

# Increased Separation Capacity with NeXRing™

Do you know how to increase the separation capacity inside a column? The secret is to fill up your column with NeXRing™ — the patented high-performance random packing of Sulzer. The demand for NeXRing is growing constantly. Sulzer extended the application range of the NeXRing family, which now consists of seven members.

Two years after being launched, the NeXRing™ has become the top seller of Sulzer ring products. Random packings are used in conjunction with specially designed column internals. Collectively, they are used for fractionation, absorption, and stripping operations in gas, refinery, and chemical plants.

The use of columns with random packing has been well established for decades. The random packing has a big advantage: it can be easily replaced in the column. If you need to improve the separation capacity in your columns, you can just exchange the column internals.



1 Sulzer NeXRing™ — the best seller product for random packing.



2 The NeXRing family now has seven members — thus enlarging the application range.

**Development of random packing**

Sulzer continuously develops and improves the performance of its random packing products. The better performance of the NeXRing is achieved by:

- An increased surface area of the ring where the separation process can take place.
- The specific form of the rings (Fig. 2), which allows an increase in the overall packing density and thus the available surface area.
- The open design of the rings (Fig. 2), which lowers the pressure drop by 50% compared with conventional rings.

**Application areas of NeXRing**

NeXRing random packing is often used for the removal of CO<sub>2</sub> and H<sub>2</sub>S from natural or biogas by contacting the feed gas with amine-based solvents. The solvents have a strong tendency to foam. With the much lower pressure drop of NeXRing, the hydraulic impact of the foam is minimized and thus the efficiency is increasing.

The NeXRing is used to guarantee the gas purity requirements in the process of gas recovery from natural gas liquids (NGL).

In Butadiene production with a high specific liquid load, the large surface area of NeXRing offers a higher capacity.

**A strong design**

NeXRing packing is spaced evenly throughout the packing volume inside the column. The mechanical structure of the rings ensures a uniform fluid flow through the column. The shape of the NeXRing looks fragile, but the ring structure cannot be deformed. Thanks to the end flanges combined with strengthened ribs (Fig. 2) the NeXRing is extremely strong.

**For a wide application range**

The smaller the rings are inside the column, the higher the surface area available for the separation process is. At market launch in 2015, only three NeXRing versions were available (NXR #2, NXR #1.5 and NXR #1).

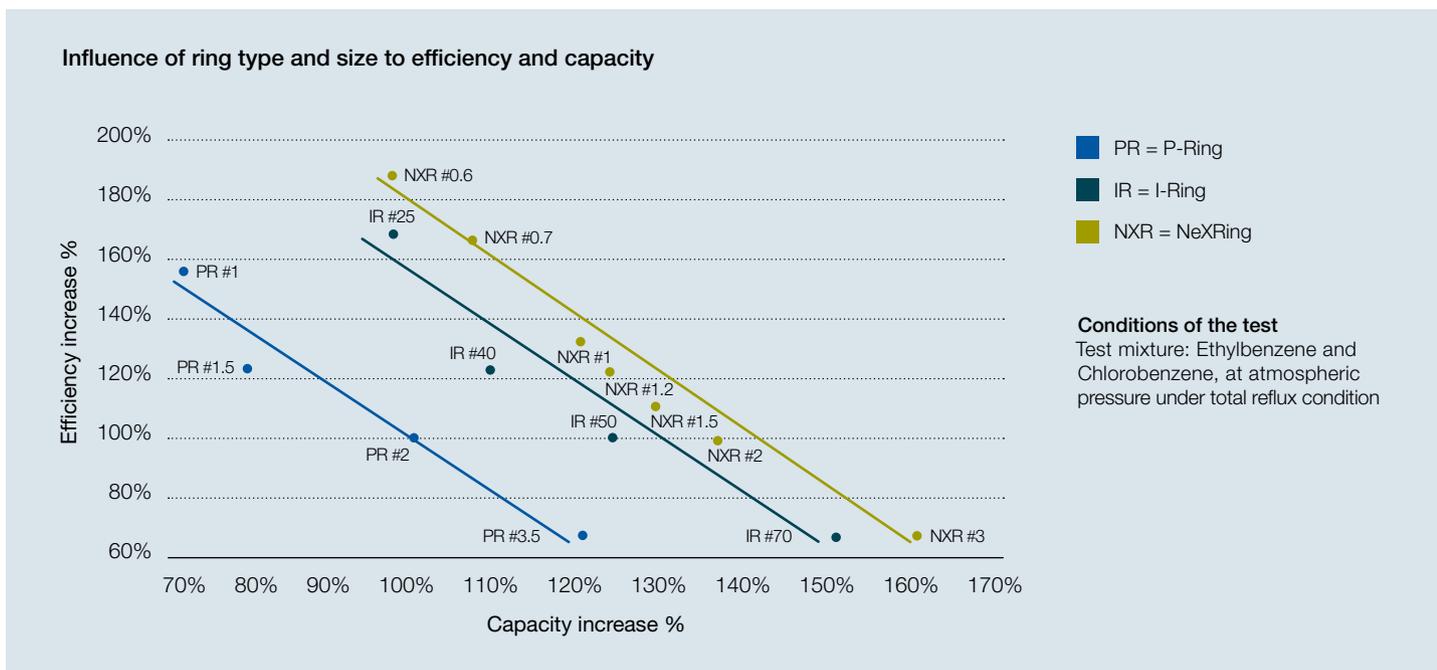
The NeXRing family has meanwhile grown to seven members (Fig. 2). Now four more ring sizes are available on the market: NXR #0.6, NXR #0.7, NXR #1.2 and NXR#3.

**Comparison of different rings**

Before launching a product on the market, Sulzer’s R&D engineers conduct in-house tests to define the application range reliably. These tests have been cross-checked at an independent institute in the US and can serve customers as a basis for decisions. The results confirm that the new product will meet the required demands. Sulzer tested three different ring types (Fig. 3) with different liquids and gases.



3 Three ring types were tested and compared: P-Ring, I-Ring, and NeXRing.



4 Influence of ring type and size on efficiency and capacity.

The graphic (Fig. 4) shows relative efficiency values and relative capacity values for different versions of P-Ring, I-Ring, and NeXRing. The P-Ring #2 is a standard in the industry. That's why it was set as a reference point (100% efficiency and 100% capacity).

The size of the rings influences the flow rate and, thus, the capacity. The larger the rings are, the lower the resistance to the flow. A more open ring structure (I-Ring and NeXRing) increases the flow rate. With a smaller ring size, the efficiency of the separation process increases. With a smaller ring size, more surface area is offered for the separation process inside the column. A high surface exposure to liquid and vapor enhances the process efficiency and, thus, the quality

of the process. NeXRing clearly shows much better efficiency than P-Ring and I-Ring.

#### Benefits of using NeXRing

What are the benefits in using NeXRing? Customers who replace conventional rings in an existing column (Brownfield project) can increase the separation capacity of their column. Sulzer recommends the use of NeXRing especially in cases where the separation process is a bottleneck at the customer's site. If customers are building a new column (Greenfield project), they can plan a smaller, slimmer column when using NeXRing packing.

Authors: Stephen Shields and Huang Wei-Jie  
[sulzertechnicalreview@sulzer.com](mailto:sulzertechnicalreview@sulzer.com)