Abstract

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Wells turbine for wave energy conversion: a review

In the past 20?years, the use of wave energy systems has significantly increased, generally depending on the oscillating water column concept. Wells turbine is one of the most efficient oscillating water column technologies. This article provides an d and a comprehensive account of the state-of-the-art research on Wells turbine. Hence, it draws a roadmap for the contemporary challenges, which may hinder future reliance on such systems in the renewable energy sector. In particular, the article is concerned with the research directions and methodologies, which aim at enhancing the performance and efficiency of Wells turbine. The article also provides a thorough discussion of the use of CFD for performance modeling and design optimization of Wells turbine. It is found that a numerical model using the CFD code can be employed successfully to calculate the performance characteristics of W-T as well as other experimental and analytical methods. The increase of research papers about CFD, especially in the last 5?years, indicates that there is a trend that considerably depends on the CFD method.