

Mitsubishi Chemical Corporation, Performance Products Division,
Performance Inorganic Products Business Development Department
Palace Building, 1-1-1 Marunouchi, Chiyoda-ku, Tokyo, 100-8251
TEL: +81-3-6748-7429 FAX: +81-3-3218-7552
email: #MCC-HO-ZEBREX@cc.m-kagaku.co.jp web site: <http://www.m-kagaku.co.jp>

[Marketing Partner]



email: Info@matheongas.com
TEL: 800-828-4313 FAX: 215-619-0458



How can ZEBREX™ help you?

1. ZEBREX™ increases production capacity.

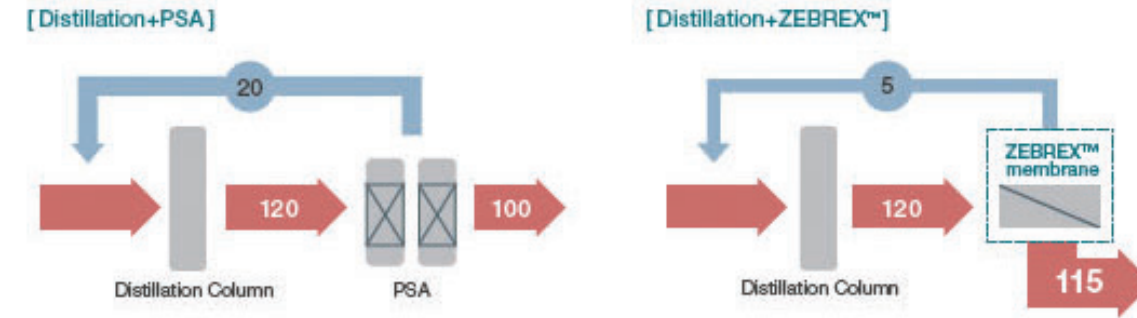
- ZEBREX™ increases production capacity by 10-20% if there is enough fermentation capacity.
- A PSA process has a REGEN stream that recycles around 20% of production back to the distillation column.
- ZEBREX™ doesn't have REGEN recycle stream line, so it can increase production capacity.

2. ZEBREX™ reduces energy cost.

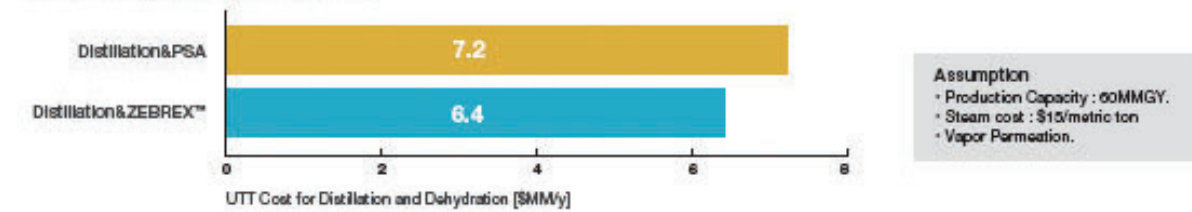
- ZEBREX™ reduces overall operation cost compared to a conventional PSA process.
- Saves significant steam consumption and uses little additional electricity.

3. ZEBREX™ is easy to install and start up.

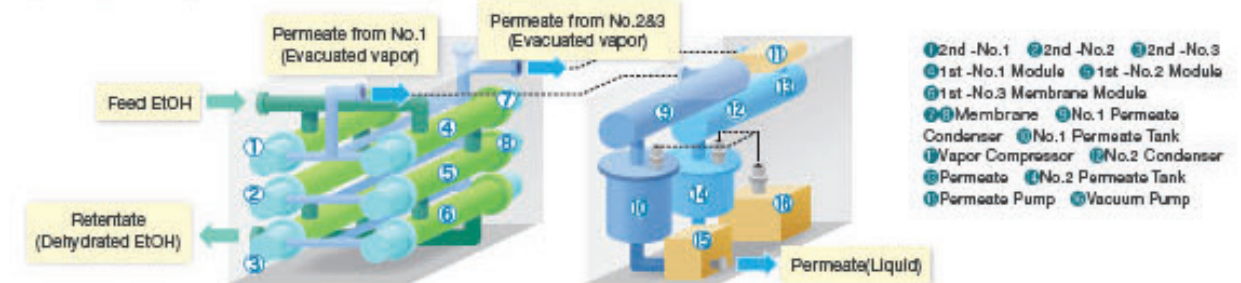
- ZEBREX™ units are mounted on a skid for easy field installation.
- ZEBREX™ process eliminates energy intensive pre-drying operation associated with the PSA process.



[OPEX comparison and targeting]



[Packaged drop-in skid mounted units]



What is ZEBREX™?

ZEBREX™ is a cutting-edge zeolite membrane dehydration process.
 ZEBREX™ is proven at over 70 plants outside of the US.

Separation by Membrane

Ethanol and water are separated by the sharp selectivity of the zeolite, to produce 99.5% purity ethanol and recycle water in a single pass.

[Ex. Water/Ethanol separation]

