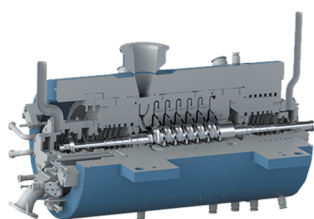
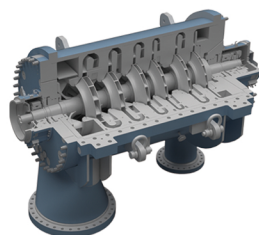


Product Overview



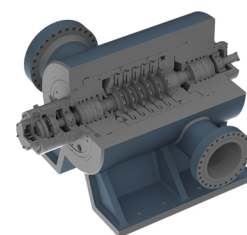
CP Series Centrifugal Compressor

Outlet Pressure: Up to 450 barg
Flow Rate: Up to 143,000 m³/h
Typical Applications: Onshore/Offshore Oil and Gas, Petrochemicals, Methanol, Natural Gas Storage and Transportation, Refining, Fertilizers, FPSO



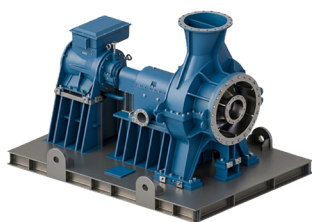
SP Series Centrifugal Compressor

Outlet Pressure: Up to 45 barg
Flow Rate: Up to 265,800 m³/h
Typical Applications: Onshore/Offshore Oil and Gas, Petrochemicals, Fertilizers, Olefins, Refining, General Chemicals, Dry Chlorine



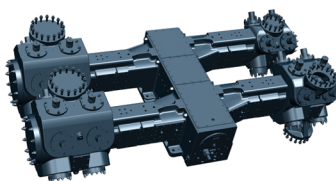
GS Series Centrifugal Compressor

Exhaust Pressure: Up to 222 bar
Shaft Power: Up to 56,000 kW
Typical Application: Natural Gas Pipeline



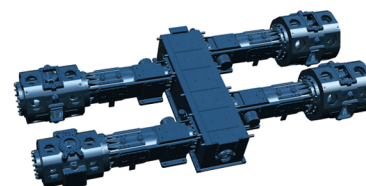
DB Series Compressor

Flow Rate: Up to 300,000 m³/h
Pressure Ratios: Up to 3
Typical Application: Used in Ethylene / Butanol / Acrylic Acid / Polypropylene applications and all kinds of blowers



ZXH Series Reciprocating Compressor

Horsepower: Up to 6,500 kW
Speed: 1,000-1,800 rpm
Throws: 2, 4 or 6
Typical Applications: Onshore & Offshore Oil and Gas Production, LNG, Natural Gas Storage & Transportation, Fuel Gas Boosting, Hydrogen Energy, and Natural Gas/Carbon Dioxide Injection, etc.



ZX Series Reciprocating Compressor

Speed: 240-720 rpm
Throws: 1 - 10
Typical Applications: Refining, Petrochemicals, Chemicals, Hydrogen, Carbon Dioxide Compression, etc.

Centrifugal Compressor Product Features

- 1. Optimized calculation of aerodynamic flow coefficient
- 2. Aerodynamic model stage validated through performance testing
- 3. Optimized stator design with strict clearance requirements for a more compact unit structure
- 4. Rigorous manufacturing process control and supplier quality assurance

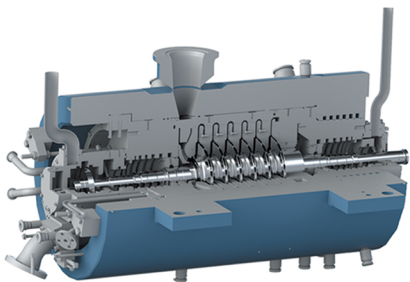
Centrifugal Compressor Product Series

CP Series (High-Ultrahigh Pressure)

Application Scenarios: Onshore/Offshore Oil and Gas, Petrochemicals, Methanol, Natural Gas Storage and Transportation, Refining, Fertilizers, FPSO

Typical Model: CP306-A

- Suitable for re-injection gas processes on offshore natural gas platforms
- Outlet Pressure: 236 barg
- Flow Rate: 600 m³/h



Compressor Type	Impeller Diameter mm	Maximum Flow Rate m ³ /h	Pressure Limit barg	Design Rotational Speed rpm
CP30X	Up to 300	10600	Up to 450	11111-21000
CP40X	Up to 400	18900	Up to 400	8333-20000
CP50X	Up to 500	29600	Up to 320	6666-15000
CP60X	Up to 600	42600	Up to 250	5555-12000
CP70X	Up to 700	58000	Up to 200	4760-10000
CP80X	Up to 800	75800	Up to 200	4167-8570
CP90X	Up to 900	95900	Up to 200	3700-7500
CP100X	Up to 1000	118400	Up to 100	3333-6666
CP110X	Up to 1100	143000	Up to 50	3030-6000

