

Turn Around Services (TAS) and replacement equipment





Sulzer Chemtech has over 50 years of experience in providing outstanding mass transfer technology, process engineering and equipment. Our global coverage allows us to bring our services to you, day or night, in almost every country of the world. Our employees are ready with the conviction, enthusiasm and attitude to offer not only quality products, but excellent service. Our goal is to meet your requirements and challenges while providing the most cost effective solutions with the least amount of downtime, in any situation.

A single source for all of your turnaround needs

Because we understand that time saved is money earned. Just one phone call to Sulzer Chemtech will provide you with a single source for all of your turnaround needs; replacement equipment, hardware and expert advice.

Whether you're facing a major turnaround or routine column repairs and maintenance, Sulzer Chemtech offers a complete replacement solution with:

- SHaRP - Sulzer Hardware Research Program
- A complete portfolio of tower hardware from all suppliers
- Consignment hardware lockers and trailers
- Pre shutdown deliveries
- Pre engineering
- 24/7 availability
- Emergency replacement
- Strategic hardware storage places worldwide
- Logistics
- Post shutdown advice

The Sulzer Chemtech Turnaround Services (TAS) team is known for its fast, reliable deliveries, quality products and customer oriented approach. Our team can provide complete, around-the-clock support for your planned or emergency turnarounds. We offer material replacements with our complete line of products regardless of the original manufacturer, which allows us to go the extra mile. The Sulzer Chemtech replacement sales team is available to you, 24 hours a day, 7 days a week – with the best response time and a customer orientation that is second to none!

SHaRP services eliminate turnaround headaches

Sulzer Chemtech hardware research program – SHaRP – eliminates the hassle of last minute hardware purchases. No more looking for tower drawings in the middle of an emergency turnaround! Our SHaRP program will provide detailed reports of all of the hardware and equipment in your plant, (regardless of manufacturer) listed by unit and tower. The report will also include material type, current pricing and recommended quantities. The best part about Sulzer Chemtech's SHaRP program is that it's free!

SHaRP benefits

- Maintain critical path
- Minimize loss of working time
- Single source of supplies
- Reduce inventory
- Main budget control



