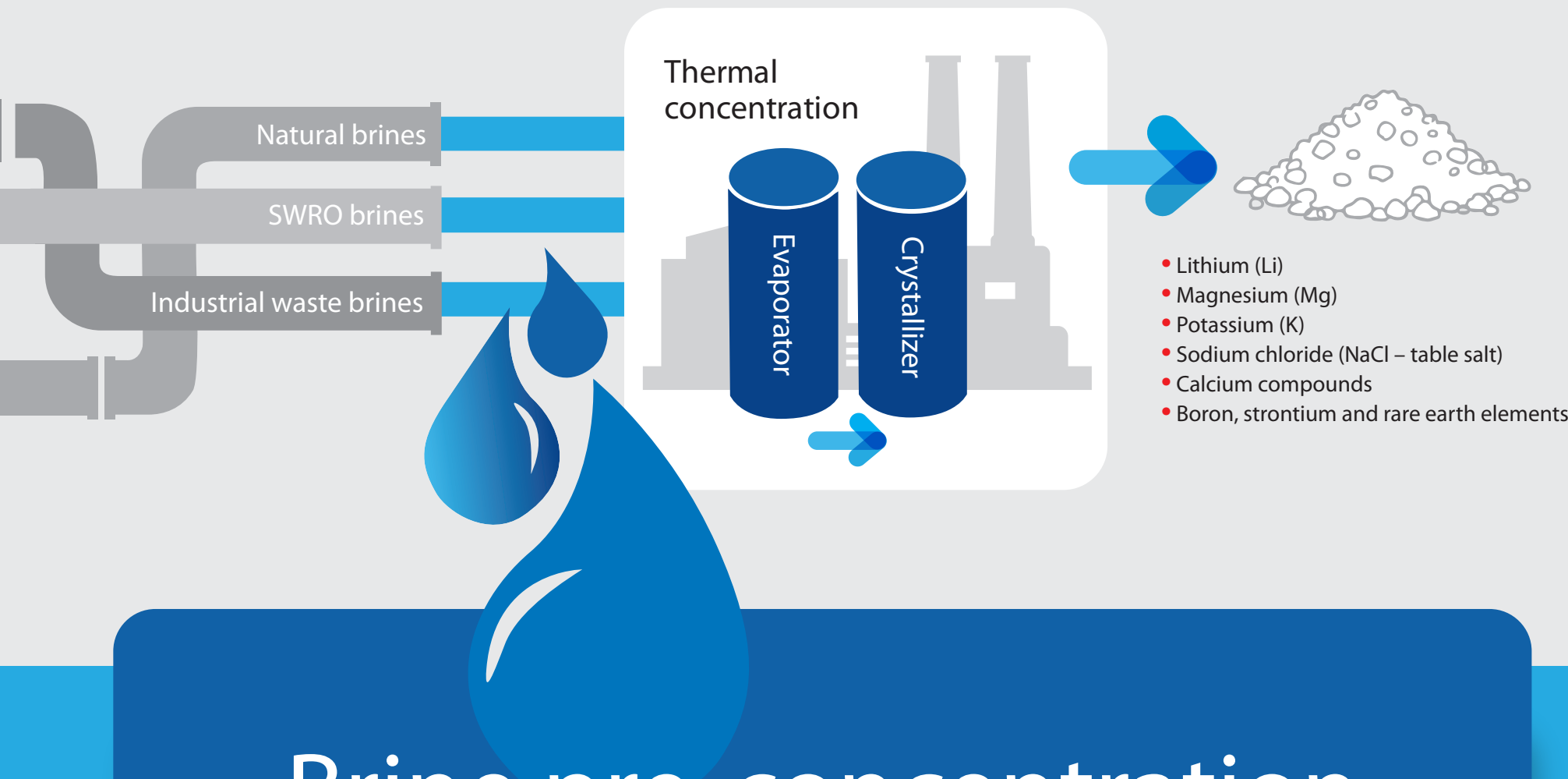


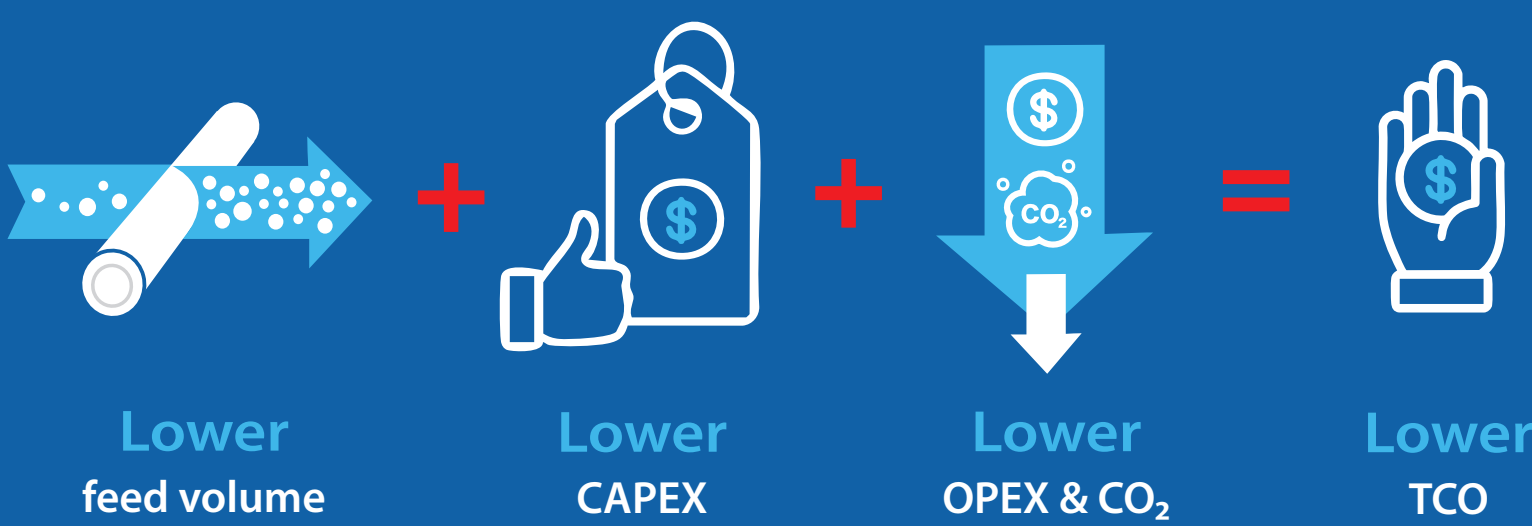
Smart brine mining & valorization start with **RO pre-concentration**

