Water Science

Separation Science

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SOLVOSEP

Pervaporation:Dehydrating Solvents and Separating Mixtures

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Engineering Today:Greener Tomorrow

SOLVOSEP

Pervaporation:Dehydrating Solvents and Separating Mixtures

SOLVOSEP represents a cutting-edge technology designed for advanced azeotrope dehydration and solvent recovery. This innovative pervaporation technology offers a highly efficient and economical alternative to traditional methods of separating solvent mixtures and breaking azeotropes.

Traditional methods for azeotrope dehydration are often energy-intensive and depend on secondary entrainers. SOLVOSEP technology provides a superior solution by using advanced pervaporation techniques based on diffusivity and selectivity to achieve effective solvent separation and recovery.

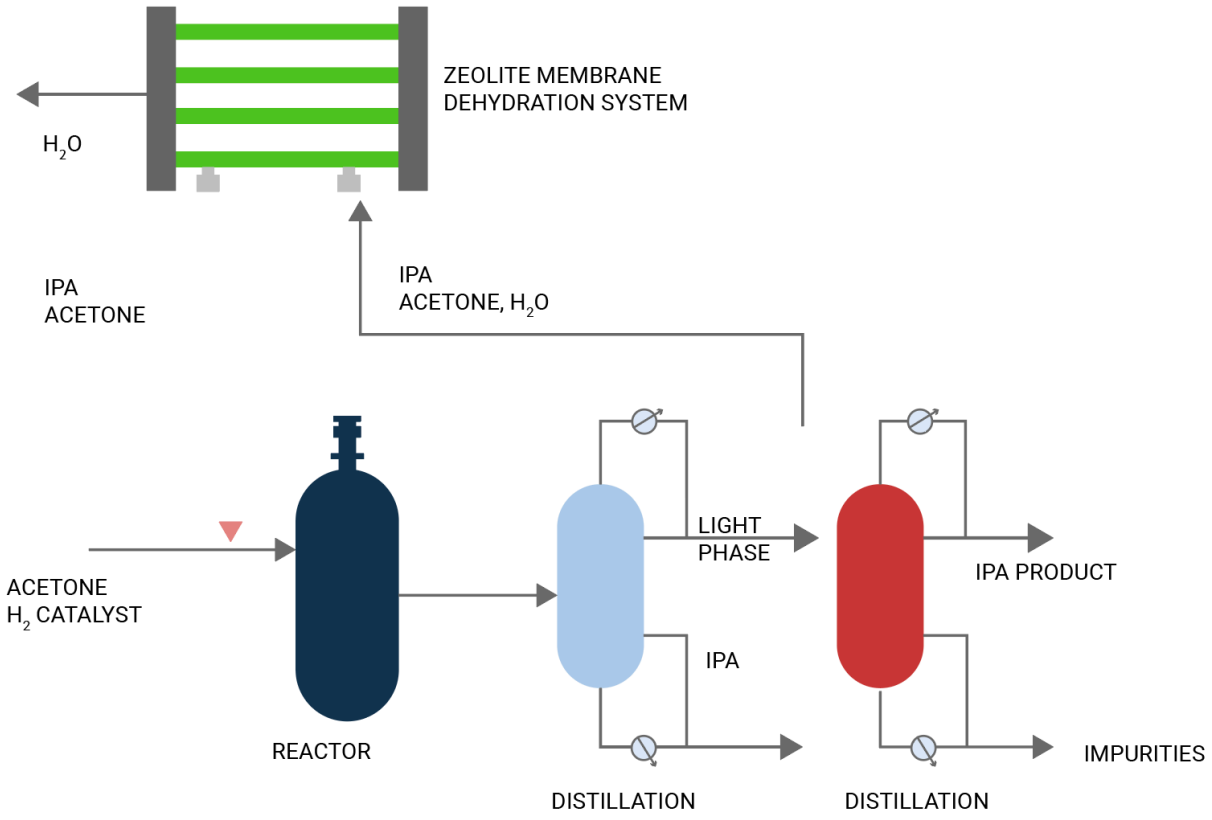
SOLVOSEP excels in applications where traditional separation methods struggle. By employing advanced pervaporation membranes, SOLVOSEP can tackle complex solvent mixtures and produce streams with varying impurity levels. This technology addresses challenges in separating azeotropic mixtures and enhances the overall efficiency of solvent recovery processes

