FRALOCK®
Leading the Way in Advanced Materials Solutions

CERAMIC SOLUTIONS FOR DESALINATION APPLICATIONS

The processing of desalinating seawater requires significant energy input. Reducing the overall energy input not only saves costs, but also decreases the use of fossil fuels and helps mitigate negative climate effects. Seawater Reverse Osmosis (SWRO) desalination plant operators benefit by utilizing equipment and systems that recover energy in their facilities.

Pressure Exchangers and Turbo Charger Pumping Systems

Systems that recover energy such as pressure exchangers using isobaric chambers or turbo charger pumping systems are widely used in SWRO plants to achieve:

- Lower energy costs
- Increased overall efficiency
- Sustainable desalination processes

These systems require a range of parts such as bearings that can withstand corrosion caused by high pressure flow of seawater and sand. The materials used for these parts can greatly influence component lifespan and operational costs. Components made with alumina ceramic provide superior performance over those made from metals.

FRALOCK CERAMIC COMPONENT SOLUTIONS

Fralock offers high purity alumina ceramic components used in pressure exchange and turbo charger systems that provide significant advantages over using bronze or stainless steel components. Fluid pressure exchangers fabricated with high purity alumina ceramics **reduce the energy requirement** for desalinating water **by 60%** compared with those using duplex stainless-steel. Ceramics also provide improved freshwater purity, enhancing public safety and health benefits.

Fralock fabricates ceramic components with high-precision dimensional accuracy, producing flat, smooth surfaces that are critical for fluid bearings. We offer world-class grinding capabilities, including fabrication of 50mm to 350mm diameter flat parts with a tolerance ± 5 µm.

We continuously develop our materials for enhanced wear, cavitation, and debris resistance. Our next generation of high-purity and high-density alumina contains about one-tenth of the material impurities than other 99.8% alumina materials.

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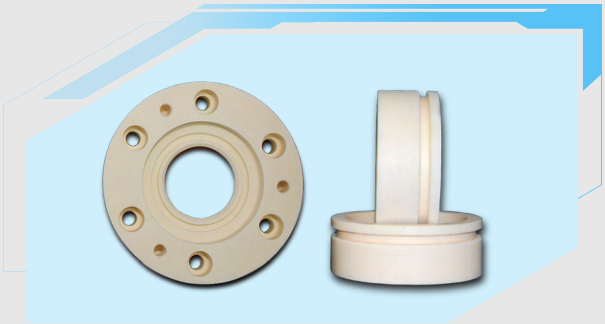
SUPERIOR PERFORMANCE WITH FRALOCK CERAMICS

Fralock's high-purity ceramic components are effective not only in fluid pressure exchangers and turbo charger systems, but also in other system pumps such as centrifugal and piston pumps. Their superior performance over metals eliminates rust and extends product life in the following way:

- Corrosion Resistance
- Abrasion and Debris Resistance
- High Hardness
- Quiet Operation
- Chemical Stability
- Thermal Stability
- Dimensional Stability
- Reduced Fouling – the smooth and non-reactive surface of alumina ceramics minimizes fouling, reducing the need for frequent cleaning and maintenance. High-purity Alumina resists HCl, enabling the removal of biological matter with periodic flushing, contributing to increased operational efficiency and extended service life.
- Optimized Fluid Dynamics within the pressure exchanger – smooth and wear-resistant surfaces ensure efficient fluid flow, reducing energy consumption, operational noise, and minimizing the impact of erosion
- Reduced Downtime and Maintenance Costs – corrosion, abrasion, and chemical degradation translates into downtime and maintenance costs, which are all reduced with ceramic components
- Ceramics can be manufactured inexpensively, making them cost competitive in comparison to titanium alloys and duplex stainless steels like AL6XN

WHY CONSIDER FRALOCK?



Fralock has built its reputation as a problem solver by leveraging our expertise in material development and selection, precision manufacturing, and close collaboration with our customers to provide tailored solutions that give you a competitive edge

Get in touch with us to discuss your project

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800.372.5625 • Sales@fralock.com