Brine mining – also known as brine valorization – uses natural or industrial brines as feedstocks for mineral recovery. Compared to surface mining, it can cause far less environmental disruption; compared to disposal, it turns waste into value.

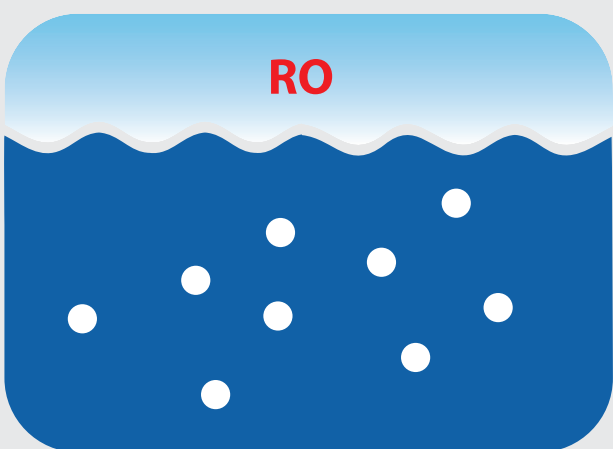


Brine pre-concentration **cuts thermal feed volume**

Thermal evaporators & crystallizers are key to high-purity mineral recovery but costly to build and run. Adding high-pressure RO pre-concentration reduces their workload and thereby their size, complexity, and costs – and brine mining's Total Cost of Ownership:

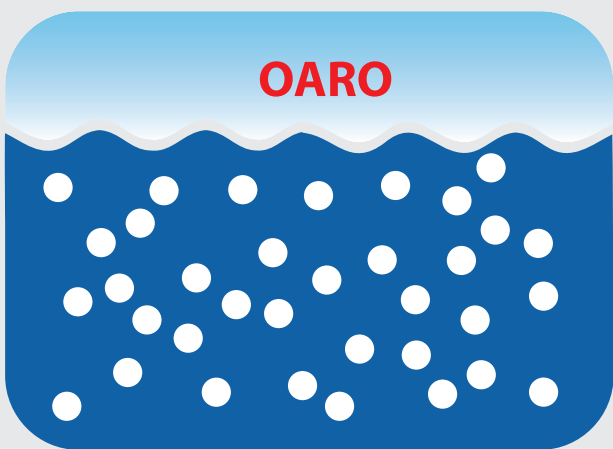


High-pressure membrane systems concentrate brines effectively



Reverse Osmosis

A proven technology widely used in SWRO and water reuse systems

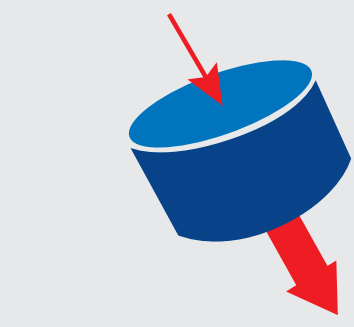


Osmotically Assisted Reverse Osmosis

An emerging technology that pushes concentration even further

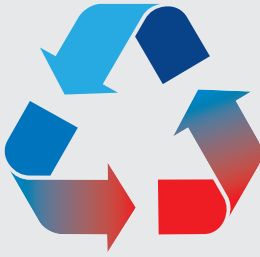
Designing RO systems for **maximum energy efficiency**

Membranes matter – but energy-efficient RO also depends on the right pumps, energy recovery devices, and design:



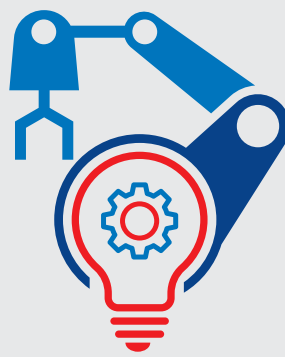
1. PD pumps

Positive displacement high-pressure pumps deliver up to 20% higher efficiency than centrifugal pumps



2. Isobaric ERDs

Recover up to 98% of reject energy, cutting overall power use by 40–60%



3. Smart engineering

Drives, sensors and controls optimize flow, boost automation, and sustain peak efficiency

Danfoss technologies for **brine mining and valorization**

Danfoss technologies enable efficient, high-reliability brine mining systems across all RO and OARO stages:



APP high-pressure pumps



iSave® ERDs



MPE 70 ERDs

With proven, worldwide performance in SWRO, ZLD, and industrial water reuse, Danfoss components help minimize OPEX and improve system uptime in demanding environments.

Ready to power the future of brine mining?

Explore how Danfoss can support your brine mining or valorization initiative with efficient, reliable technologies tailored to high-pressure RO systems.

- [Learn why Hyrec chose Danfoss pumps & ERDs for the world's first large-scale OARO brine mining plant](#)
- [Read more about the Danfoss pump & ERD platform for energy-efficient brine mining](#)