

Study of steam parameters on the performance of a TVC-MED desalination plant

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ABSTRACT

For a dual-purpose power plant with low temperature multi-effect distillation (LT-MED) desalination plant, the heating steam is normally extracted from steam turbine with pressure much higher than needed. In order to use the steam energy more efficiently, the thermal vapor compressor (TVC) is normally adopted to form the vapor recirculation utilization. A mathematical model for a multi-effect desalination with thermal vapor compression (MED-TVC) desalination plant was developed and the model validity was examined by comparing with a commercial MED-TVC plant which showed good results in this paper. It also presents the performance calculation of the MED-TVC desalination system with different steam pressures and temperatures. With higher steam pressure, the gained output ratio (GOR) of the desalination plant could get higher values. The recirculation position of vapor in a multi-effect distillation system has a great effect on the GOR as well.

Keywords: Desalination; Multi-effect distillation; Thermal vapor compressor; Gained output ratio

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