



Raschig USA Inc. ®

Ethanol Plants CO₂ Scrubber Packed Bed Options

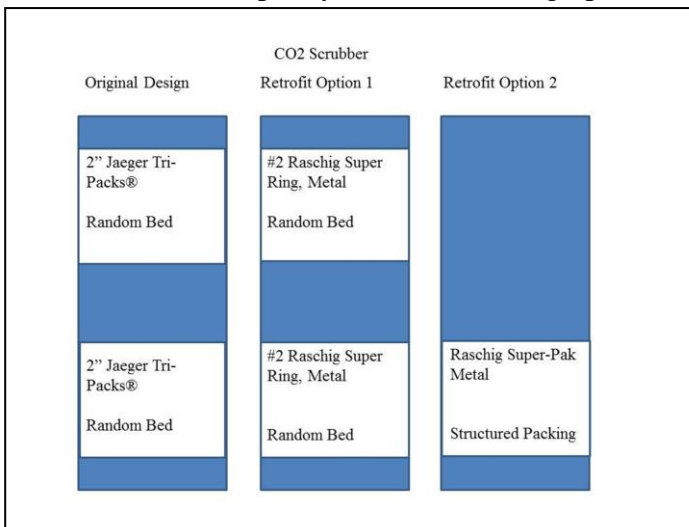
Design of the Carbon Dioxide Scrubber at Ethanol Plants

Ethanol, chemical formula CH₃CH₂OH, is widely produced as a fuel additive in the USA. The basic process that makes ethanol is fermentation. And fermenters give off gases as the microorganisms consume the feed stock (be it corn, sweet sorghum, sugarcane or other) and produce ethanol as a byproduct. Ethanol is a relatively volatile liquid at normal temperature and pressure. So some of the ethanol volatilizes above the fermentation broth and is carried away in the fermenter off gas. The primary constituent of the off gas is CO₂, carbon dioxide. But there are also other volatiles or VOCs, such as acetaldehyde, present in the fermenter off gas.

Common manufacturing practice at an ethanol plant calls for a packed bed wet scrubber to clean the off gas from the fermenter. This scrubber is commonly called the ‘CO₂ scrubber’ at an ethanol plant, even though its primary function is to recover ethanol, not CO₂.

CO₂ Scrubber Design Options – New and Retrofits

Many ethanol plants around the USA were built with scrubbers that had two packed beds, each containing 2” Jaeger Tri-Packs® in polypropylene. As time has passed many of these scrubbers have been retrofitted to either random metal packing or to structured metal packing. This has been done as the need to increase capacity has arisen. The graphic here shows schematically these options.



The two choices of packing used in a retrofit are typically:

Option 1: Repack both beds with #2 Raschig Super Ring®, metal

or

Option 2: Repack only lower bed with Raschig Super-Pak®, Metal

The two possible metal packings are seen in the photo:

Jaeger Tri-Packs® is a registered trademark of Raschig USA, Inc.
Raschig Super Ring® is a trademark of Raschig USA, Inc.
Raschig Super-Pak® is a trademark of Raschig USA, Inc.

What Raschig USA Can Supply to the Project

Both metal packings shown here are available an in stock in normal circumstances. Raschig is pleased to quote the packing need of your project. Additionally as we have experience in numerous CO₂ scrubber packing projects we are more than pleased to discuss specifics of a project to help avoid pratfalls and to help move the project forward as smoothly as possible.

Tower Internals: Raschig USA also carries a full line of liquid distributors, packing supports, hold down grids, mist eliminators and other towers internals. All of these items will be sized, if needed, based upon the specific needs of the project. If required in the project we will be pleased to quote these items.



#2 Raschig Super Ring[®], Metal



Raschig Super-Pak[®], Metal

Contact

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Please contact Raschig USA to review the design needs of your specific project. The information contained in this bulletin is believed to be accurate and reliable but it is not to be construed as implying any warranty of guarantee of performance.