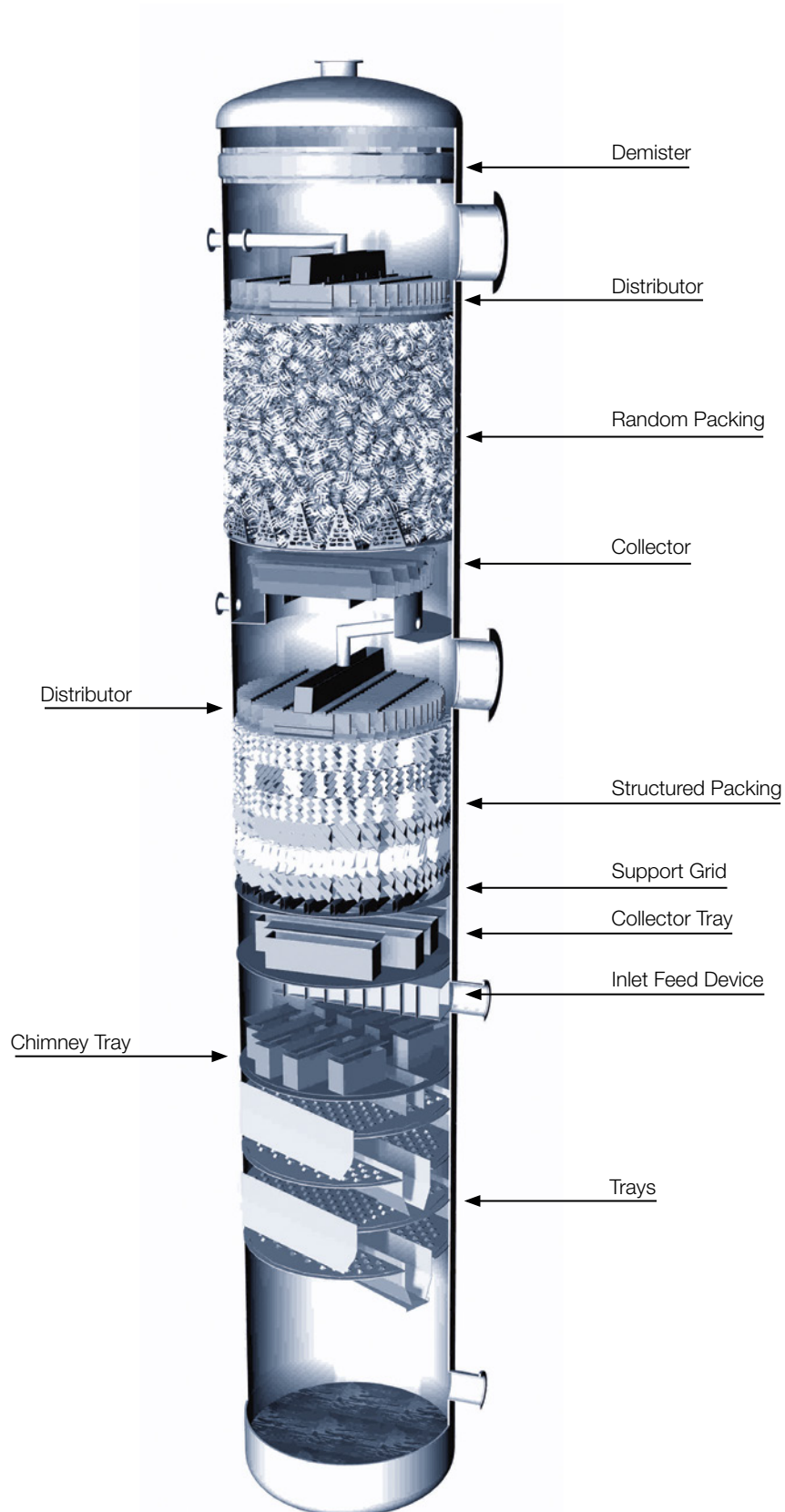
Consignment hardware lockers and trailers give you total inventory control

To ensure that your turnaround is on time and on budget. We have regional warehouses and offer hardware on consignment. Our teams will custom package hardware for your specific towers and deliver the inventory in trailers and lockers to your site for the duration of your turnaround.

Since most hardware is provided on consignment, you only purchase the hardware that is needed. This service provides you with proactive control over your hardware inventory and your budget.

Proven, reliable, replacement internals

When turnarounds or shutdowns occur, Sulzer Chemtech can provide the equipment you need. Whether it be replacing and installing one of the many proven, reliable Sulzer internals or an exact OEM equivalent, we can supply all of your internals quickly and efficiently.

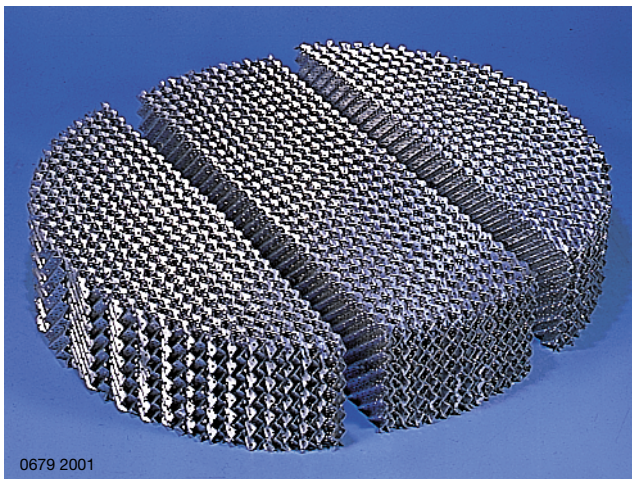


We have your packings

Sulzer Chemtech is the industry leader in structured packing technology – in fact, Sulzer invented structured packing. We can provide you with a replacement for any tower packing in the industry structured or random. No matter who provided the last product, our packings will match or improve the performance of your existing packing.

