Beverage Solutions

High-Purity Processing for Enhanced Clarity and Taste



KOVALUS
Separation Solutions™

The KSS Advantage

KOVALUS SEPARATION SOLUTIONS™ (KSS) is transforming the landscape of separations by leveraging synergistic technologies such as membrane filtration, ion exchange, evaporators, and dryers. Our solutions are tailored to improving product quality, increasing process efficiency, and driving down costs in dairy, food, beverage, life science, and industrial markets around the world.

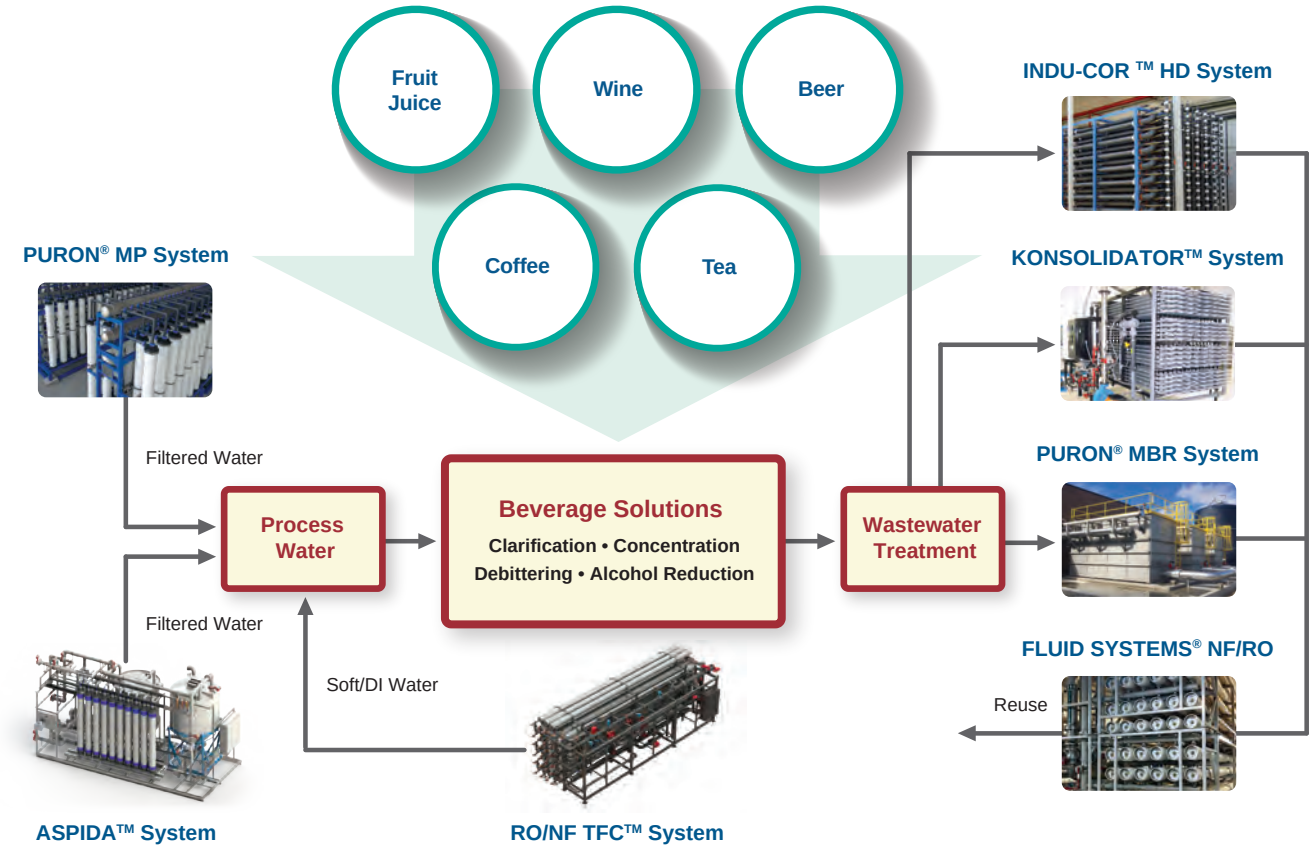
Advanced Solutions for Every Beverage Product

With decades of experience in the global beverage market, KSS employs advanced membrane filtration along with RELCO® evaporators and dryers to meet the production needs of beverage products such as fruit juice, wine, beer, coffee, and tea. Our integrated solutions are applied to concentrate, clarify, and purify beverages to attain the highest product quality while minimizing product loss, treating byproducts, lowering costs, and promoting sustainable operations.

