

Ethylene Quench Tower Modifications Exceed Revamp Requirements

Customer: Refinery
Tower Name: Ethylene Water Quench
Tower Diameter: 19'-6" (5,944 mm)

Mass Transfer Equipment: FLEXIPAC® 3X and 4Y Structured Packing, HcKp #2 Random Packing, Feed Pipe, Liquid Distributors, and Packing Supports.

Objective: The objective for this revamp was to increase the overhead cracked gas throughput by approximately 12%. This was to be achieved while maintaining the relative heat removal, the overall column pressure drop to be less than 78 mmHg and the overhead vapor temperature to less than 105 °F.

Solution: Koch-Glitsch, Inc. recommended the changes indicated in the sketch below:

Ethylene Water Quench Tower Conditions: Before and After Revamp		
	Before	After
Column Diameter	18' - 6"	18' - 6"
Feed Gas Rate, m lb/hr	502	818
Overhead Gas Rate, m lb/hr	373	542 (+45%)
Overhead Temp, °F	84	89
ΔP, mmHg	57	21

Conclusion: Packed designs for ethylene quench towers can provide a more economical alternative than trays. Capacity gains in excess of 30% are not uncommon with equivalent, or improved relative heat removal, and pressure drop reductions of 50% or more.

On-Line: 1985

REVAMP MODIFICATIONS

