



whitefox

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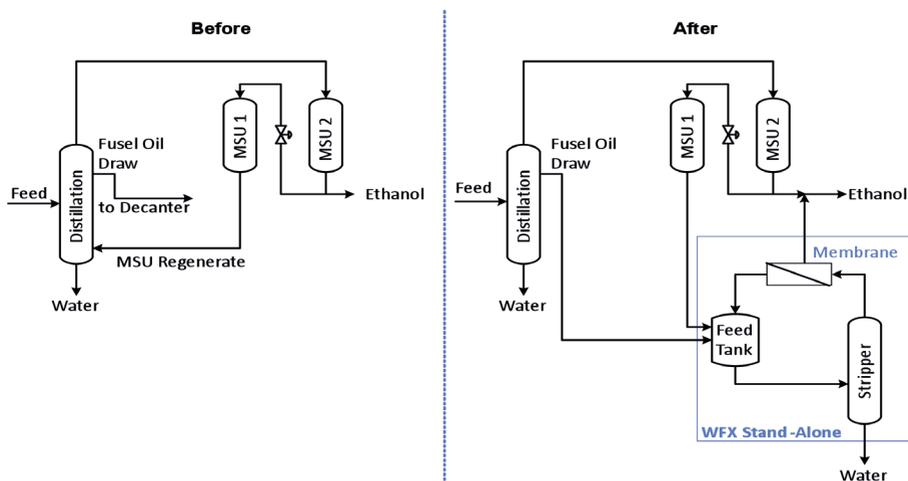
Whitefox Solutions

Challenge

Molecular sieve technology is commonly used to dehydrate ethanol through the use of zeolite beads that adsorb water. Two aspects of an MSU can create bottlenecks and limit plant expansion: (i) fusel oils have to be removed prior to dehydration and often go through a water intensive decantation step; and (ii) the regenerate stream from the MSU has to go through the distillation column again, which can be 15-20% of plant capacity (using capacity and increasing energy consumption).

Whitefox™ Solution

The Whitefox™ Stand-Alone system can work alongside an existing MSU to remove such bottlenecks. As Whitefox membrane technology is tolerant to fusel oils and can dehydrate with a high water content in the feed (up to 30w%), both side streams can be dehydrated directly. This significantly reduces the load on decantation, upstream distillation and the MSUs, allowing for plant expansion and water and energy savings.



Customer Benefits – Case Study

An MSU based bioethanol facility in North America was operating at full capacity and the customer wanted to increase capacity. The aim was to maximize the plant capacity without an increase in energy consumption. The results show that significant improvements to an existing plant are possible through retrofit:

| Parameter | Existing solution | Whitefox solution |
|--------------------|-------------------|-------------------|
| Capacity | 250,000 LPD | 315,000 LPD |
| Steam | 2.64 kg/IE | 2.54 kg/IE |
| Extra Revenue/year | - | US\$ 14 million |

Case study assumptions:

Steam: US\$7.74/tonne; Ethanol: \$2.24/gal (US\$0.592 per litre of ethanol (IE))

Current plant uses 20% of product for regenerating zeolite beds and operates for 350 days

With Whitefox membrane technology working in tandem with the customer's existing equipment it was possible to achieve not only a capacity increase in excess of 25%, but also an energy saving of around 5% per litre of ethanol produced.



For further information please contact

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