KSS Capabilities

Your Partner for All Your Separation Needs



KOVALUS
Separation Solutions™

Who We Are

KOVALUS SEPARATION SOLUTIONS™ (KSS) is a global leader in separation technologies for a variety of markets. Getting our start as a membrane manufacturer in 1963, KSS has driven technological innovation by developing a variety of products and systems to tackle purification, concentration, product recovery, reuse, and water and wastewater treatment challenges. With our recently expanded capabilities, our solutions offering now includes ion exchange, gas-liquid contacting, and thermal processing equipment for a holistic approach to solving customers' separation challenges.

Our Vision

Our vision at KSS is to become the preferred partner for separation solutions by driving value creation and sustainability in the food and beverage, life science, and industrial markets.

We are committed to creating transformative solutions through collaborative innovation, project execution, and overall customer satisfaction.



Our Approach to Collaborative Innovation

EARLY-STAGE DEVELOPMENT

- Understand challenge & identify desired outcomes
- Evaluation of separation properties & bench testing
- Access to Process and R&D experts

FIELD TESTING

- Pilot testing
- Process optimization
- Full scale costing and design recommendation

FULL-SCALE EXECUTION

- Project management & execution of capital projects
- Construction and installation
- Commissioning and operator training

LONG-TERM SUPPORT

- Complete after-sales services
- System troubleshooting
- Performance optimization through remote digital monitoring program

The KSS Advantage

Value-Creation

Effective separation processes improve product purity, concentration, and overall quality. Our technologies and process expertise allow customers to achieve a superior product value by minimizing costs and optimizing efficiencies.

Sustainability

Our solutions center around sustainable processes that promote environmental protection. KSS systems are designed to operate with lower energy requirements while recovering valuable process chemicals for reuse, recycling treated wastewater, or reducing contaminants in discharge streams.

Collaborative Innovation

We take a collaborative approach with our customers, combining our deep applications knowledge with their unique process expertise to develop the most transformative and value-added solutions. Through this approach, and our wide selection of separation technology, KSS is best positioned to offer customers a complete package solution eliminating the need for multiple vendors.

Project Execution and Customer Satisfaction

Our team of highly experienced engineers and technology experts work closely with customers throughout the development, on-site testing, and full-scale implementation project stages. We build long-lasting relationships through our continued support and after-sales services, ensuring maximum benefits.

State-of-the-Art Manufacturing Facilities

KSS operates several large-scale manufacturing facilities around the world. Our facilities are equipped with cutting-edge machinery, automation, and technology to fabricate a variety of separation products and systems for sanitary and industrial applications. Our highly skilled and experienced staff take great pride in their commitment to delivering high quality products on time. We are an ISO 9001 certified company, following strict safety, environmental, and quality-control standards.

Integrated Technologies and Synergistic Solutions

Our solutions are built on separation technologies that are complementary to one another and offer opportunities of integration. At KSS we recognize that separation challenges vary and cannot be solved with one-size-fits-all solutions. We own and manufacture all of our products and work with technology experts in cross-functional groups to develop best-fit, custom solutions for a variety of market applications.

Performance Optimization Through Digital Analytics

KSS is committed to performance optimization after system installation and commissioning. Through advanced data collection and analytical software, we enable customers to monitor their system performance remotely, troubleshoot, easily request replacement parts, and quickly get in touch with KSS service representatives. Our digital solution enhances return on investments and helps promote system efficiency and longevity.

Industry-Leading Separation Technologies



Membrane Filtration

of Suspended and Dissolved Solids

We offer an extensive line of membrane products and systems ranging in a variety of chemistries, configurations, and pore sizes. KSS membranes are employed in a variety of applications from the concentration of high-value food and beverage products and the recovery of electrocoat paint solids, to process water conditioning and wastewater treatment in municipal and industrial settings. Our industry-leading selection of membranes are backed by decades of research and development and are trusted by operators around the world.



Ion Exchange Separation

of Metals and Chemicals Based on Charge Differences

Our proprietary fine-mesh ion exchange resin technology offers a leading alternative to conventional ion exchange technology. The systems operate using an innovative reciprocating flow process to purify industrial process streams while recovering valuable resources. With a reduced footprint and greater efficiency, KSS ion exchange systems provide significant performance improvements and economic benefits.



