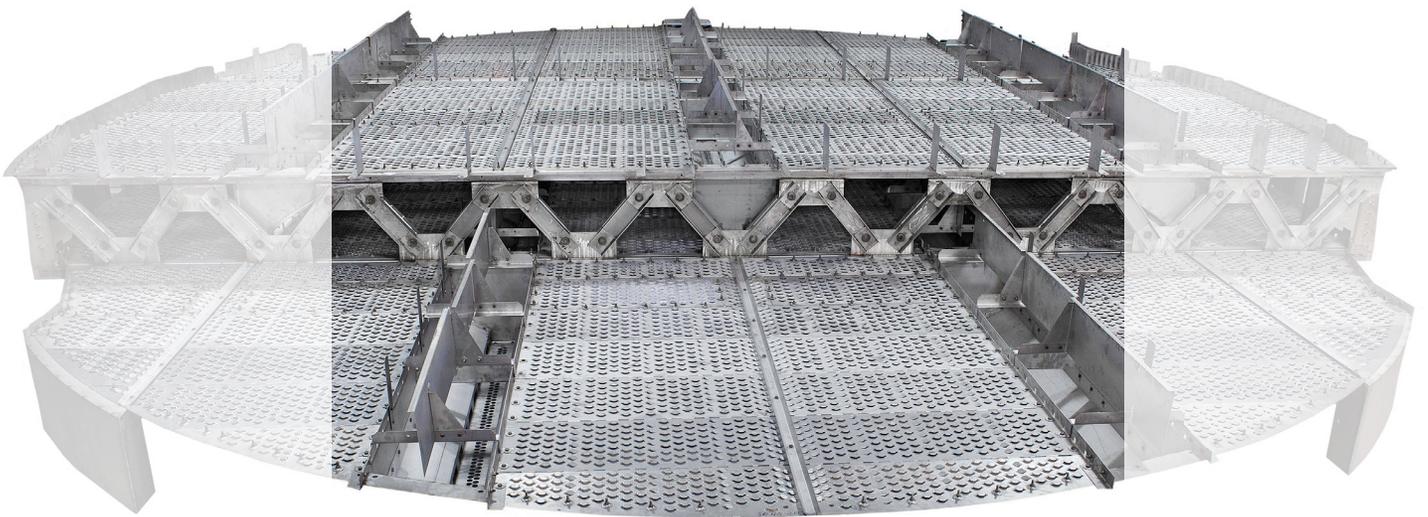


# SUPERFRAC<sup>®</sup> XT

## High Performance Trays



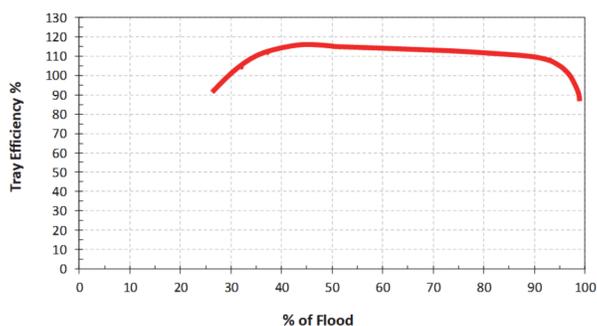
**YOU CAN RELY ON US.**

** KOCH-GLITSCH<sup>®</sup>**

# SUPERFRAC® XT trays - engineered for the most demanding services.

The SUPERFRAC® tray family has been proven through more than 25 years of application in the most demanding fractionation, absorption, and stripping applications. Through sustained investment in research and development, Koch-Glitsch continues to improve the performance of the SUPERFRAC tray to meet the future requirements of its customers.

Koch-Glitsch's most recent development is the SUPERFRAC® XT tray, which applies our combined hydraulic, separation, and mechanical design expertise to maximize the tray's performance – capacity and efficiency. The SUPERFRAC XT tray can handle the most demanding fractionation services in large diameter towers, which often require complex multiple flow pass designs.



**SUPERFRAC® XT tray performance curve shows uniformly high tray efficiency across the entire operating range.**



**Koch-Glitsch's 5.5 ft [1.67 m] pilot plant for distillation testing with hydrocarbon mixtures.**

Traditionally SUPERFRAC trays have been used to revamp existing towers for improved performance. Because of their superior performance (superior capacity and efficiency), SUPERFRAC XT trays are also being specified for new grass roots installations to minimize equipment diameter, height, and overall investment cost.

Now Koch-Glitsch brings you the SUPERFRAC XT tray, which is demonstrating unparalleled capacity and efficiency in some recent very notable commercial applications.

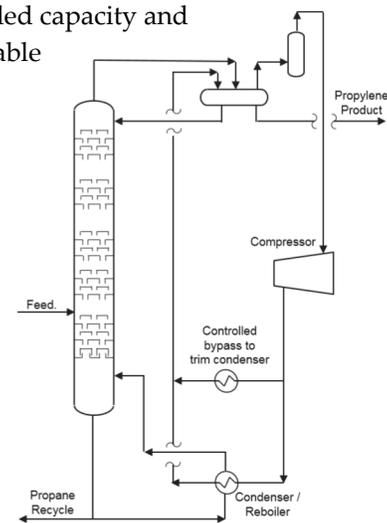
## SUPERFRAC® XT trays for Tower Retrofit Applications

A 28 ft [8.5 m] diameter Propane/Propylene Splitter was recently revamped to improve the tray efficiency at a 25% higher production rate. From initial start-up, the original 4-pass fixed valve trays had been plagued by low tray efficiencies,

resulting in a significant shortfall in polymer grade propylene production. 6-pass SUPERFRAC XT trays (shown on the front cover) were chosen for this revamp, which included extensive use of innovative OMNI-FIT® technology to avoid welding directly to the tower shell.