Piloting & Testing

KSS works with customers to develop best-fit solutions for their unique separation challenges. We offer extensive research and development, bench-scale testing, and piloting capabilities to ensure an optimal process design.

- **Multi-Purpose Test Unit:** Compact, self-contained membrane test unit compatible with spiral, hollow fiber, tubular, and ceramic membrane configurations for small volume testing.
- **Single-Stage Dryer:** Small-scale (2 – 5 kg of water evaporation) and larger-scale (25 – 50 kg of water evaporation) available for rent or purchase. The larger unit comes pre-assembled and delivered in a container for quick and easy commissioning and has a multi-stage option and baghouse option.



Major Applications

Fruit Juice & Citrus

From processing golden, haze-free apple juice to ensuring excellent color passage in dark juices, KSS offers juice clarification technology for all juices while providing significantly increased yields of higher-quality juice with reduced maintenance requirements.

Several of the world's largest juice processors turn to KSS to help recover fruit solids and reduce bitterness in their juices. We have perfected a process that combines membrane separation and polymeric adsorption to remove limonin, hesperidin, and polyphenols from prime orange, grapefruit, tangerine, lemon, and lime juices, providing improved juice quality, consistency, and yield.

- **Clarification:** Our SUPER-COR® and SUPER-G® tubular membranes easily remove suspended solids, colloidal haze particles, microorganisms, and undesirable proteins, leaving behind a crystal clear, flavorful juice. Processors can achieve filtered juice yields of 96-99%, producing more juice per bushel and higher profits per gallon without the need for diatomaceous earth (DE).
- **Concentration:** For low energy, high pressure color concentration of fruit juice, we offer a line of Sani-Pro® sanitary spiral-wound elements. Our membranes are designed to reduce operating costs, increase productivity, and decrease contamination risk while facilitating the cleaning process. The Sani-Pro membrane efficiently concentrates while maintaining aroma, taste, and color of fruit juice.
- **Debittering:** Through our membrane and ion exchange technology, we can remove limonin and flavonoid compounds from citrus juice to achieve a stabilized flavor in the final juice product.



Major Applications

Coffee & Tea

As the market landscape for coffee and tea evolves with the growing popularity of ready-to-drink products, producers in both large and small operations rely on KSS solutions to achieve desired product quality. KSS employs crossflow filtration membranes to preserve the taste, color, and aroma of coffee and tea products through high-quality clarification and concentration.

- **Clarification:** Our ROMICON® hollow fiber cartridges provide excellent clarity and enhanced haze stability. Designed to perform in low pH environments, this product maintains stable production and easy cleaning.
- **Concentration:** The Sani-Pro® spiral membrane ensures consistent product quality through reliable and gentle operation. Available in a variety of configurations and designed to meet exact specifications, the Sani-Pro product provides an effective and unique solution for coffee & tea producers.



Wine & Beer

KSS is a trendsetter in putting membranes to use in the wine industry, working closely with winemakers to enhance the organoleptic and aesthetic characteristics of their products. Using KSS crossflow filtration membranes allows for excellent throughput and eliminates the need for DE or filter sheets.

Our Wine-COR systems, built on our WINEFILTER™ hollow fiber cartridges, play an integral role in the meticulous craft of winemaking by producing high-quality, clarified, and stabilized wines full of aromas and rich in color. These scalable systems are easily installed and maintained and produce clear, bottle-ready wine. For optimized operation, KSS also offers the Lees-COR™ tubular system to squeeze every last bit of wine out of the retentate from wine filtration, increasing product yield and profitability.