Biogas Purification

Using Gas-Liquid Contacting

For simple, efficient, and reliable hydrogen sulfide removal from biogas or sour gas, KSS provides a patented gas-liquid contactor system to treat streams from anaerobic digesters, landfills, or oil processing plants. This system reduces sulfur dioxide emissions, equipment corrosion, and fouling while improving operational health and safety conditions and the ability to recover energy.



Thermal Separation

Through Evaporation and Drying

Through evaporation and drying technology, KSS provides additional methods of concentration and purification of high-value products. Our offering includes MVR, TVR, and crystallizing evaporators and timing belt, airlift, wide body, and tall form bustle dryers. These cutting-edge systems are designed for stand-alone processing or to be integrated as part of a larger process. Operating with safety and efficiency in mind, our thermal separation technology offers customers a robust solution for a variety of applications.

Services & Support

SepTrac™ Smart System

The SepTrac Smart System links to any KSS system to gather live data, send notifications and alerts, store documentation and influent logs, and provide an easy point of access to our dedicated customer service teams. Offered as standard and premium versions, the program is designed to save operators time and allow for faster decision making.



Features & Benefits

- Remotely monitor system performance through live data
- Obtain an updated HMI without third-party software
- Receive performance alerts and part replacement notifications
- Optimize system performance based on real time data and predictive analytics
- Consolidate documents and data logs
- View after-sales service contract details and reports
- Quickly request replacement parts, track part installations or current orders

After-Sales Services

For continued support, KSS provides customers with after-sales services to extend product lifetime, offer remote and in-person troubleshooting and diagnostics, and provide replacement parts and components. Our services are offered through packaged programs, such as KSS ASSIST™ or RELCO® after-market services, and include:



Benefits

- Site visits by KSS personnel for system assessments, maintenance, and operator training
- Data monitoring and performance reporting to promote efficiency improvements
- Non-dye inspections and repairs for food and beverage technologies
- Easy order placement for replacement parts and components
- Equipment upgrades or system expansion

Chemicals & Ion Exchange Resins

To ensure that customers are capitalizing on their separation solution, KSS offers KOVKLEEN™ cleaning chemicals and KOVKLEEN antiscalant products to clean and protect membrane products and effectively extend their operating life. We also offer replacement resin for our ion exchange systems to keep systems running and functioning properly.

Market-Based Solutions

Food • Beverage • Dairy • Life Science Markets



Food

- Clarification, concentration, demineralization, and drying of animal and plant-based proteins, sugars, starches, fermentation products, and nutraceuticals
- Process water conditioning
- Wastewater treatment & reuse



Beverage

- Clarification and alcohol reduction of wine and beer
- Clarification, concentration, and debittering of fruit juices
- Clarification and concentration of coffee and tea
- Process water conditioning
- Wastewater treatment & reuse



Dairy

- Clarification, concentration, demineralization, drying of whey protein, milk, and cheese products
- Concentration, demineralization, and drying of lactose and permeate
- Powder handling and packaging for whey protein, milk, cheese, lactose, and permeate products
- Recovery of caustic used for equipment cleaning
- Process water conditioning
- Wastewater treatment & reuse



Life Science

- Endotoxin removal from process water and pharmaceutical products
- Concentration of human blood products
- Clarification and concentration for vaccine production
- Water purification and polishing for pharmaceutical-grade water.

Industrial Markets



General Industrial

- Softening and sulfate removal
- Heavy metal removal
- Amine purification
- Acid purification and metal recovery for metal finishing operations
- Latex removal from wastewater
- Concentration of colloidal silica
- Paint, dye, and ink recovery from wastewater
- Industrial water and wastewater treatment

Market-Based Solutions

Industrial Markets



Oil & Gas

- Heat stable salt removal for amine purification
- Pretreatment of high-quality process water
- Produced water



Mining & Metals Refining

- Acid purification and recovery of nickel and cobalt in hydrometallurgical operations
- Heavy metal removal from wastewater
- Salt separation for chloride removal in chemical leaching process



Biogas & Sour Gas

- Hydrogen sulfide removal from biogas and sour gas



Textile

- Recovery of caustic used for fiber and fabric purification
- PVA & indigo dye recovery from wastewater
- High-purity process water conditioning
- Wastewater treatment and reuse



Pulp & Paper

- Removal of chloride and potassium contaminants
- Sulfuric acid recovery and recycle to chlorine dioxide generators
- Coatings and flexographic ink recovery from wastewater
- Whitewater treatment & recycle
- Color reduction from wastewater
- Recovery of caustic used for dissolving pulp
- High-purity process water conditioning
- Water and wastewater treatment & reuse



