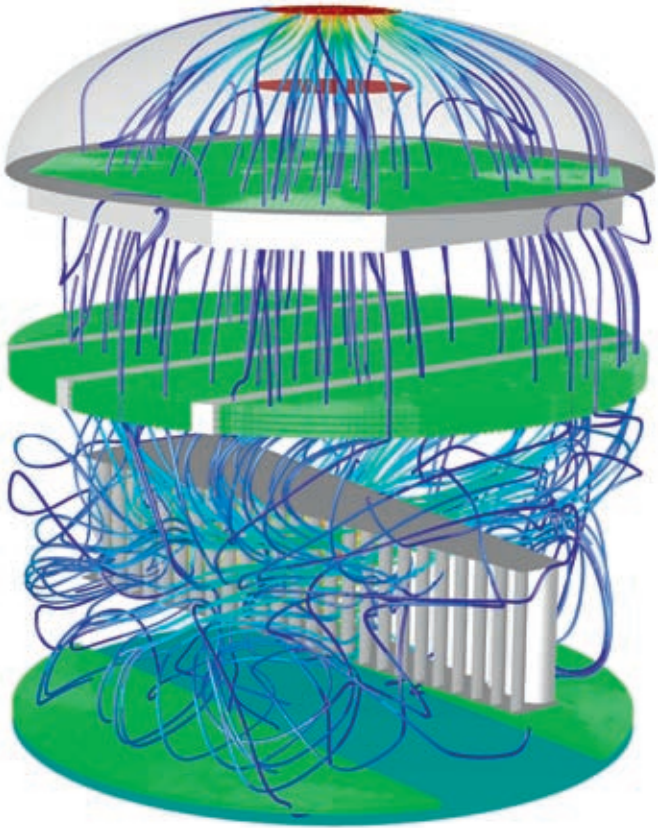
CDS Separation Technology

Computational Fluid Dynamics



3-phase Separator

Cold Separator c/w upstream piping

Accurate performance prediction

Analysis, design, testing and optimization are critical steps in the CDS approach to separation technology. Computational fluid dynamics modeling (CFD) is a key tool, which can be used to analyze flows and their interaction with complex surfaces in pipes, manifolds, separators, etc. CFD modeling provides an accurate representation of the expected flow profiles, which can then be used to predict the performance of a separation system.

FMC Technologies

Computational Fluid Dynamics

How it works

Flow distribution is a critical factor in all separation processes, whether they are gas/liquid, liquid/liquid or gas/liquid/liquid. To analyze and optimize the performance of a system, the flow distribution needs to be known, the challenge is that these separation processes take place at elevated pressures and in a very aggressive environment, so the actual situation cannot be observed directly. With CFD the system can be modeled and the necessary information visualized. CFD is a very powerful, flexible and cost-efficient tool that can be used to replace expensive, time-consuming tests.

Computational models are easily revised, without the need for extensive engineering or hardware modifications. Furthermore, CFD offers any view you may require of the separation process and the physical properties of the construction. This provides detailed information about the process at any location in the system, which would be difficult to obtain in a test or operational environment. Qualitative comparisons of the performance of different designs can then be made to identify the optimal solution.

Since these are virtual models, no material handling is involved in this phase of the design process. Even highly complex system designs can be explored without the need to use any physical tools. Once a design is optimized in terms of CFD, the model can be verified with our extensive in-house and on-site test capabilities if this is required.

Benefits

- Quick, low-cost method to determine the cause of separation-related performance issues
- Allows a technically substantiated performance comparison between different design alternatives
- Quick, low-cost detailed evaluation of separation designs
- Problem-free operation.

Scrubber with upstream piping

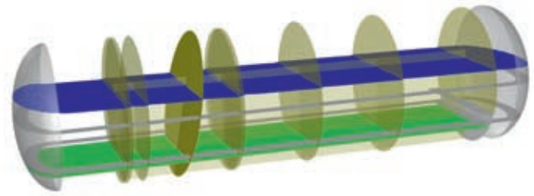
Internals:
- Evenflow HE
- Mesh Type Agglomerator
- Spiraflow Cyclones
- Liquid Surface Protection

Retrofit simulation

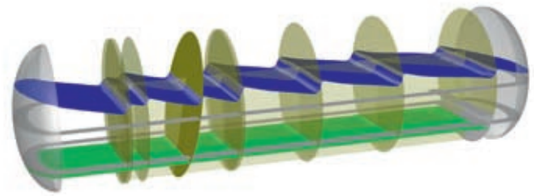
Applications

- Troubleshooting, determining the cause of poor performance of separation equipment
- Design optimization, reducing the size and weight of separation equipment
- Design optimization, increasing the capacity of existing separators by proposing and reviewing a retrofit design
- Design optimization, increasing the efficiency of existing separators
- Design optimization for FPSOs, including motion mitigation
- Key focus areas (both new build and retrofit): scrubber applications, 2/3 phase separators, inline equipment, manifolds and pipework systems and custom applications.

Separator on a FPSO

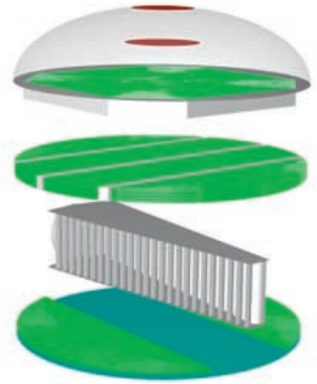


Internals:
- Distribution baffles
- Motion dampening baffles
- Surge rings
- Weir plate

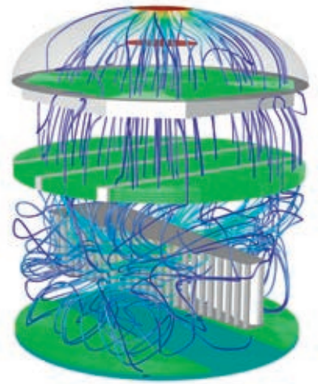


New built simulation

Scrubber



Internals:
- Evenflow HE
- Mesh Type Agglomerator
- Vane-pack
- Liquid surface protection



New built simulation

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And keep you ahead.

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