



# **WANT HIGH PERFORMANCE WITH A LOWER CARBON FOOTPRINT?**

Optimize operation, reduce energy consumption and emissions,  
and improve performance with a cost-effective revamp.<sup>1,2</sup>

**Honeywell**  
**Uop**

# THREE REASONS TO OPTIMIZE WITH A HIGH-PERFORMANCE UPGRADE

For today's ethylene and propylene producers, reducing energy consumption and emissions is paramount. Honeywell UOP has the retrofit solutions to achieve your goals. Here are three reasons to optimize your operation with our high-performance tubes and trays:

## 1. Drop energy consumption per ton of product produced.<sup>3</sup>

Our high-performance tubes and trays are designed for better thermal performance, so you can reduce the steam or refrigeration needed to drive production.

## 2. Optimize the refrigeration loop at the heart of your plant.

In ethylene plants, our high-performance tubes allow a warmer refrigerant to be used to initiate boiling in condensing on the C2 splitter overhead. This frees up the refrigeration loop, so you can potentially increase production — or simply use less energy in the process.

## 3. Improve your ranking against industry benchmarks like the Solomon report.

Upgrading to high-performance technology can help you get more out of your assets, improving your plant's energy efficiency and carbon footprint.

# TAKE THE NEXT STEP WITH THESE SOLUTIONS

## High Flux™ Tubes

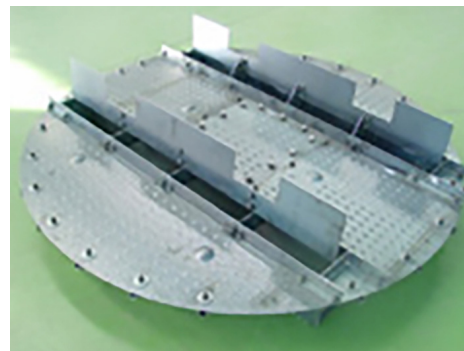
Our High Flux (boiling) tubes feature thermal surface enhancements that enable better heat transfer. Replacing bare tubes with High Flux tubing allows you to initiate boiling at a tighter temperature approach, so you can optimize process conditions — or utilize lower-pressure steam — to save energy and eliminate production bottlenecks.<sup>3</sup>

## High Cond™ Tubes

Our High Cond (condensing) tubes enable plants to run at a very close temperature approach (down to 5 °C), eliminating summer cooling water limitations and debottlenecking existing plant assets. High Cond tubing also helps optimize cooling water usage and reduce operating pressure while maintaining the existing footprint.

## MD/ECMD/ECMD+ Distillation Trays

We also offer a wide portfolio of high-performance distillation trays. Our ECMD+ trays offer high hydraulic capacity at very low tray spacing, allowing more trays to be installed in less space.<sup>3</sup> This helps increase production<sup>3</sup> while also reducing the amount of energy required<sup>4</sup> compared to conventional trays.



ECMD+ distillation trays offer exceptional capacity in less space than conventional trays.



Upgrading to High Flux and High Cond tubing can help improve heat integration and reduce production costs.<sup>5,6</sup>

## LOOKING TO REDUCE YOUR ENERGY COSTS AND CARBON EMISSIONS?

Connect with a UOP representative. We can help you with a study to identify how to optimize your operation with our equipment, expertise and engineering assistance.

<sup>1</sup> P. J. McGuire and M. R. Sobczyk, "Maximizing Return on Assets and Process Optimization of New Units with UOP Equipment Technologies," 2008.

<sup>2</sup> M. R. Resetarits, J. L. Navarre, D. R. Monkelbaan, G. W. A. Hangx, R. M. A. van den Akker, "Trays Inhibit Foaming," Hydrocarbon Processing, March 1992.

<sup>3</sup> M. S. M. Shakur, R. E. Tucker, K. J. Richardson, M. R. Sobczyk, R. D. Prickett, C. Polito, and S. E. Harper, "Increase C2 Splitter Capacity with ECMD Trays and High Flux Tubing," American Institute of Chemical Engineers (AIChE) Spring National Meeting, Houston, Texas, March 18, 1999.

<sup>4</sup> S. G. Fry, J. M. Moll, P. Ronan, L. Scanlon, "NGL Unit Debottlenecked with UOP ECMD Trays and High Flux Tubing for Significant Production Expansion and Energy Optimization," AIChE Spring National Meeting, Austin, Texas, April 29, 2015.

<sup>5</sup> M. R. Sobczyk, R. Tucker, "Enhanced Heat Transfer Technology Proves Beneficial in Cooling Water Driven Condensers," March 2011.

<sup>6</sup> "Design and Operating Experience with Vapor Recompression Systems Having High Performance Equipment," March 1985.

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