporting can improve the turbulent flow pattern, reduce the circumference velocity and increase the pumping system efficiency.

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