KSS provides excellent membrane-based clarification of both wine and beer, as well as alcohol reduction capabilities for alcohol-reduced and alcohol-free beverages, through our Sani-Pro spiral membranes.

Advanced Separation Technology

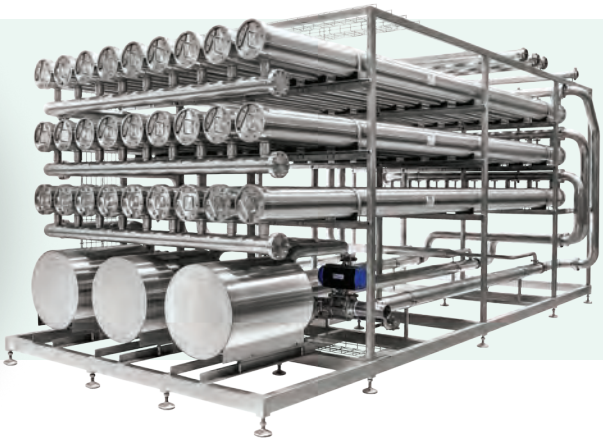
Sani-Pro Sanitary Elements Meet Industry Standards

Sani-Pro® elements combine cutting-edge construction techniques and optimized subcomponents to provide the most advanced crossflow filtration membranes available. These membranes are designed to improve energy efficiency, reduce operating cost, increase productivity, and decrease contamination risk. Sani-Pro elements tolerate higher temperatures and harsh chemical cleaning, extending their operating life in demanding food and beverage membrane processing applications. Available in multiple configurations, Sani-Pro elements are constructed to meet the exact specifications of your operation.

Benefits

- High productivity
- Energy efficient operation
- Reduced operating costs and water consumption
- Advanced remote monitoring and control options
- Unparalleled customer service and support through KSS ASSIST™
- Long operating life
- Robust sanitary construction





RELCO Evaporators for Concentration

Together with RELCO®, we offer an array of evaporator systems to concentrate juice, coffee, and tea beverage products. Our evaporator systems range from falling film, MVR, and TVR evaporators that are custom designed to meet customers' exact process specifications. They are available in different configurations and can process a range of flowrates for stand-alone processing or be integrated with drying or other functions.



Benefits

- A variety of configurations to meet specific requirements
- Custom systems available for a range of total solids concentrations
- Suitable for stand-alone processing or integrated with drying or other functions
- Operate with high efficiency and produce stable final concentrations

Advanced Separation Technology

RELCO Dryers for Powdered Products

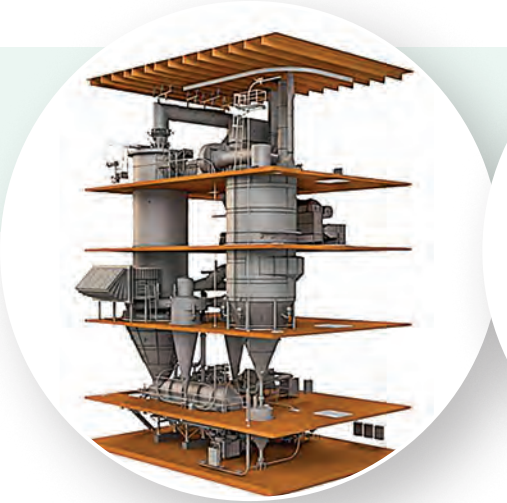
RELCO® drying technology produces high-quality, non-caking, non-hygroscopic, edible powders. Our systems are versatile and custom-designed to meet exact process specifications. We offer drying systems to produce high-quality products such as powdered juice and instant coffee.