We offer equivalents to all OEM packings as well as these proprietary packings:

- Mellapak™
- MellapakPlus™
- Mellagrid™
- The original gauze packings, BX and CY
- Nutter Rings™
- I-Rings™
- C-Rings™
- R-Rings™
- P-Rings™



All rings come in various sizes

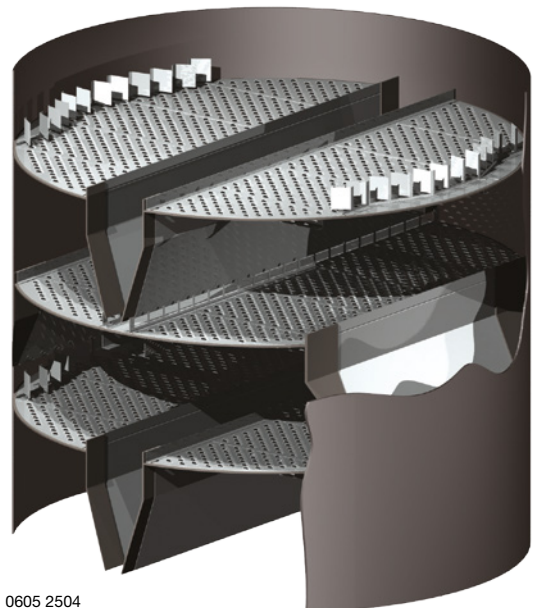
We have your trays

Sulzer Chemtech has a replacement for absolutely any type of tray, and can address the unexpected problems encountered in every shutdown – problems that can cause a huge loss due to lost production.

Our new or replacement trays are manufactured to exact specifications and arrive on time, every time.

We can supply the trays listed below as well as many others:

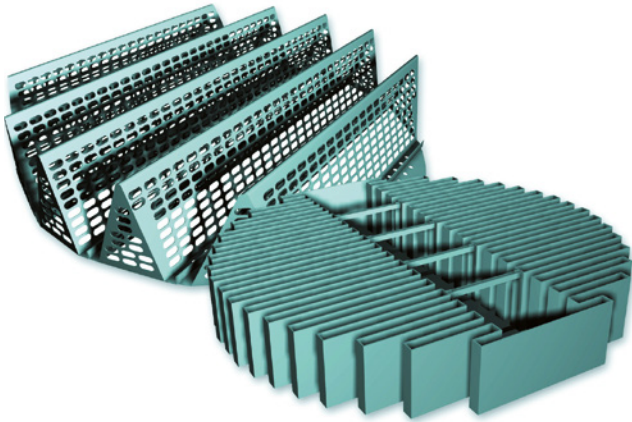
- VGPlus™ trays
- VG AF™ trays
- MVG™ trays
- MMVG™ trays
- SVG™ / LVG trays
- HiFi™ trays
- CS™ trays
- ConSep™ trays
- Valve (round or rectangular) trays
- Perforated (sieve) trays
- Bubble cap trays
- Dual flow trays
- Baffle trays
- Disc and donut trays
- Shower deck trays
- Chimney trays
- Cartridge trays
- Grid trays



We have your internals

Regardless of who supplied your original internals, we can supply and install the mass transfer equipment you need with a lump-sum, turnkey price. Sulzer Chemtech has a complete range of internals for the optimum performance of your columns.

- Distributors
- Supports
- Hold-downs
- Collectors
- Retainers
- Gas inlet systems
- Liquid inlet systems



We have your separators

Sulzer Chemtech can react to the most challenging deadlines and can assist with urgent replacement or repair of Separator internals.

- Knitmesh™ mist eliminator
- V-mister™ mist eliminator
- Mellachevron™ mist eliminator
- MKS Multi Cassette™ mist eliminator
- Shell Swirltube™
- Shell Swirltube Light™
- Shell Schoepentoeter™ Inlet Device
- Shell Schoepentoeter™ Plus Inlet Device
- Treelnlet™ Device
- GIRZ Cyclone Gas Inlet Device
- GITV Vapor Horn
- Vanta™ Inlet Device
- Dusec™ and Dusec Plus™ coalescer
- DC Coalescer™
- Mellaplate™ coalescer
- Shell cartridge coalescer

