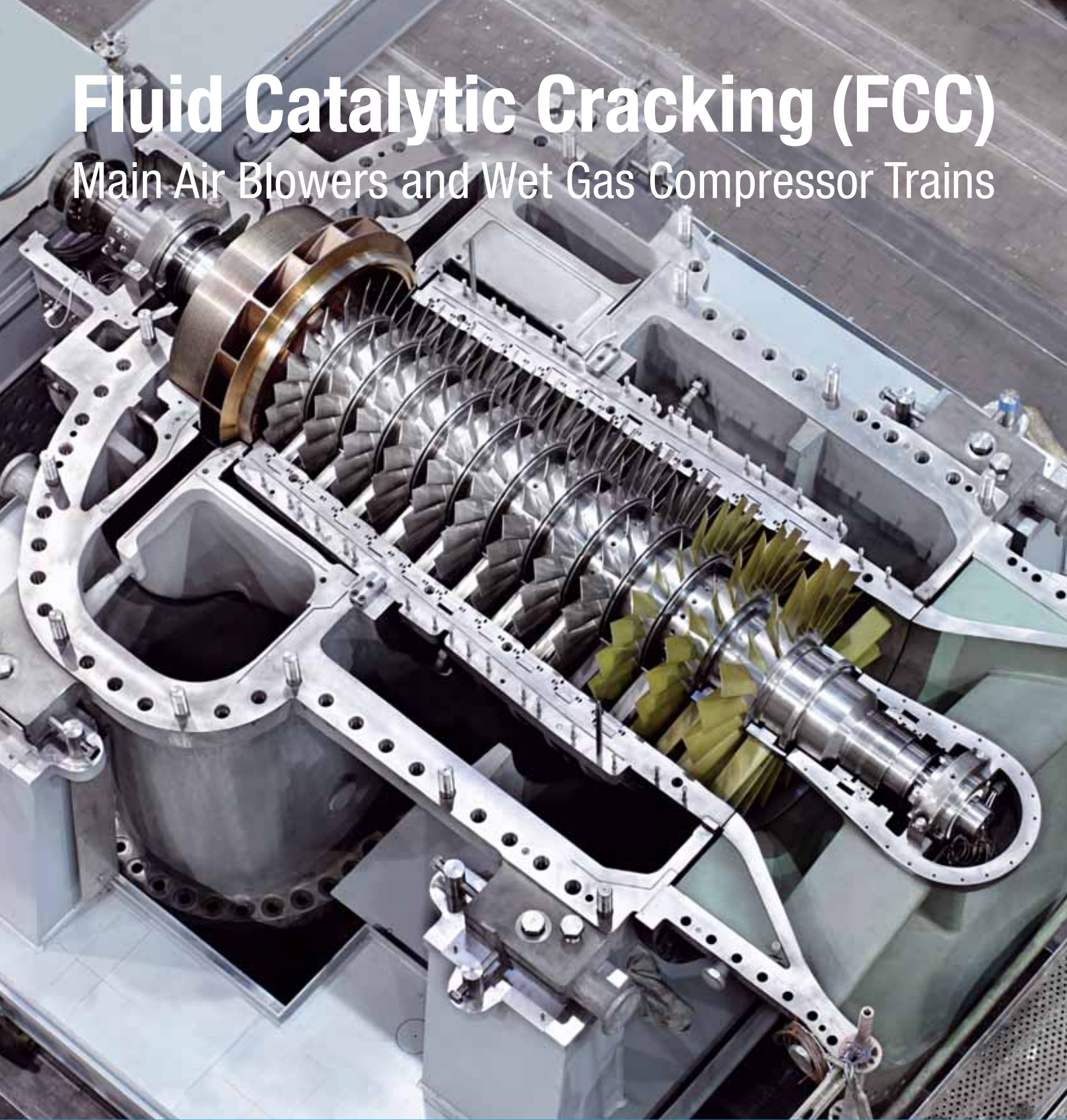


Fluid Catalytic Cracking (FCC)

Main Air Blowers and Wet Gas Compressor Trains



Engineering the Future – since 1758.