Automotive

- Electrocoat paint treatment
- Alkaline cleaner recovery
- Deionized (DI) dip rinse water treatment
- Process water conditioning
- Water and wastewater treatment & reuse



Environmental

- Drinking water treatment
- Municipal water & wastewater treatment
- PFAS removal
- Desalination

Core Technologies

Membrane Filtration

KSS offers one of the world's largest membrane product and system portfolios, tailored to meet specific requirements for a variety of market applications. Our industry-leading membrane filtration products are installed around the world to concentrate and purify a broad range of process and waste streams. We provide pre-packaged, skid-mounted, or custom-designed systems to meet our customers' most demanding challenges with quick and easy installation and operation.

Features & Benefits

- Wide range of pore sizes: Microfiltration, Ultrafiltration, Nanofiltration, Reverse Osmosis
- Multiple chemistries, materials, and configurations
- Designed for optimized cleaning and maintenance
- Built with durability and robustness in mind for extended product lifetime
- Minimized footprint

Spiral Membranes



- Suitable for applications with low suspended solids
- Ideal for both sanitary and non-sanitary applications
- High productivity and low lifecycle cost

Hollow Fiber Membranes



- Suitable for applications with moderate suspended solids
- High flux and reduced fouling
- Low-energy consumption for small to large filtration volumes

Tubular Membranes



- Suitable for applications with high suspended solids
- Robustly designed and plugging resistant
- Up to 60% solids concentration

Ceramic Membranes

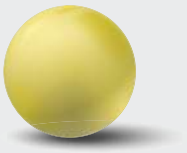
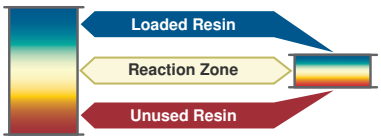
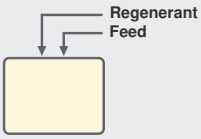
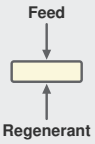


- Suitable for small, medium, and large projects
- Excellent chemical and thermal compatibility
- Long membrane life

Core Technologies

Eco-Tec Ion Exchange Technology

KSS ion exchange systems feature Eco-Tec's proprietary Recoflo® ion exchange resin technology to purify industrial process streams and recover valuable resources. Recoflo ion exchange features a fine mesh resin bead that is 25% of the diameter of conventional resin beads and a compressed shallow resin bed to dramatically reduce footprint and resin volume requirements.

	Conventional Ion Exchange	Recoflo Ion Exchange	Features of Recoflo Technology
Resin			**Recoflo:** Fine mesh resin beads **Conventional:** 4X larger diameter resin beads
Column			**Recoflo:** Compressed shallow resin bed **Conventional:** Fluidized resin bed with large freeboard
Regeneration			**Recoflo:** Short cycles (minutes) of counter-current regeneration **Conventional:** Long cycles of regeneration, same direction as process flow

Features & Benefits

- Low resin loading improves exchange performance
- Finer mesh resins pack more surface area per volume for shorter exchange zone and higher flow rates
- Packed resin beds promote uniform flow distribution and plug flow conditions
- Reduced cleaning requirements and duration of regeneration cycles