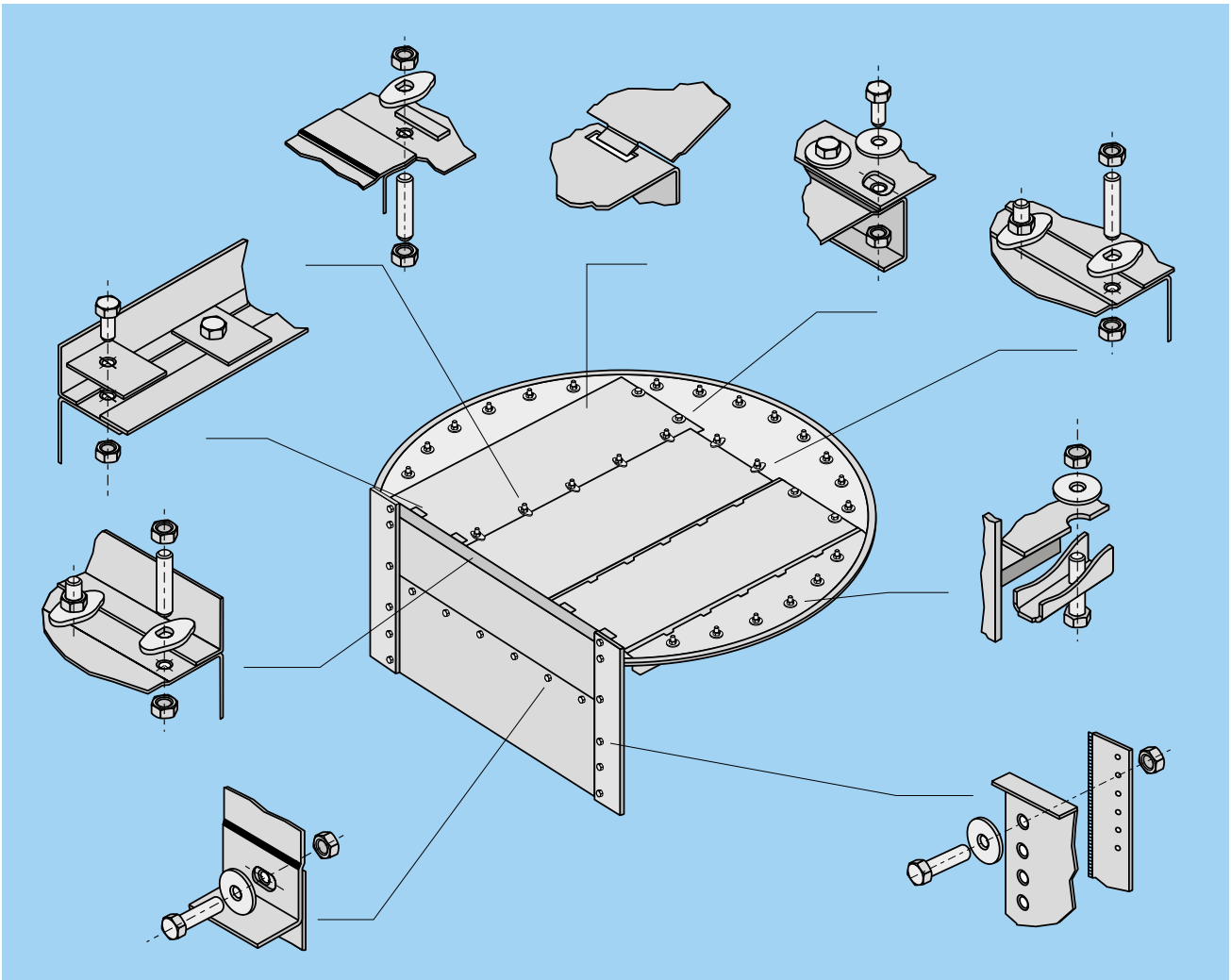


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A complete portfolio of tower hardware



Sulzer Chemtech can supply you with all the tower hardware or equipment your project needs. Whether you are in the middle of a shutdown or just planning ahead, our Team has the right products and services for you. Day or night, one call does it all!

