Energy-saving Advanced Dehydration System for Ethanol and IPA

Membrane Dehydration System

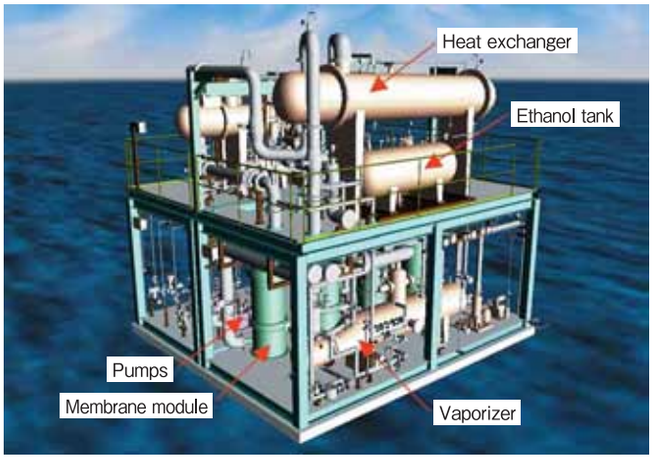
Feature

- A more efficient energy-saving system compared with conventional distillation or pressure swing adsorption (PSA) systems. Saves more than 20% energy compared with PSA systems.
- Attains a water separation speed that is more than twice as fast as that attained by conventional membranes, thus ensuring space-saving performance.
- Providing not only membranes but also total engineering including the system.

Overview (Technical principles, actions, etc.)

Hitachi Zosen's dehydration membrane is a kind of inorganic membranes made of a ceramic support tube coated with hydroplite zeolite. The membrane has sufficient mechanical strength and water separation performance even in the industrial commercial use. A number of membranes are set in a specially designed module vessel. By pressurizing the primary side of the vessel (supply side of solution) and depressurizing the secondary side (water permeate side), water molecules permeate inside the membrane selectively, where the solution (e.g. Ethanol) is dehydrated and concentrated. The dehydration system composed of several heat exchangers, tanks, pumps, chillers, piping and instrumentation equipment as shown in the picture below.

Ethanol Dehydration Equipment
(50 kL/d)



Ethanol / IPA Recycle System Package
(Type:HDS-100)

Full Auto Type
Capacity:
Ethanol 3.0 kL/day
IPA 2.4 kL/day
Feed Condition:
E(I)/W=90/10 wt%

Introduction of Membrane Dehydration System

Applicable field
General Chemical Industry, Biofuel, IT-related Business

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