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MAN Energy Solutions
Future in the making

FCC-EH hot gas expander

Reliable and efficient for maximum power recovery

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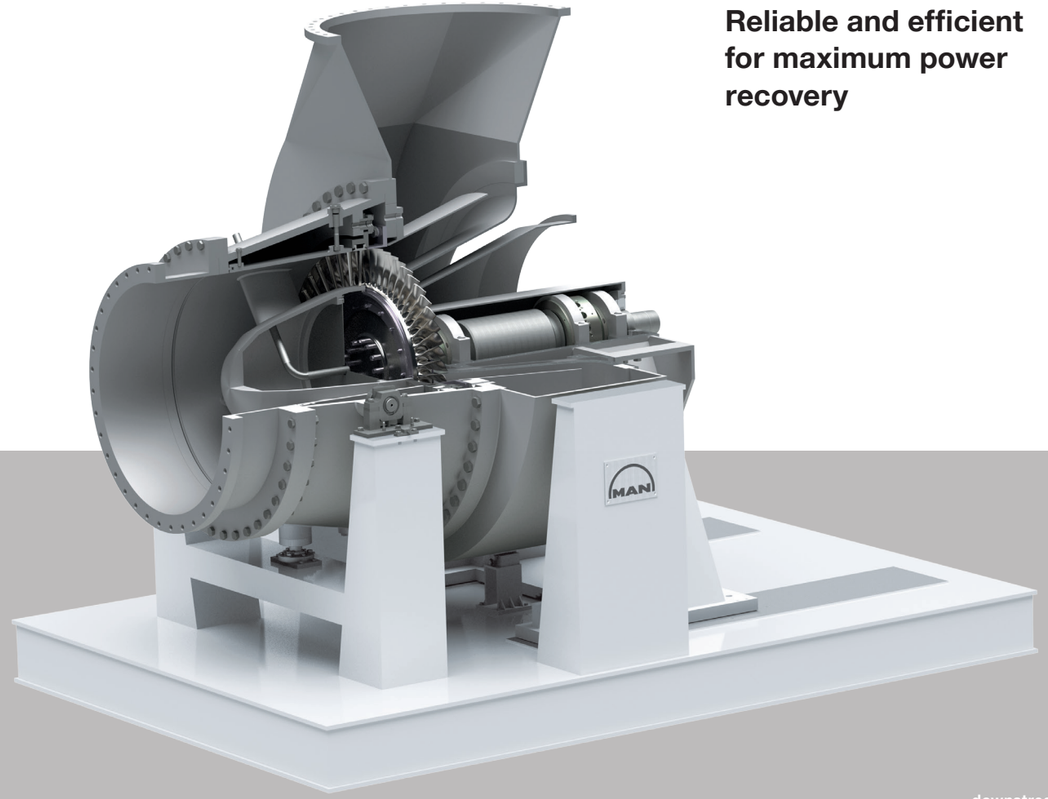


downstream
turbomachinery

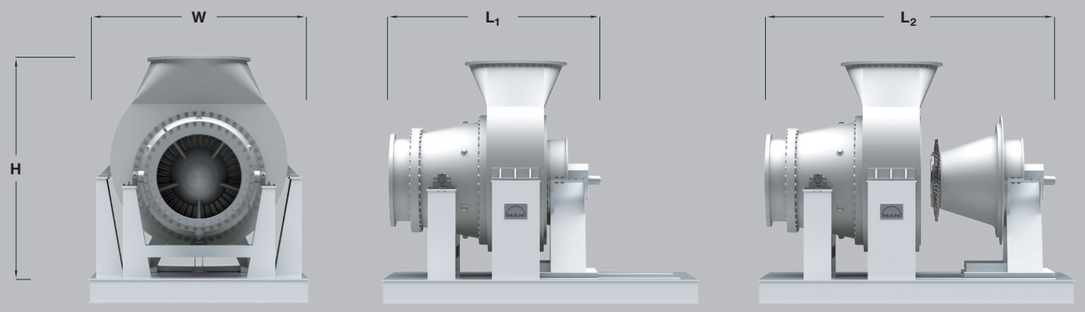
FCC hot gas expander

Technical data

Dimensions (example: EH100)

L_1 (mm)	3,700
L_2 (mm)	5,100
W (mm)	3,500
H (mm)	3,700
Dry mass (t) without frame	22.5
Output (kW)	20,000

Last updated August 2018



General

Fluid Catalytic Cracking (FCC) as one of the most important industrial conversion processes converts high molecular weight hydrocarbon fractions into more valuable products like gasoline, olefinic gases and others.

Economic reasons, but also societal demands for conservation of resources, make it advisable to utilize the energy still contained in the process and residual gases, e.g. for driving turbomachinery in power recovery trains or to separately drive a generator for power generation.

Since 1950, MAN Energy Solutions has built more than 300 process gas turbines. The FCC Hot gas expander as the latest development step combines the benefits of both the gas turbines and turbochargers, resulting in a very robust, compact and economically optimized design.

Technical specification

- Power output 5 to 40 MW
- Pressure ratio up to 3.6
- Operating temperature up to 760°C
- Afterburn temperature up to 840°C (short term)
- Efficiency up to 87%

Main features

- CFD-designed axial rotor blades
- Steam cooled rotor system
- Single stage overhung design
- Vertically split casing
- Integrated washing system
- Compact overall size due to increased power density

Train configurations

- Power generation train:
  Hot gas expander with generator as stand-alone solution
- Power recovery train:
  Hot gas expander and motor generator supplement the Main Air Blower train

Blading design strategy

- Aerodynamical design:
  Profile sections individually tailored to avoid flow separation and low flow areas (minimized fouling)
- Mechanical design:
  Profile sections tailored for optimal stress distribution (optimum robustness)

Maintenance concept

Easy access and maximum reliability
- Condition monitoring
- Remote monitoring for native operation
- Borescope holes for blading inspection
- Rotor assembly from rear side
- No removal of process piping necessary
- Bearing inspection without rotor disassembly

Design features

Expander for power recovery