

절대유량법(ASFM)을 이용한 저낙차·카플란 수차효율측정 적용사례 연구

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Case study of a low head & kaplan turbine efficiency measurement using ASFM

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This study concerns a low head and kaplan turbine efficiency measurement using the acoustic scintillation flow meter(ASFM). The ASFM is one of absolute discharge measurement methods because it measures velocity-area of discharge with couples of transducers.

This study shows that the highest efficiency of turbine is 87.7% and the efficiency is 85.8% in the rated output(600kW). The test result is reliable because the efficiency trend from this test is similar to the result of index test conducted in 1986.

In this paper, the principle, measurement methods, application and test procedures of the test are discussed.

Key words : ASFM, kaplan, turbine, acoustic, scintillation, absolute, discharge, efficiency, index

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디퓨저를 이용한 튜블러형 상반전 수차의 CFD 성능해석

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CFD Analysis of a Counter-rotating Tubular Type Micro-Turbine with Diffuser

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Micro hydraulic turbines take a growing interest because of its small and simple structure as well as high possibility of applying to micro and small hydropower resources. The differential pressure exiting within the city water pipelines can be used efficiently to generate electricity like the energy generated through gravitational potential energy in dams. In order to reduce water pressure at the inlet of water cleaning centers, pressure reducing valves are used widely. Therefore, pressure energy is wasted. Instead of using the pressure reduction valve, a micro counter-rotating hydraulic turbine can be replaced to get energy caused by the large differential pressure found in the city water pipelines. In this study, in order to acquire design data of counter-rotating tubular type micro-turbine, output power, head, and efficiency characteristics due to the diffuser.

Key words : small hydropower(소수력), micro-turbine(마이크로터빈), counter-rotating(상반전), output power(출력), efficiency(효율)

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