Ultra-High Pressure Reverse Osmosis (UHPRO)

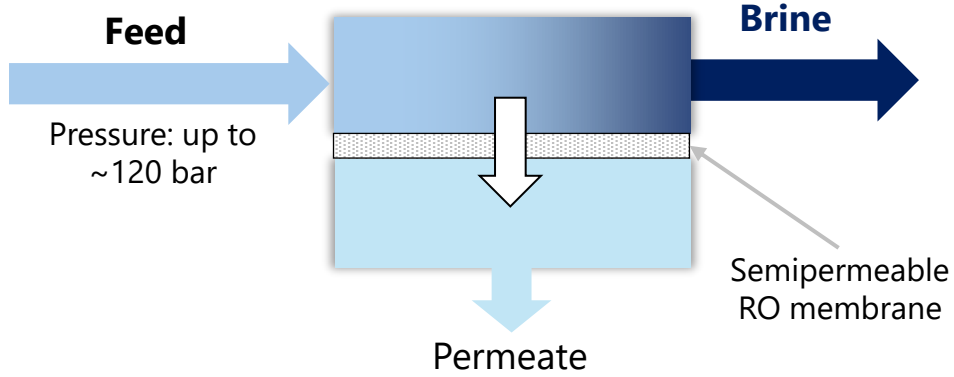
Process Description

UHPRO is an advanced reverse osmosis (RO) process that extends the application of conventional RO to higher-salinity streams through operation at pressures of up to ~120 bar.

Similar to conventional RO, hydraulic pressure is applied to overcome osmotic pressure and drive water through a semi-permeable membrane, producing a lower-salinity permeate while concentrating the remaining brine. UHPRO can treat feed salinities of up to ~130 g/L, enabling desalination of high-salinities brines such as produced water beyond the practical operating limits of conventional RO.

As a high-recovery desalination process, UHPRO can desalinate hypersaline brines with lower specific energy consumption than thermal evaporators. Effective pretreatment is key to minimize fouling and ensure reliable long-term performance.

Process Schematic



Publications

Osmotically assisted reverse osmosis: assessing pretreatment on hypersaline produced water (Link)

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