Benefits

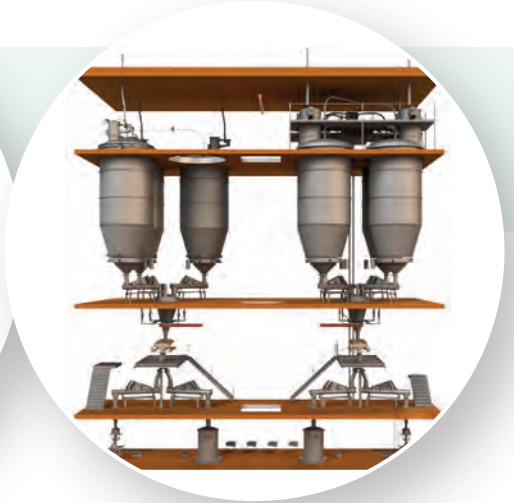
- A variety of dryer types and configurations to meet specific requirements
- Customizable to meet specific quality standards and product properties
- Low capital and operating costs
- Designed with operator safety and feasibility in mind

Applications

- Citric products: Pectin powder, acerola powder, concentration of orange, grape, lemon, apples, pineapple, and other tropical juices
- Coffee & tea: Concentrate and powder
- Brewery: Yeast, malt extract
- Ready-to-drink beverage products: Soy powder, dairy whey protein concentrate powders



RELCO DRYER



RELCO POWDER HANDLING

Powder Handling & Packaging Equipment

For a complete processing solution, we provide conveying systems, packaging systems, bulk bag fillers, powder gassing and blending equipment to fulfill food processing needs.

- High-rate transfer of fragile powders by pressure or vacuum
- Hygienic semi-automatic or automatic powder packaging lines
- Stable and accurate bag filling, simplified bag transport, and robust bag unloading
- Complete mixing, blending, and gassing of powders

Water & Wastewater Solutions

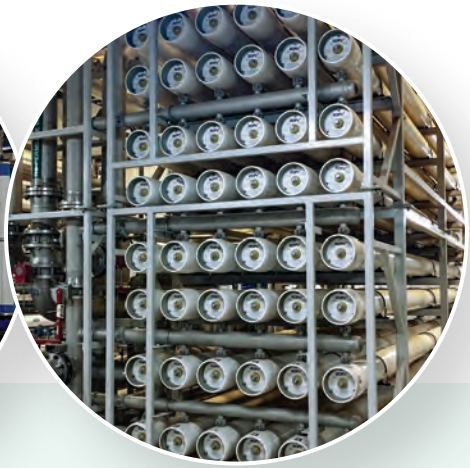
PURON MP for Water Treatment

Achieve the highest water quality standards and regulations for your process water with our innovative hollow fiber ultrafiltration technology. Easily installed and serviced, PURON® MP systems are designed for longevity and performance. These water and wastewater treatment systems offer robust engineering and reliable operation at low cost of ownership and in a small footprint.

- Virtually unbreakable fiber
- Optimal pore size distribution
- Efficient air scouring
- Single-potting design
- Low maintenance



PURON MP



FLUID SYSTEMS

FLUID SYSTEMS Series for High Purity Water

FLUID SYSTEMS® is a key component of KSS, complementing the MBR, MF and UF technologies to provide municipal and industrial clients with broad expertise in filtration and purification processes. Our RO and NF products are available in standard 8” FRP hard overwrap configuration (8040) in standard and high area construction. All products have drinking water certification under NSF/ANSI Standards 61 and 372. We offer a wide range of reverse osmosis (RO) and nanofiltration (NF) products to serve in potable water and industrial water applications.

INDU-COR HD for Wastewater Treatment

The INDU-COR™ HD external MBR features tubular crossflow membranes for optimized system performance and footprint. The 8mm PVDF membrane is designed with a higher packing density of up to 300%, enabling efficient and economical wastewater treatment to remove emulsified oils, grease, heavy metals, and suspended solids in a variety of wastewater treatment applications.



INDU-COR HD



KOVALUS SEPARATION SOLUTIONS

KOVALUS SEPARATION SOLUTIONS™ (KSS) is a global leader in separation technologies. With best-in-class domain expertise, technologies and systems, KSS is uniquely positioned to help customers purify and recover valuable process streams and achieve sustainability goals across food and beverage, life science, and general industrial markets.

Services & Support

After-Sales Services & Maintenance Programs • SepTrac™ Smart System





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KOVALUS
Separation Solutions™

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