

## Effects of design and operation variables for multiple-effects distillation plant for seawater desalination

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The multiple-effect distillation (MED) process is the oldest desalination method and is very efficient thermodynamically. The steam economy of MED plants is proportional to the number of effects. There are three types MED processes. Horizontal tube arrangement, vertical tube arrangement, vertically stacked tube bundles. Horizontal MED plants have been operating successfully for almost three decades. Thus, in this study, the horizontal MED plant is modeled and simulated using the ASPEN PLUS program at steady state. Through the ASPEN PLUS simulation, it was obtained optimal operation conditions. This process simulation has been designed to operate at three distinct maximum top brine temperatures (TBT): at about 71.6 °C (160.88°F), at 85.3 °C (185.54°F) and 90.3 °C (194.54°F) with 8 effects plants. For comparisons between the three different operating conditions, maximum heat recovery is assumed by setting the same condition for feed and products. The temperature drop per effect is set in the range of 2.1°C ~2.3°C. This study discuss operating temperature, gained output ratio (GOR) or performance ratio, process recovery and other available information.