

Case Study

Vessel Internals - Modernized at 18% Cost Savings

Challenge

A 90" ID vessel within a Texas chemical manufacturing facility required a replacement for a multi-layer catalyst support grid. This support grid was the primary media retention screening used to support the fluid/media weight and prevent media loss. Through several years of service, erosion created undesired gaps in the mesh layer which compromised the system.

No drawings were available and a planned shutdown was looming. It was necessary to reverse engineer the design based on measured dimensions, new selected media, metallurgy and anticipated service conditions.

One thing the client did know – the original cost.

Client engineers were convinced to revisit the design and modernize the vessel to accept the new media and 89" catalyst support grid required for longer-term service and overall cost savings.

Solution

A design review with client engineers detailed mechanical and operational requirements. Maintenance history and operational performance were reviewed against Delta Screen's knowledge and proposed design for a wedge wire support grid.

Key criteria for the vessel design included:

- Buckling and collapse resistance under high load – grid must support operating liquid / media weight and pressure differential
- Corrosion resistance – material selection offers an opportunity to extend service life while reducing maintenance costs
- Wedge-wire specifications and layout - ensure specific flow characteristics through the grid

"Not having drawings for the existing failed grid was a challenge as we needed a quick solution to get this vessel back in service."

"Delta's expertise in support grid design and quick turnaround gave us the confidence to quickly move through the design process to final approval... Modernizing the vessel was important to us for extended service within the facility."

(Plant Manager)

"Catalyst support grids are one of Delta Screens' specialties. We have a lot of expertise in design and fabrication of these grids."

(Paul Ho, Industrial Engineer)

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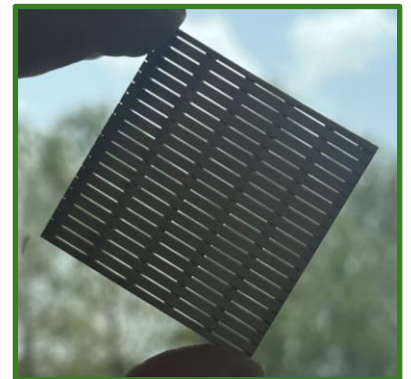
Result

The 89 inch 6-piece support grid assembly was delivered and installed within the shutdown time frame of 3 weeks.

The experience of the collaborative design review with Delta's manufacturing engineering experts highlighted opportunities going forward for upgrading and modernizing aspects of designs incorporating wedge-wire filtration. This design change using wedge wire fabrication replaced a multi-layer, outdated solution (subway grating, mesh layers and expanded metal), resulting in 18% in total cost savings for the new support grid.

The 100% Made in USA feature of Delta products will be a consideration for future work.

Delta Screens & Filtration proudly continues to fabricate filtration / separation screens for this valued customer.



Wedge wire filters are made with precision gap (slot) size to meet the desired flow requirements and solids particulate filtration and media retention.

We can provide from 0.002" (50 micron) gaps with best-in-class tolerance of +0.002"/-0.001".