하천수를 이용하는 열펌프시스템의 냉방성능평가

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Cooling Performance Test of Heat Pump System Using River as a Heat Sink

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Key Words: Unused Energy(미활용 에너지), Temperature Difference Energy(온도차 에너지), Heat Pump(열펌프), Performance Test(성능평가)

Abstract : It is required that various kinds of unused energy from urban area and industrial sectors be recovered and re-utilized from the viewpoints of energy saving and environmental conservation. Since most of this heat demand is low temperature below 60℃, the utilization of "unused energy" is surely one of very effective measures to both environmental preservation and energy conservation. "Unused energy" is implicated as "temperature difference energy" available from water-heat sources for heat pump including river, sewage and sea. The present study has been conducted to develop a heat pump system using river as a heat sink.

유동가시화를 통한 버터플라이 밸브의 유동특성에 관한 연구

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The Study on Flow Characteristics of Butterfly Valve using Flow Visualization

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Key Words: Flow Visualization(유동 가시화), Butterfly Valve(버터플라이 밸브)

Abstract : Flow visualization of butterfly valve is tested for four types(15°, 30°, 45° and 90°) of valve opening angle. The inner flow characteristics of valve are studied. The flow variation was measured using a high speed camera which takes 500 frames per second with 1024 x 1024 pixels. These captured images were used for calculation to analyze two dimensional flow velocity of the valve. The smaller opening angle, the more increasing the differential pressure of a butterfly valve. Therefore, we know that the complex flow is occurred by increasing the differential pressure. And it is found that the flowing backward is more increased according to the increase of the opening angle of a butterfly valve. However, its flow pattern is similar to a simple pipe flow when the opening angle is 90°.