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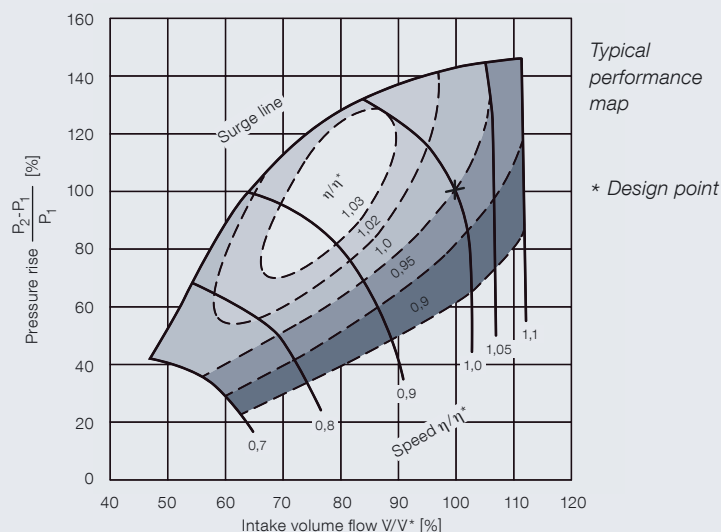
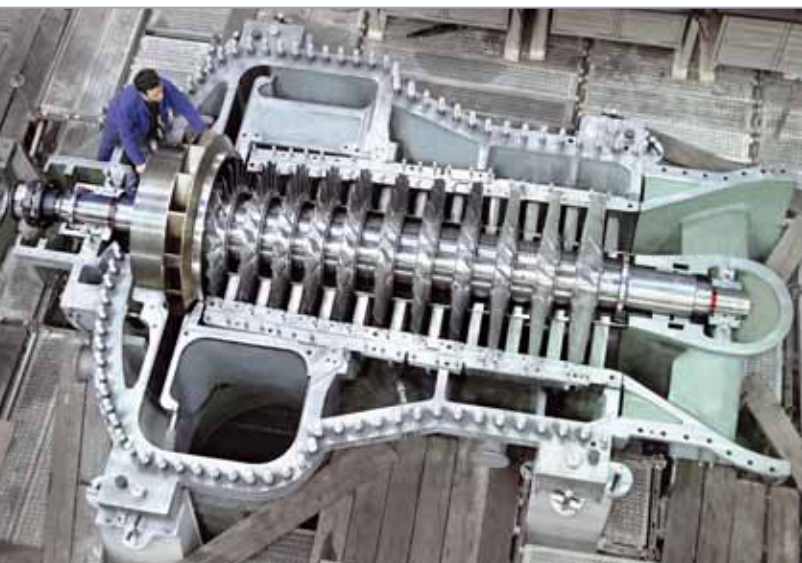


Turbomachinery for FCC Plants

Main Air Blower



The growing demand for light hydrocarbons such as benzene or propylene is driven by the increasing level of motorization worldwide on the one hand and the growing need for plastic or synthetic fibres on the other. With the help of the Fluid Catalytic Cracking (FCC) process, a key conversion process where various heavy hydrocarbons are converted to lighter, more valuable products via high-temperature catalytic cracking, this growing demand can be covered. Turbomachinery trains are at the heart of these plants and as such exert a significant influence on plant profitability.



The air compressor takes atmospheric air and delivers it to the regenerator at pressure ratios of approx. 4-5 for the subsequent combustion process.

MAN Diesel & Turbo is the leading supplier of air compressor trains including steam turbine drivers in FCC plants with flows up to 1,000,000 m³/h and has gained significant references for this application worldwide including the Main Air Blower for the world's largest FCC plant.

The challenging operating conditions with varying flow rates and temperatures can be covered by the wide-ranging performance map with its inherent speed and/or stator blade control capability and the well proven design with radial end stage.

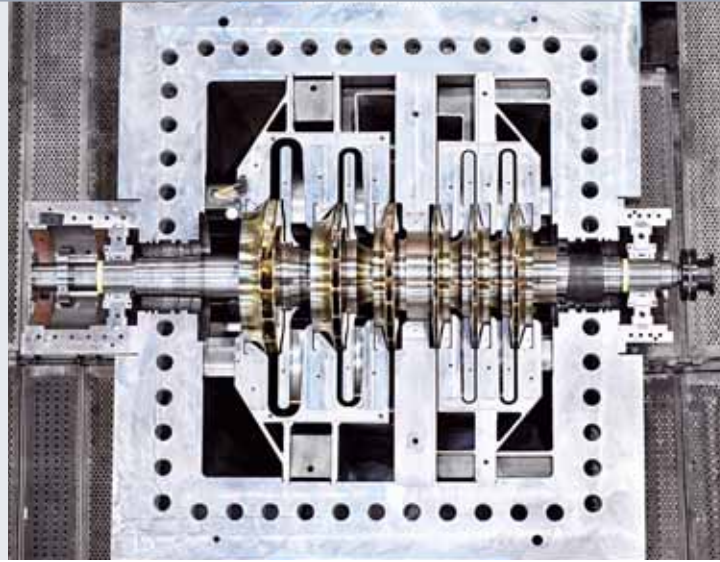
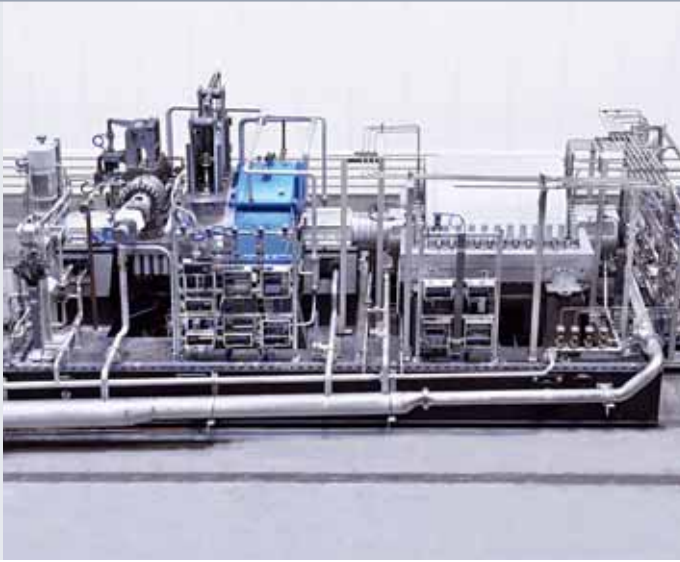
Design features

