



# TAKE YOUR EQUIPMENT INTO THE FUTURE

Optimize operation, reduce energy consumption and emissions,  
and improve performance with a cost-effective revamp.<sup>1, 2, 3</sup>

**Honeywell**  
Uop

# THREE REASONS TO START PLANNING FOR A HIGH-PERFORMANCE UPGRADE

## 1. Waiting puts your plant at risk.

Equipment failure and emergency replacement are far more costly than proactive upgrades. When you wait, you not only prolong your risk of unplanned shutdowns — you also risk plant safety. Plan ahead before the unexpected occurs and minimize downtime.

## 2. It's an opportunity to harness new technology.

If your equipment is more than 15 years old, it's nearing the end of its useful life. Why replace it with conventional products when you can upgrade to the latest technology and potentially achieve better operation, lower energy consumption and more flexibility for future expansion?

## 3. It's a cost-effective way to get more out of your existing assets.

You don't have to change your footprint to get the benefits of a revamp. Tube bundles, heat exchangers and distillation trays can be replaced within your current configuration.

## TAKE THE NEXT STEP WITH THESE SOLUTIONS

### High Flux™ Tubes

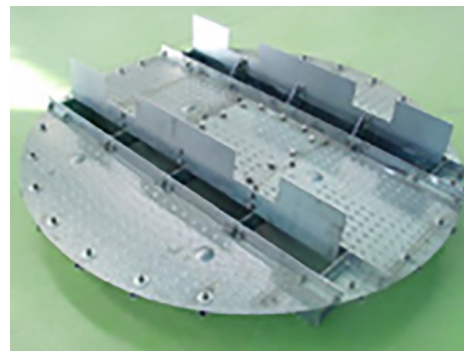
Our High Flux (boiling) tubes feature high-performance enhancements that enable significantly better heat transfer. Replacing bare tubes with High Flux tubing allows you to initiate boiling at a lower temperature, so you can change from medium-pressure steam to a low-pressure steam, saving energy and reducing operating expenses.<sup>1,3</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.<sup>3,4</sup>

### 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. This helps increase production<sup>5</sup> while also reducing the amount of energy required<sup>6</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>4,7</sup>

## NOW IS THE TIME

If you're thinking about a replacement, start planning now. A simple upgrade to high-performance tubes and trays can bring significant benefits to your operation. Contact a UOP representative and find out how we can help with the optimal solution to reduce your energy consumption and maximize production.

<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> "High Flux Tubing Applications in the Petrochemical & Refining Industries," December 1999.

<sup>4</sup> M. R. Sobczyk, R. Tucker, "Enhanced Heat Transfer Technology Proves Beneficial in Cooling Water Driven Condensers," March 2011.

<sup>5</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," AIChE Spring National Meeting, Houston, Texas, March 18, 1999.

<sup>6</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>7</sup> "Design and Operating Experience with Vapor Recompression Systems Having High Performance Equipment," March 1985.

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