Our large hardware inventory is available for immediate shipment, and our regional warehouses are in convenient proximity to our customers, wherever they may be.

Sulzer's hardware trailers and lockers can be stocked with each specific tower's hardware and located on your site for quick and easy access.



Turnaround services hardware

- Items are stocked in all regional warehouses.
- Hardware stocked in carbon steel; 410, 304L, 316L stainless steel; and Monel.
- Hardware available in other materials including exotics and various sizes.

Bolts

- Full thread
- Regular and slotted

- Available sizes:

	20	30	40	50	60	70
M 08	x	x				
M 10	x	x	x	x	x	
M 12		x	x	x	x	
M 16		x	x	x	x	
M 20				x	x	x
3/8"		x	x	x		
1/2"		x	x	x		
5/8"				x	x	

- Other sizes available upon request



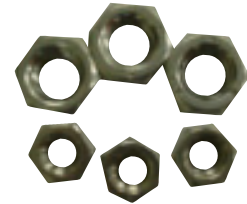
Hex nuts

- Heavy or finished

- Available sizes:

M 08
M 10 / 3/8"
M 12 / 1/2"
M 16 / 5/8"

- Other sizes available upon request



Washers

- Washers
- Lock washers
- Dimpled washers
- Domed washers
- Spring washers

- Available sizes:

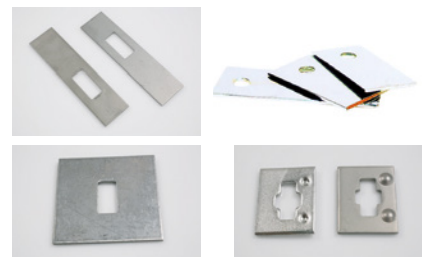
For bolt sizes as mentioned above

- Other sizes available upon request



Seal plates

- Beam plate
- Prof plate
- Downcomer plate
- Wedge clamp seal plate



Studs

- Full thread
- Square
- D shape

- Available sizes

3/8"	Full thread	Square	D shape
L = 50 mm		x	x
L = 65 mm		x	x
M10	Full thread	Square	D shape
L = 50 mm		x	x
L = 65 mm		x	x
L = 75 mm	x		
M16	Full thread	Square	D shape
L = 500 mm	x		
L = 1000 mm	x		

- Other sizes available upon request



- Any tray hardware or part can be manufactured upon request with a sketch or actual sample.
- Regardless of who supplied the original equipment, Sulzer does it all.

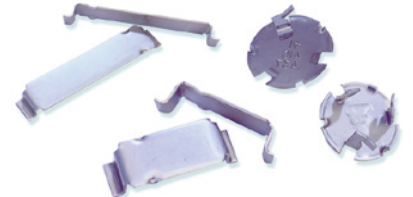
Manway fasteners

- Manway football washers
- Manway hex washers
- Slide fasteners
- Slide fastener washers
- D-washers



Valves

- Round
- Rectangular – BDP and BDH
- Caged
- Snap-in
- Other types available on request



Tray clamps

- One-way universal
- Two-way universal
- Universal „long“
- Universal with 2“ Bolt
- Universal with nut
- Wedge clamp
- Hinge clamp
- Clamp with bolt
- Other clamps available on request



Wedges lugs

- Wedge 80 x 1.5 mm
- Wedge 100 x 3.0 mm



Hook bolts

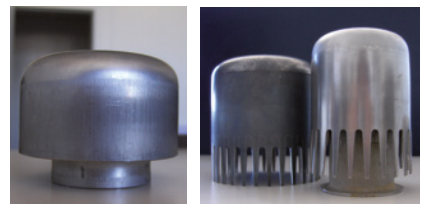
Different lengths and shapes on request



Bubble caps

All types of any size and manufacturer available on request

- e.g. Shell Bubble Caps
 FRI Bubble Caps
 Schmieding Bubble Caps
 Linde
 Bayer
 etc.



