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Preliminary Study on Using of Thermal Energy from Effluent Water for the SBR Process of RO

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Abstract : SBR (Sequencing Batch Reactor) process is usually applied to membrane water treatment plants to treat its concentrated wastewater. The role of SBR process is to remove COD (Chemical Oxygen Demand) and NH3 from wastewater before discharging it outside of the water treatment plant using microorganism. Microorganism's nitrification capability is influenced by water temperature because the nitrification rate of the concentrated wastewater becomes 'zero' as water temperature approach 0℃. Heating system is necessary to operate SBR in winter season even though the operating cost increase sharply. The operating cost of SBR at 'D' RO water treatment plant in Korea was 51.8 times higher in winter (October to March) compare to summer (April to September) season in 2014. Otherwise the effluent water temperature maintained around 8℃ constantly in winter. This study focuses on application heat pump system to recover the thermal energy from the effluent water of 'D' RO plant so that the operating cost will be reduced.

Keywords : water treatment, water thermal energy, energy saving, RO, SBR
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