Mechanical Vapor Compression (MVC)

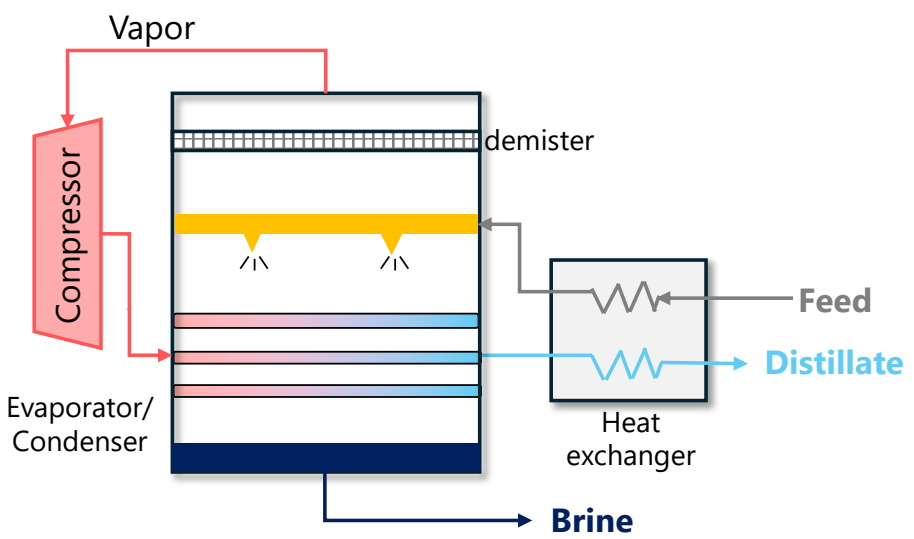
Process Description

MVC evaporation is an established thermal desalination process that separates water from dissolved salts through evaporation and condensation.

In MVC systems, saline feedwater is heated, causing a portion of the water to evaporate while salts remain in the concentrated brine. The generated vapor is mechanically compressed to increase its temperature and pressure, then condensed on a heat exchange surface, releasing latent heat that is reused to drive further evaporation. This continuous heat recycling reduces external energy requirements while producing high-quality distilled water and a concentrated brine stream.

MVC is typically applied for the treatment and concentration of high-salinity brines for minimum liquid discharge applications due to its ability to achieve high water recovery while producing high-quality distillate. The pretreatment requirement for MVC feedwater is typically less extensive as compared to membrane desalination processes.

Process Schematic



Publications

Advanced water treatment technologies for produced water (Link)

For further information, please contact us at email: GWSC@conocophillips.com