

Case Study

Increased capacity through bigger cylinder diameter and installation of HydroCOM and monitoring system

A refinery in Germany required more hydrogen for the desulphurisation process. Increased the throughput of the three single-stage compressors by 9.1–9.8 t/h to meet a need for hydrogen for desulfurization.

Compressor manufacturer: DRESSER-RAND

Type	BDCB 12	Gas	H2 mix
Power	1,080 kW (1468 hp)	Suction pressure	22 bar (319 psi)
Speed	371 rpm	Discharge pressure	47 bar (681 psi)
Lubrication	no		

Solution applied

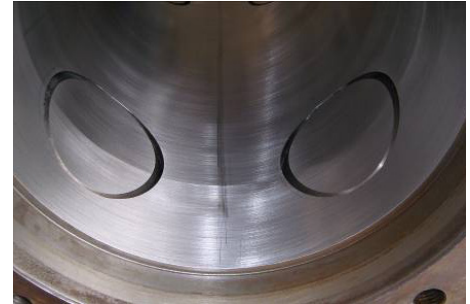
- Compressor audit and simulation
- Evaluation of possible capacity increase
- Capacity increase achieved by combining slightly bigger cylinder diameter with reduced clearance volume
- Pulsation calculation
- New HOERBIGER valves and piston rings
- Installation of HydroCOM system for continuous control
- Change pistons from a single-piece to a two-piece design
- Documentation and CE marking

Results

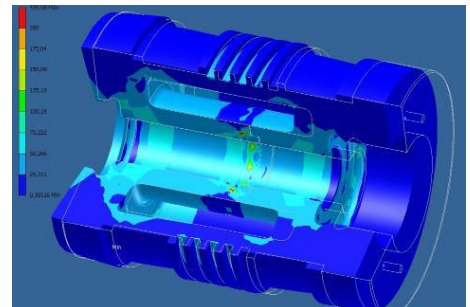
- Economical investment compared to six new cylinders
- Capacity increased by 8%
- Fast and accurate control has improved operability of the hydrogenation process and extended the catalyst lifetime



One of the three hydrogen compressors



New dummy valves for reduced clearance



New FEA-optimised pistons

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