

Compressor Lifespan Improvement

Scrubber retrofit increases the compressor's lifespan and reduces fouling on North Sea platform

The presence of corrosion and corrosion products in the compressor bundle led to a reduction in both the bundle's lifespan and compressor efficiency. Despite several initiatives to manage the problem, none succeeded.

We engaged directly with the client to determine the most likely root cause and develop an optimization plan. After a total system review, we identified the upstream scrubbers as the root cause.

Following a detailed review of the scrubber designs to ascertain capacity, we developed an advanced internals design and used computational fluid dynamics (CFD) to verify performance.

Then we manufactured all hardware and conducted all the removal and retrofit on site.

The project was executed on time and on budget. The cost savings in compressor bundle repairs easily covered the cost of the study and hardware supply.

The compressor's performance is on track to meet our client's overall project goals, including return on investment (ROI).

Project details

- Efficiency decay observed after 3,500 hours of operation on a new bundle
- Bi-annual replacement/rebuild required
- Identified upstream scrubbers as the root cause

Scope of work

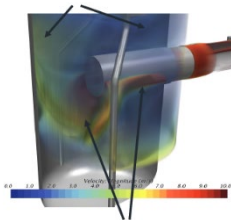
- Client workshop
- Total system review
- Detailed review of scrubber designs to ascertain capacity
- Developed advanced internals design
- Detailed CFD review to verify performance
- Manufacture of all hardware
- Site works for removal and retrofit
- Commissioning and optimization

Key facts

- Cost savings in compressor bundle repairs easily covered the cost of the study and hardware
- Project executed on time and on budget
- Offshore installation was smooth and as planned
- Performance is on track to meet client's overall project goals, including ROI

Existing internals

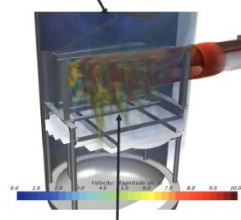
Inefficient inlet device leads to poor velocity distribution across vessel cross section. Note velocity differences indicated by arrows.



Velocity at locations indicated by arrows is similar. This suggests minimal momentum dissipation by existing inlet device.

Proposed internals

No evidence of short circuiting flow behaviour above the proposed inlet device.



Effective momentum dissipation is evident as the high velocity in the inlet nozzle doesn't propagate into the vessel volume.