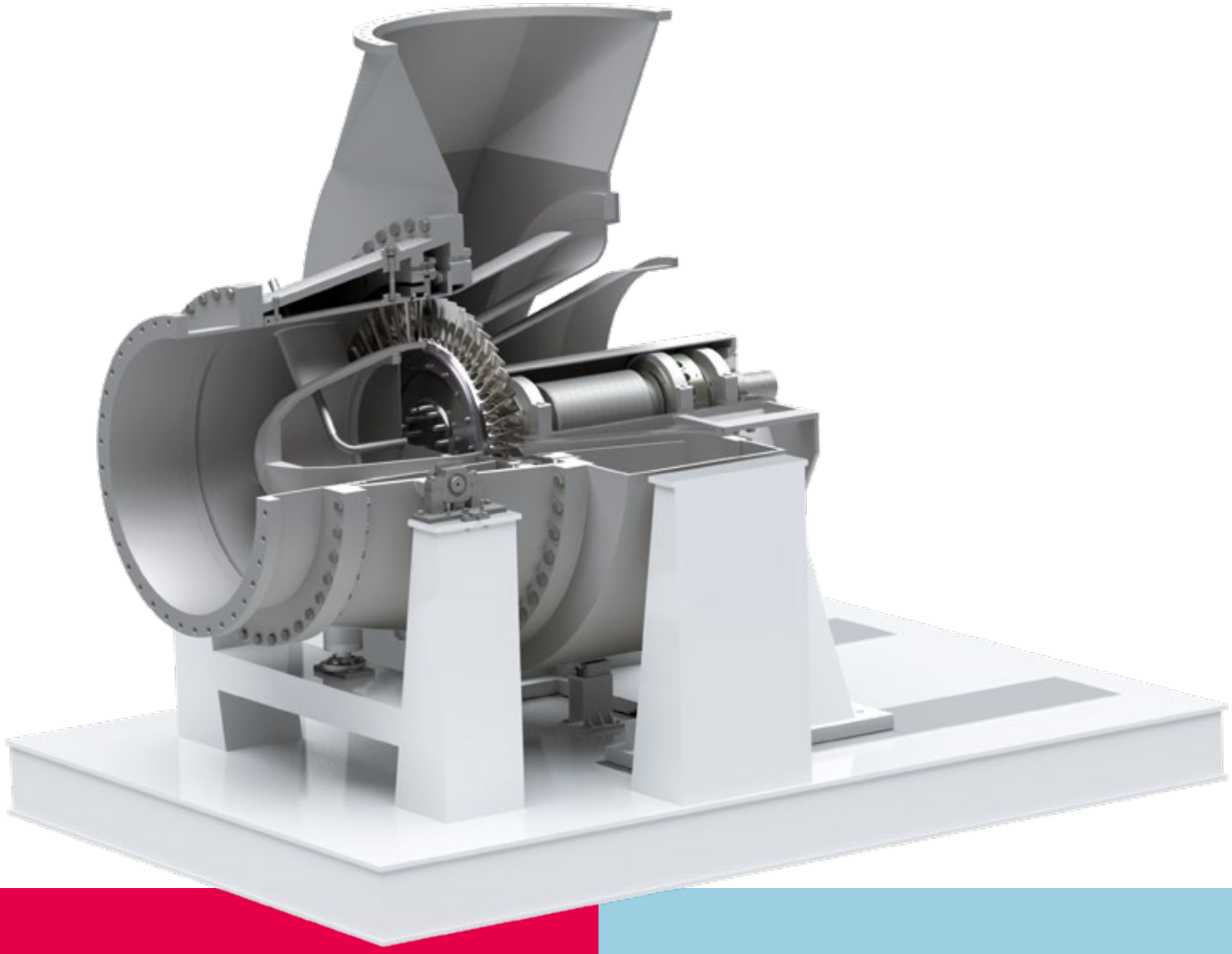
Hot gas expander

FCC-EH



Designed for maximum power recovery

Benefits at a glance

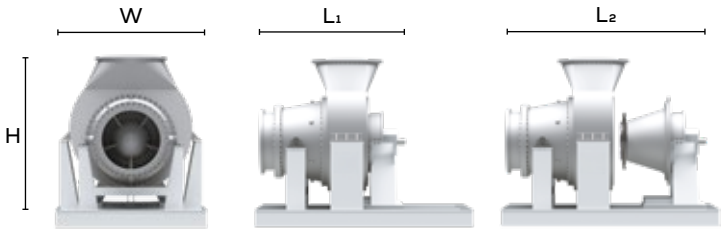
- High efficiency
- Robust & compact design
- Flexible power output
- Smart maintenance design
- Tailored aerodynamics for reliability

