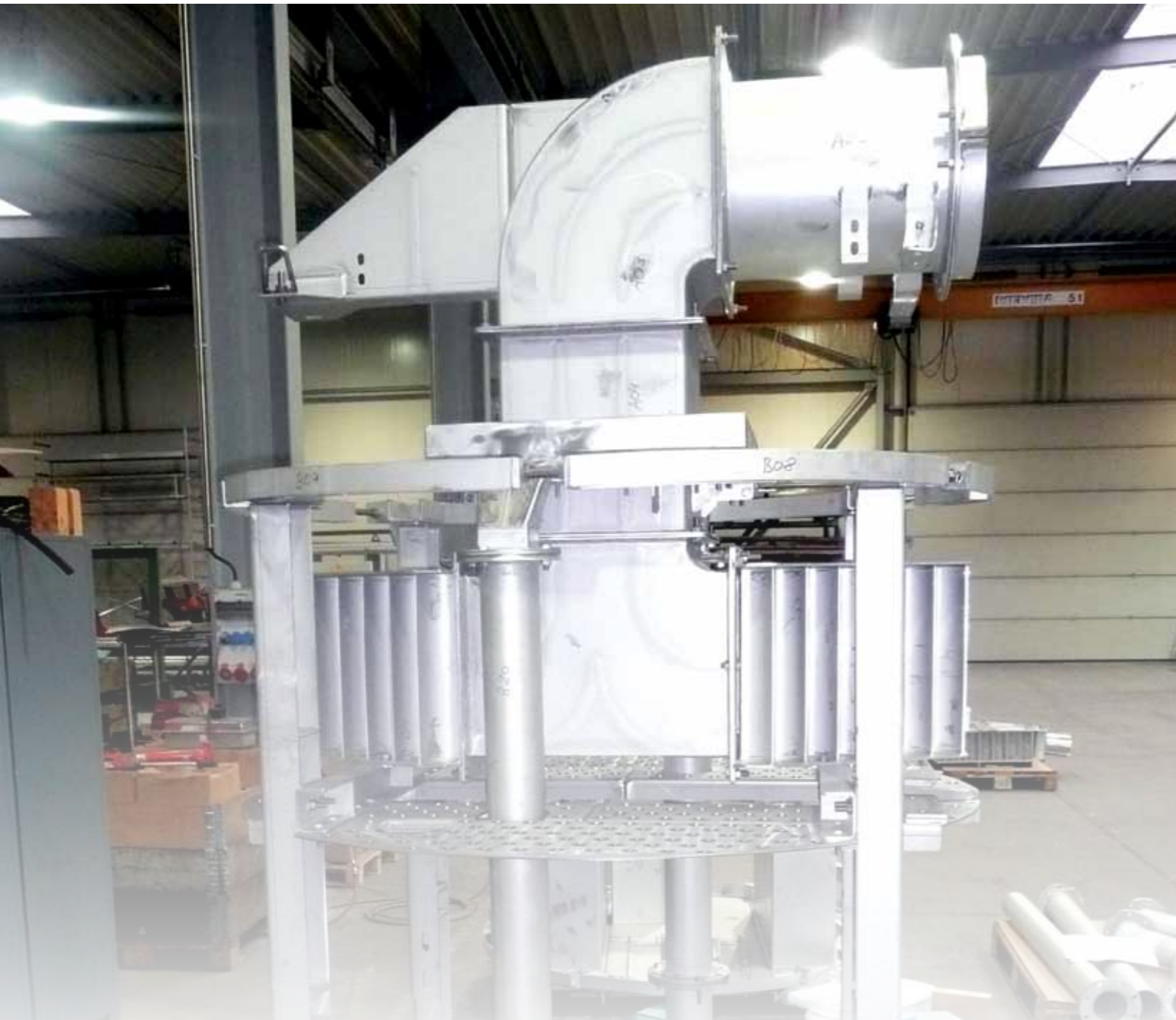


Maersk Oil Qatar Gets to Grips with Gas Scrubber

ESCHER's solution provides continuity



ESCHER Process Modules (ESCHER) delivered three Gas Dehydration and Glycol Regeneration units for the GD and ED offshore platforms of the Al Shaheen gas field of Maersk Oil Qatar (MOQ) in the Persian Gulf in 2008. The scope for ESCHER's contract consisted of design, fabrication and supply of three Gas Scrubbers (gas and liquid separators), three Glycol Contactors (absorption towers) and three skid-mounted Glycol Regeneration units.