A very aggressive installation schedule required a ONE SOURCE SOLUTION approach, in which the Koch-Glitsch equipment design team and the Koch Specialty Plant Services installation team worked seamlessly together during planning and design to minimize the revamp duration. Removal of well over 100 existing trays and installation of the new trays took only 38 working days.

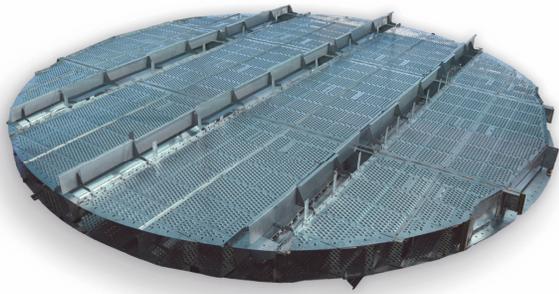
Following this revamp, the overall tray efficiency increased to approximately 94%. The tower is now meeting the product purity goal at the higher feed rate. High tray efficiencies and capacities can be obtained with optimized SUPERFRAC XT trays. In other Ethylene and Propylene splitters, efficiencies of 92 to 100 percent have already been demonstrated.



**SUPERFRAC® XT tray designs require fewer trays, reducing the overall pressure drop - especially beneficial for a Propane/Propylene Splitter using vapor recompression.**



**28 ft [8.5 m] diameter x 330 ft [100 m] tall Propane/Propylene Splitter was retrofitted with SUPERFRAC® XT trays.**



**33.5 ft [10.2 m] diameter 8-pass SUPERFRAC® XT tray for a new Propane-Propylene splitter tower.**

## SUPERFRAC® XT Trays for New Towers

An even larger Propane/Propylene Splitter has been in service for over 2 years with 8-pass SUPERFRAC® XT trays. The 33.5 ft [10.2 m] diameter vessel was originally designed with SUPERFRAC XT trays and has exceeded design capacity and product purity requirements from the initial start-up. The overall tray efficiency is above 90%, which exceeds the design basis, allowing the reflux ratio to be optimized to minimize energy consumption.

## Mechanical Design Technologies for Large Towers

Large tower diameters bring additional challenges that can impact the process performance of the fractionation trays. Sectionalized beam and pinned truss technologies use pinned assemblies to provide superior mechanical rigidity while reducing tower down time associated with equipment installation.

Both variations are used in large diameter SUPERFRAC XT tray applications where internal mechanical loadings require tall structures that may exceed vessel manway diameter. The lighter-weight shop-fabricated components of these technologies allow safer and easier passage through the manway. Assembly of the individual components is achieved via pins coupled with indexing journals in bearing plates, each sized to transfer mechanical loads between the multiple sections of the structure. Specific fabrication sequences are used to provide equipment with interchangeable components, easing the installation process, avoiding mix-ups, and simplifying maintenance activities. Feedback from installation crews noted savings of up to 80% compared to field welded constructions.

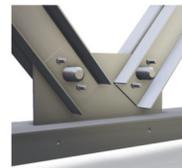
To improve process performance, cross-sectional openings in the structure allow passage of vapor and liquid. These technologies can achieve cross-sectional open areas of more than 70%. For extremely large vessels, sectionalized beams and pinned trusses can be fabricated with a pre-camber to ensure that the operating trays will be adequately level, allowing improved operational performance.

## Increased Adaptability

Koch-Glitsch offers a diverse variety of mechanical technologies to improve process performance and enhance equipment installation. These technologies can also be applied in retrofit applications to change the number of flow passes or tray spacing without welding to the pressure boundary.

The unparalleled performance of SUPERFRAC XT trays allows debottlenecking of existing splitters or a reduction in diameter and height for grassroots Ethylene, Propylene, and Xylene splitters. It also allows the energy consumption of these mega towers to be minimized. In the case of heat-pump splitters, it also minimizes the energy consumption and size of the heat-pump system.

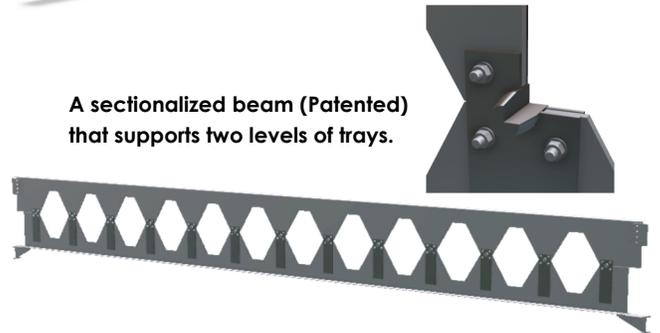
Contact your Koch-Glitsch representative to learn how a SUPERFRAC XT tray design can help you eliminate the need to find a trade-off between capacity and efficiency in your towers.



**A pinned truss (Patented) that supports two levels of trays.**



**A sectionalized beam (Patented) that supports two levels of trays.**



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## Emergency Numbers

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**Asia:** +65-6831-6500 (Singapore) or your local Koch-Glitsch office.

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The following trademark is owned by Koch Specialty Plant Services LLC in the United States and may be registered in other jurisdictions: ONE SOURCE SOLUTION approach.

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

### Patents

The following technologies are protected by one or more patents in the USA; other foreign patents may be relevant: Column Internals (US8485504) and OMNI-FIT® technology (US6736378, US7055810, US7125005).

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