Ion Exchange Systems Featuring Recoflo Technology



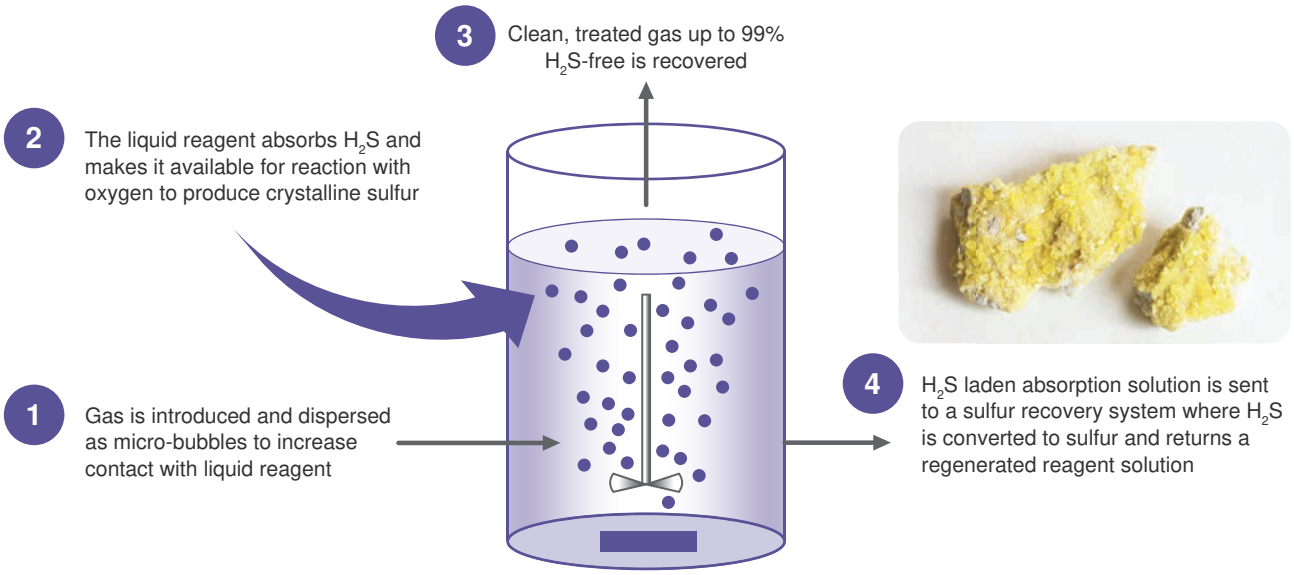


Core Technologies

Biogas Purification

To facilitate biogas production, Eco-Tec developed the BgPur™ Biogas Purification System. This gas-liquid contactor uses a gas scrubbing process to remove hydrogen sulfide (H_2S) from biogas during production. This technology is best suited for use in power generation facilities, cogeneration facilities, boiler units, natural gas pipeline blending, and other heating applications to reduce sulfur dioxide emissions, equipment corrosion, and fouling. H_2S removal also yields cost savings through lower maintenance requirements and greater energy recovery for power generation.

For gas sweetening processes, the SgPur™ Gas Contactor was designed to specifically treat sour gas feed streams in oil and gas operations. Adapted from the BgPur system, the SgPur removes H_2S from sour gas to reduce operating costs and chemical make-up requirements.



Features & Benefits

- Efficient contact between gas and liquid reagent promotes consistent performance with >99% H_2S removal
- Simple design and operation with no packed columns
- Small footprint and low installation costs
- No additional waste treatment or disposal equipment needed
- Automated control systems respond to changes in gas flowrate or H_2S composition with automatic reagent addition

BgPur™ Gas Contactor



Core Technologies

RELCO Thermal Processing Technology

KSS offers RELCO® technology including evaporators and dryers for dairy, food and beverage, and life science applications. RELCO's custom steel fabrication for sanitary equipment and systems meet 3-A, USDA, MAF, and EHEDG standards. Our Industrial Process Automation capabilities supply a wide variety of control systems custom-designed to fit each customer's application. System performance is ensured through automated development processes and thorough quality testing procedures prior to shipping.



Evaporator Systems

Our RELCO evaporator systems combine cutting-edge technology with basic thermal concentration principles to provide no-hassle systems and equipment that increase production while using less energy.

- Falling film, MVR, and TVR evaporators
- 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



Drying Systems

RELCO dryers are ideal for processing high-value products such as powders and protein concentrates and isolates made from milk, whey, permeate, or lactose.

- Customizable to meet specific product requirements
- Designed with operator safety and feasibility in mind
- Vigorous mixing and optimized moisture control
- Low capital and operating costs

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 dairy and 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

Cheesemaking Equipment

Our selection of cheesemaking equipment includes cheese belts, vats, coagulation detectors, curd tables and pick-up hoppers, valves, and blockformers designed for the perfection of a variety of cheese products. Our equipment follows USDA guidelines and are customizable to meet unique processing requirements. RELCO cheesemaking equipment allows for safe and simplified operation to plants around the world, ensuring reliable performance and high throughput.

Our Global Offices

KSS experts are located around the world and are ready to assist you with your separation challenges.



Our Core Technologies

Membrane Filtration • Ion Exchange • Biogas Purification • Evaporation • Drying

Our Markets

Food • Beverage • Dairy • Life Science • General Industrial • Oil & Gas • Mining & Metals
Biogas & Sour Gas • Textile • Pulp & Paper • Automotive • Environmental

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KOVALUS
Separation Solutions™

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