

해양 조류발전단지 타당성 조사시 발전용량 산출방법에 관한 연구

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Study on Extractable power capacity of Tidal current power farm in the Feasibility investigation

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Due to global warming, the need to secure an alternative resource has become the international issue. Not like other renewable energy sources, TCP is the high reliable and predictable and continuous energy source as the current pattern and speed can be predicted throughout the year.

Having very strong tidal current speeds, there are many suitable site for the application of TCP (Tidal Current Power) on the west and south coastal region in Korea. The maximum current speed in the south is recorded up to 6.5m/s. Due to the high tidal current speed on the west coast of Korea, numerous tidal current projects are being planned. To extract a significant quantity of power, a tidal current farm with number of devices is required in the ocean.

However, it is important to estimate the potential quantity of energy in the area. Also the realistic quantity that can be extracted is to be investigated. Based on the estimated energy production considering the number of devices and the interactional effects, system type, the water depth and etc., the cost of the development and the benefit from SMP can be estimated. The feasibility study for the 200MW tidal in Incheon, Korea has been performed recently. Based on the actual feasibility study, the procedure and the key points for the application of tidal current power farm are introduced in the paper.

Key words : Tidal current power(조류 발전), Feasibility investigation(타당성 조사), Capacity factor(이용률), Annual energy production(연간 발전량), Availability(가동률)

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CFD를 사용한 인천대교 충돌방지공 주변의 조류 흐름장 해석

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Analysis of Tidal Stream around Ship Impact Protection of Incheon Bridge Using CFD

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Recently, the massive offshore bridges in a ship passage have been constructed on the sea. Therefore, the ship impact protection for the bridge-piers are installed to consider the possibility of vessel collision danger. Due to the ship impact protection, the flow-field characteristics are changed in comparison with the condition without the ship impact protection. Especially, the fluid velocity between the pier and the ship impact protection is possible to increase due to the contraction of the cross sectional area of flow. In this study, the tidal energy magnitude around the ship impact protection of Incheon bridge is assessed by simulating the flow-field by using FLOW-3D software.

Key words : ship impact protection(충돌방지공), CFD(CFD), Tidal stream(조류)

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