Turnaround services hardware

- Any tray hardware or part can be manufactured upon request with a sketch or actual sample.
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Gasket tape

- Non-drop warp
- Drop warp
- Rope
- Ladder band
- Tape

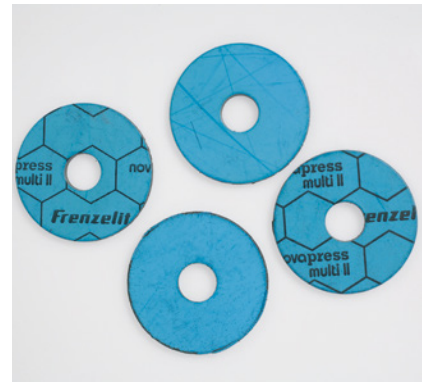
Available materials:

- Neoprene
- Teflon®
- Fiberglass
- Other materials available on request



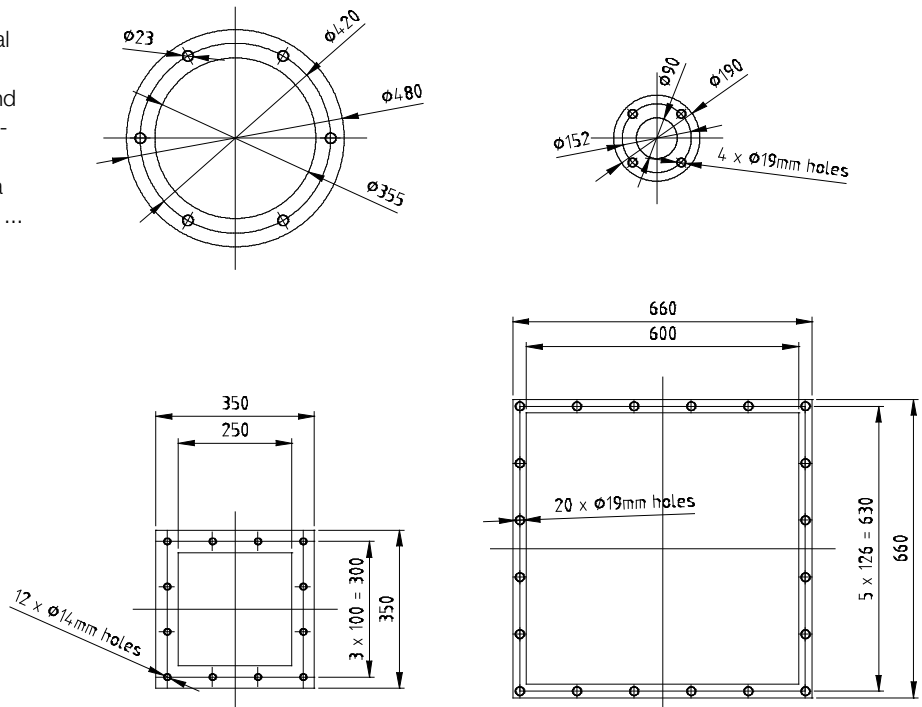
Gasket washers

- Other materials and sizes available on request



Gasket flanges

In addition to our standard stock internal piping gasket flanges we are able to produce gaskets of all sizes, designs and types all we need is a complete description (outside / inside diameter, number and size of holes and material type) or a sketch and you can leave the rest to us ...



Tower Field Service offers a complete blind-to-blind service covering isolation, tower manways, internals and tray inspections, tray cleaning, and any necessary repairs to trays or internals including hardware replacement.

In addition we can provide all necessary support services including scaffolding, specialist cleaning, cranes, etc. resulting in less administration for our clients.

Our global Tower Field Service presence provides the customer with the satisfaction of knowing that no matter where the site location, the high quality of service is maintained by our technicians and skilled workforce.

Supported by the Sulzer global manufacturing network we can supply your internals equipment needs as identified in pre-turnaround planning or during the actual turnaround by our technicians.

Maintenance Services

- Blind-to-Blind service
- External tower manways
- Opening and closing internal tray manways
- Tray cleaning
- Inspections and recommendations
- Tray and vessel shell repairs
- Static equipment
- Support services such as scaffolding, specialist cleaning, cranes, etc
- Flexibility in adjusting to changes in scope
- Consignment hardware lockers and trailers
- All replacement internals needs from our Global manufacturing network



Hardware Lockers and Trailers





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