

## 해양 조류발전용 2블레이드 터빈의 성능해석

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### Performance Analysis on 2-Bladed Tidal Current Power Turbine

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Due to global warming, the need to secure an alternative resource has become more important nationally. Due to the high tidal range of up to 9.7m on the west coast of Korea, numerous tidal current projects are being planned and constructed. The rotor, which initially converts the energy, is a very important component because it affects the efficiency of the entire system, and its performance is determined by various design variables. In this paper, a design guideline of current generating HAT rotor and acceptable field rotor in offshore environment is proposed. To design HAT rotor model, wind mill rotor design principles and turbine theories were applied based on a field HAT rotor experimental data. To verify the compatibility of the rotor design method and to analyze the properties of design factors, 3D CFD model was designed and analysed by ANSYS CFX. The analysis results and findings are summarized in the paper.

**Key words** : TCP: Tidal current power(조류발전), Renewable energy(신재생에너지), HAT: Horizontal axis turbine(수평축 터빈), Blade(블레이드), CFD: Computational fluid dynamics(전산유체역학)

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## 시화조력발전소 방류 수문을 활용한 조류발전이 조력발전에 미치는 영향

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### Effect of tidal current turbine using the discharge gate of Siwha tidal power plant on the tidal power generating

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The tidal current power is the power plant by installing the turbine or rotor where the tidal speed is fast. This system converting the horizontal movement to rotating energy. Tidal power turbine is needed for the dam to utilize the pressure difference. However, tidal current power using the only flow. The tidal current power was evaluated as the impact on the marine environment surrounding was less and the development of eco-friendly way. In this article, we calculated the effect of tidal current turbine on the tidal power generating by mean of CFD. With these calculated results, we checked the possibility of tidal current power using tidal power plant the discharge gate.

**Key words** : tidal current power(조류발전), tidal power plant(조력발전소), discharge gate(방류 수문), Computational Fluid Dynamics CFD(전산유체역학)

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