

INNOVATION



FLEXIPRO® technology, the next generation fixed valve tray.

The reliability of a large fixed valve that delivers enhanced performance combined with an operating range close to that of a movable valve.

The FLEXIPRO® valve tray exceeds the performance of similar fixed valve trays:

- Increased tray efficiency
 - Can result in reduced reboiler duty or increased throughput at same reboiler and condenser duties
- Higher capacity
 - Can result in higher throughput; check for sufficient reboiler and condenser capacities
- Higher turndown ratio with no increase in pressure drop
 - Provides more flexibility at stable operating conditions without loss of tray efficiency
- Enhanced push and sweeping effect over the tray deck to remove solid deposits
 - Mitigates the risk of fouling and achieves longer run lengths

The FLEXIPRO® valve tray approaches the turndown ratio of movable valve trays without the drawbacks:

- Valves cannot stick closed
 - Uniform vapor distribution maintains tray efficiency over the full operating range
- Non-moving valve legs do not cause erosion or enhanced corrosion
 - Maintain uniform open area and good vapor distribution

YOU CAN RELY ON US.

KOCH-GLITSCH.

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For related trademark information, visit <http://www.koch-glitsch.com/trademarks>.



THE NEW FLEXIPRO® VALVE TRAY BENEFITS REVAMPS AND NEW TOWERS

Koch-Glitsch's latest innovation in mass transfer devices, the FLEXIPRO® valve, extends the operating range of fixed valves to levels close to that of movable valves, while maintaining the performance and reliability of fixed valves. The result is a fixed valve tray that offers increased efficiency and capacity, enhanced push and sweeping of the deck, as well as a higher turndown ratio with no increase in pressure drop.

Although moving valves offer the advantage of a wide operating range, they also come with some drawbacks:

- Being more prone to fouling than fixed valves.
- Becoming stuck in the open or closed position.
- "Popping" free from their orifices.
- Prone to erosion or enhanced corrosion of the valve legs.

A large turndown range of 4:1 is generally only achievable with moving valves. As the vapor rate decreases, some of the valves will close, reducing the effective open area of the tray and limiting the tendency to weep. At reduced vapor rates, not all moving valves on the tray deck will be actively bubbling vapor. This could be particularly challenging for multi-pass trays where a higher vapor rate will typically be needed to ensure all passes are actively bubbling vapor. If one pass becomes inactive, tray efficiency will decline sharply.

ENTER A NEW ENHANCED FIXED VALVE

Koch-Glitsch introduced the PROVALVE® tray in the mid 1990s. The PROVALVE® fixed valve has a uniquely shaped tapered cover that is larger than the hole in the deck. This imparts a forward push to liquid flowing across the tray deck, promoting an even and low froth height that suppresses entrainment. With installations in over a thousand towers, the PROVALVE® tray has a well-proven track record for fouling resistance and strength in challenging applications.

Koch-Glitsch recently embarked upon a development program to improve the PROVALVE® tray. The result is the FLEXIPRO® valve tray that has a turndown ratio higher than other fixed valve trays. Like its predecessor, the new FLEXIPRO® valve tray is a fixed valve tray and is not subject to the disadvantages of moving valves.

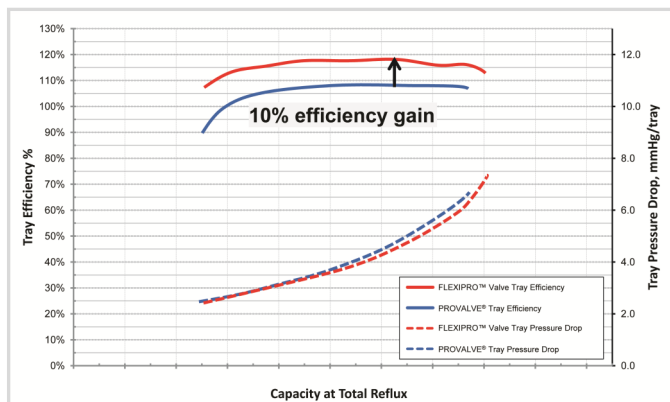
The FLEXIPRO® valve features a specially shaped deck orifice to reduce pressure drop and delay weeping. The redesigned valve cover is also larger than the deck orifice, which leads to reduced entrainment and enhanced sweeping of the deck for superior fouling resistance.



The new FLEXIPRO® valve.

PERFORMANCE TESTING

The performance of the FLEXIPRO® valve tray has been verified by testing in Koch-Glitsch's 5.5 ft [1.7 m] diameter commercial-scale pilot column. These tests confirmed the improvements in entrainment characteristics, increased tray efficiency and reduced weep, which all lead to a wider operating range.



Results of pilot plant testing at Koch-Glitsch, Wichita, Kansas.

The increased jet flood capacity and reduced weeping has resulted in an operating range that allows the FLEXIPRO® valve tray to be used where moving valves traditionally are applied, but without any of the reliability shortcomings of moving valves.

ENHANCED RELIABILITY

Fixed valves have no moving parts and are more rugged and durable than moving valves. In addition, fixed valves have a greater ability to withstand process upsets, especially when combined with FLEXILOCK® tray construction (an interlocking tray joint offered by Koch-Glitsch that strengthens joint and uplift tolerance and reduces installation time). Due to their durable construction, the mechanical reliability of fixed valves makes them good choices for towers where uplift rating is required to guard against damage.

The wider operating range of the new FLEXIPRO® valve tray with enhanced capacity and efficiency opens new opportunities for revamps and new towers. Contact your nearest Koch-Glitsch office to evaluate the possibilities the FLEXIPRO® valve tray can offer in your tower!

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