Inducement

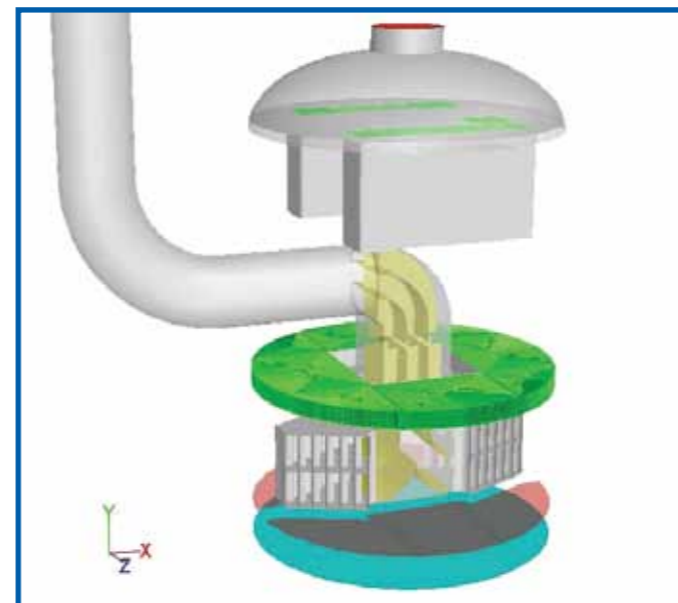
It emerged during the start-up of the system on the GD platform that the composition of inlet gas flow to the gas scrubber differed from the gas for which the system was originally designed and ordered. Besides a different composition – resulting in the presence of far higher quantities of liquid hydrocarbons – the gas throughput was also far higher.

This eventually became visible in the glycol regeneration unit. Degradation products of liquid hydrocarbons were found here in the form of solid carbon. This proved that the Gas Scrubber was not working properly and, by consequence, there was liquid breakdown.

Finding the bottleneck

MOQ selected ESCHER to conduct a study for rectifying the working of the Gas Scrubber. The Gas Scrubber contains process internals, or a gas and liquid separation system. The study showed that the existing internals were unsuitable for the present gas velocity and particle size of the liquid droplets.

By replacing the 'vane pack' (blade package) by a system of cyclones with a 'mesh pad' (gauze pack), it was possible to guarantee again the separation processes of the Gas Scrubber. Together with ESCHER's supplier of internals, a plan was produced to replace the internals of the Gas Scrubber and carry out the project as a retrofit, with ESCHER responsible for CFD (Computational Fluid Dynamics) modelling, design, delivery, documentation, and supervision of the installation works on the offshore platform.



A CFD study was conducted to obtain an impression of the gas flow through the container with the new internals



The cyclones deck fitted to the top of the cage

Cage

Hot work (i.e. welding and grinding) in the Gas Scrubber vessels for the purpose of the retrofit was not preferred, because the Gas Scrubber is covered on the inside with a so-called 'Belzona' protective layer. Such protective layer is a fibre-reinforced synthetic coating. To avoid welding and grinding, the internals were installed in a steel cage with the fullest possible use of the existing supports. The cage was assembled in the Gas Scrubber and the internals were hung in it. To protect the Belzona coating, PTFE packing (Teflon) was fitted between the cage and the coating of the container.

Time pressure

Besides the technical issues, the delivery time was also a challenge to achieve. The standard delivery time for the applied process internals without installation in a cage, is approximately three to four months. Due to the scheduled platform shutdown, ESCHER supplied the internals in a record time of seven weeks, including a mock-up test (i.e. rehearsal of the installation and its assembly) in the workshop. Furthermore, ESCHER produced a tailor-made Retrofit Installation, Operation and Maintenance Manual in addition to the customary documentation. This manual enabled MOQ to install the internals during the shutdown within three days under ESCHER's supervision.

Thanks to the success and timely delivery of this project, MOQ is interested to have also the internals of the Gas Scrubbers on the ED platform replaced by ESCHER.

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