- Axial or radial inlet
- Cast iron casing, horizontally split
- Double casing design (inner/outer casing)
- Radial end stage/rotating diffuser
- Reaction-type blading
- Solid forged shaft/rotor (single piece)

Advantages

- Robust design
- High flexibility and reliability
- Ease of maintenance
- High efficiency
- High cost efficiency

Wet Gas Compressor Train



The vapours or wet gases from the reactor are compressed by the Wet Gas Compressor (WGC) before being transferred to the high-pressure condenser. Typically, the Wet Gas Compressor is a two-stage inter-cooled centrifugal compressor driven by an industrial steam turbine.

MAN Diesel & Turbo supplies the Wet Gas Compressor, an optimized machine for specific process conditions and fully compliant with NACE requirements, as well as the respective steam turbine driver. Both machines are designed according to the specific customer and process requirements, fully tested and assembled in the factory.

Design features

- Dry Gas Seals (DGS) in double or tandem arrangement
- Closed impeller in 2D or 3D design, optimized for specific flow requirements of each stage
- Horizontally split casing for easy maintenance
- Water/wash oil injection for long mean time between maintenance activities
- Back-to-back arrangement

Advantages

- Robust design
- High flexibility and reliability
- Ease of maintenance
- High efficiency
- High cost efficiency

Competencies



Workshops and testing facilities

To meet today's needs for high-quality, economic production and short delivery periods, advanced workshops are mandatory. The state-of-the-art production and service shops as well as assembly and testing facilities of MAN Diesel & Turbo's turbomachinery sector fulfil these requirements in every respect.

Additionally, the entire supply chain is continuously developed further for an optimum flow of materials and reduced lead times.

In 2004, a sophisticated assembly and test centre for large machine trains was commissioned including overhead cranes, cooling towers, steam supply lines and substantial electrical power supply system. This enables MAN Diesel & Turbo to work on several machine trains with modules up to 600 tons of weight at the same time by using an area of more than 4,500 m².

Experience

- More than 100 years of experience
- All FCC processes covered
- Approved by all oil and gas majors worldwide
- Some 200 turbomachines supplied for FCC
- References for all types of rotating equipment including Main Air Blower, Wet Gas Compressor, Heat Pump Compressor, Expander as well as the respective steam turbine drivers for various customers and operators

Selected references

Order year	Installation	Customer/operator	MAN Diesel & Turbo equipment
2010	Ruwais, UAE	GSEC/Takreer	Main Air Blower, Steam Turbine
2009	Cuddalore, India	NOCL/NOCL	Main Air Blower, Wet Gas Compressor, Steam Turbines
2006	Ulsan, South Korea	SK Corp./SK Corp.	Main Air Blower, Steam Turbine
2006	Minatitlan, Mexico	Dragados/Pemex	Main Air Blower, Wet Gas Compressor, Steam Turbines
2006	Jamnagar, India	Bechtel/Reliance	Main Air Blower, Wet Gas Compressor, Steam Turbines
2006	Dung Quat, Vietnam	JGC/PetroVietnam	Main Air Blower, Steam Turbine
2005	Rabigh, Saudi Arabia	JGC/Rabigh Joint Venture	Main Air Blower, Steam Turbine
2005	Point-a-Pierre, Trinidad & Tobago	Petrotrin/Petrotrin	Main Air Blower, Wet Gas Compressor, Steam Turbines

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