Process Operation

SOLVOSEP systems utilize a range of membrane configurations, including hollow fiber, tubular, spiral-wound, and flat sheet membranes made from zeolite and polymer materials. These membranes operate in two primary modes: liquid flow and vapor flow. SOLVOSEP systems are designed for:

Solvent Dehydration: Efficiently removes water from solvents such as ethanol, providing significant energy savings and reliable performance with minimal downtime.

Azeotrope Dehydration: Breaks azeotropes at a molecular level, improving the efficiency of distillation processes and enabling the separation of components with similar concentrations in liquid and vapor phases.



Energy Efficiency

Signifitcantly reduces energy consumption compared to traditional separation methods.

Operational Ease

Features minimal downtime and straightforward operation for user convenience.

Enhanced Separation

Breaks azeotropes at a molecular level, offering superior separation capabilities.

Hybrid Technology

Complements and enhances conventional distillation processes for improved efficiency and profitability.

Features & Advantages

1. **Azeotrope Breakthrough:** Overcomes limitations of azeotropic mixtures, expanding separation possibilities.
2. **Chemical-Free Separation:** Achieves fluid separation without additional chemicals, ensuring process purity.
3. **Enhanced Reactor Performance:** Optimizes reaction kinetics, reactor efficiency, and productivity.
4. **Complete Conversion & Yield:** Ensures full reaction conversion for maximum product yield and minimized reagent consumption.

5. **Gentle Ester Dehydration:** Efficiently dehydrates esters without causing decomposition.
6. **Durable Membrane Technology:** Utilizes robust membranes for extended operational life and system longevity.
7. **Flexibly Designed:** Features a simple, adaptable unit design suitable for various capacities and process needs.
8. **Wide Solvent Compatibility:** Handles a diverse range of industrial solvents for multiple applications.
9. **Modular & Automatic Operation:** Offers a modular design for easy integration and fully automatic operation.

Applications

1. Solvent Azeotrope Breaking and Dehydration

- ### Ethanol

  SOLVOSEP exhibits promising results in dehydrating ethanol, a vital step in the production of biofuels, alcoholic beverages, and pharmaceuticals. The technology effectively removes water from ethanol mixtures, enhancing the purity and quality of the final product.

- ### Isopropanol (Isopropyl Alcohol)

  In numerous industries, including pharmaceuticals, cosmetics, and electronics, isopropanol serves as a common solvent. SOLVOSEP offers an energy-efficient and sustainable method to dehydrate isopropanol, meeting stringent purity requirements.

- ### Acetone

  Widely used in the production of plastics, fibers, and chemicals, acetone benefits from SOLVOSEP's excellent separation capabilities, enabling efficient recovery and recycling.

- ### Toluene

  In industries like paints, coatings, and adhesives, the dehydration of toluene is crucial for ensuring product quality. SOLVOSEP efficiently removes water from toluene mixtures, making it an attractive option for industrial applications.

- ### Benzene

  An essential component in the petrochemical industry, benzene finds efficient dehydration through zeolite membranes, enhancing overall process efficiency and safety.

2. Removal of Aroma Components from Aqueous Streams

3. Ethanol Recycling and Reuse in Perfume Extraction

SOLVOSEP is poised to become a preferred solution for various industries seeking efficient solvent recovery and azeotrope separation.

Discover how SOLVOSEP can enhance your solvent separation processes. Contact us today to explore this advanced technology and discuss your specific needs.