Everllence

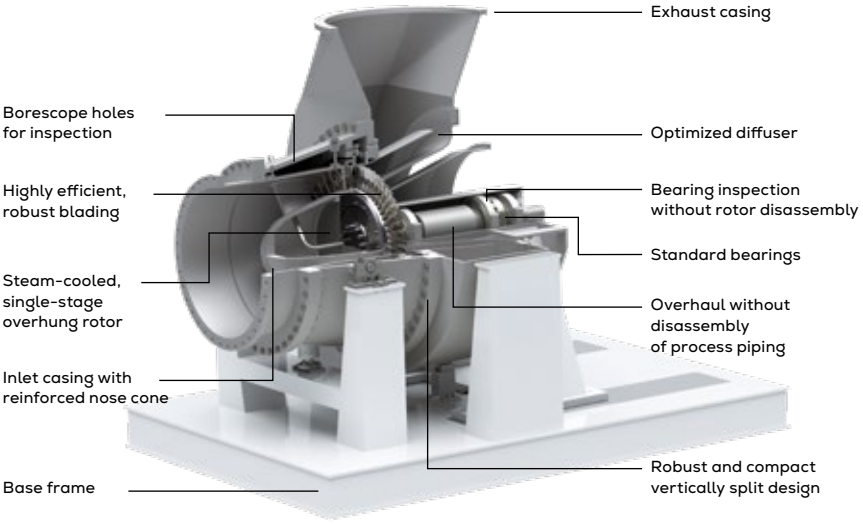
FCC-EH
Hot gas expander

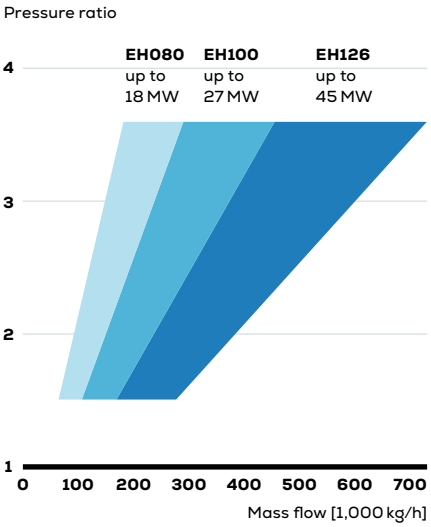
Technical data

Dimensions	EH080	EH100	EH126
L_1 (mm)	3,200	4,000	5,100
L_2 (mm)	4,400	5,500	7,000
W (mm)	2,800	3,500	4,500
H (mm)	3,000	3,700	4,700
Mass (t)	10	18	32
Output (MW)	18	27	45



Design features
Expander for power recovery





General
Fluid catalytic cracking (FCC) converts heavy hydrocarbons into valuable products like gasoline and olefins. To improve efficiency and sustainability, the energy from residual process gases can be recovered to power turbomachinery or generate electricity. Everllence's latest FCC hot gas expander is based on decades of experience and the delivery of over 300 process gas turbines. It offers a compact, robust, and cost-efficient solution by combining gas turbine and turbocharger advantages.

Technical specification
- Power output 5 to 45 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

Maintenance strategy
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

Blading design strategy
- **Aerodynamic design:** Profile sections individually tailored to avoid flow separation and low flow areas (minimized fouling)
- **Mechanical design:** Profile sections tailored for optimal stress distribution (maximum robustness)

Train configurations
- **Power generation train:** Hot gas expander with generator as standalone solution
- **Power recovery train:** Hot gas expander and motor generator supplement the main air blower train

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