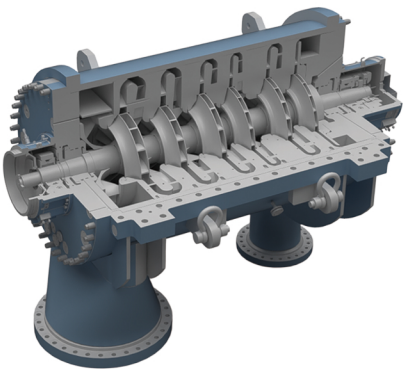
Centrifugal Compressor Product Series

SP Series (Medium-Low Pressure, Capable of Handling Ultra-large Flow Rates)

Application Scenarios: Onshore/Offshore Oil and Gas, Petrochemicals, Fertilizers, Olefins, Refining, General Chemicals, Dry Chlorine

Typical Model: 2SP806-B

- Suitable for instrument air compression
- Outlet Pressure: 8 barg
- Flow Rate: Approx. 70000 m³/h



Compressor Type	Impeller Diameter mm	Maximum Flow Rate m³/h	Pressure Limit barg	Design Rotational Speed rpm
SP30X	Up to 300	10600	Up to 45	11111-21000
SP40X	Up to 400	18900	Up to 45	8333-19000
SP50X	Up to 500	29600	Up to 45	6666-15500
SP60X	Up to 600	42600	Up to 45	5555-12000
SP70X	Up to 700	58000	Up to 45	4760-10000
SP80X	Up to 800	75800	Up to 30	4167-8570
SP90X	Up to 900	95900	Up to 30	3700-7500
SP100X	Up to 1000	118400	Up to 20	3333-6666
SP110X	Up to 1100	143000	Up to 20	3030-6000
SP120X	Up to 1200	170000	Up to 20	2780-5454
SP130X	Up to 1300	200000	Up to 20	2565-5000
SP140X	Up to 1400	231500	Up to 20	2380-4615
SP150X	Up to 1500	265800	Up to 20	2200-4285

Naming & Interpretation of Centrifugal Compressor

2 CP 4 09 – B

- 2 stands for 2 process stages
- CP stands for vertically split compressor
- 4 stands for nominal diameter (impeller tip diameter in decimeters, rounded up)
- 09 stands for impeller number (quantity of stages)
- B stands for back-to-back arrangement rotor

Supercritical Carbon Dioxide (sCO₂) Brayton Cycle Waste Heat Power Generation Solution

Main Scope of Supply

Core Main Equipment

- Centrifugal Compressor (API 617)
- Axial Expander (API 617)
- Gearbox
- Common Baseplate

Power Drive Equipment

- Asynchronous Motor / Generator

Auxiliary Process Systems

- Lubricating Oil Station
- Seal Gas Control Cabinet

Electrical and Control Systems

- Unit Control Panel
- VFD Control Cabinet
- Local Control Cabinet

Main Applications: Medium- and Low-Temperature Heat Sources (300–500°C)

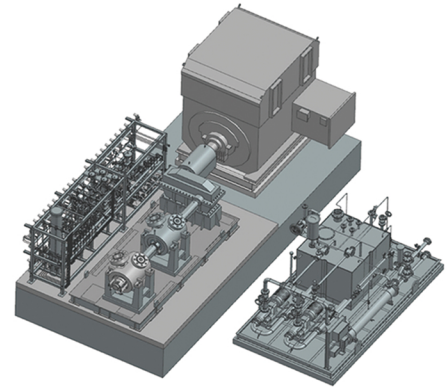
Gas Turbine Waste Heat Recovery: Power generation

through recovery of exhaust heat from gas turbines

- Onshore Applications: Natural Gas Compressor Stations
- Offshore / Marine Applications: Marine Propulsion Systems, FPSOs, Offshore Platforms
- Best-Fit Units: 10–35 MW Gas Turbines

Industrial Process Waste Heat Recovery: Power generation through recovery of waste heat from boilers, smelting furnaces, incinerators, heat treatment facilities, etc.

Applicable Industries: Steel, Cement, Glass, Paper, Chemical Processes, etc.



sCO₂ Turbomachinery Design and Manufacturing Capabilities

• Aerodynamic and Rotor Dynamic Design

Accurate capture of rapid property changes near the critical region and flow control for compressors

- Coupled real-gas state modeling and 3D multiphase CFD
- Accurate prediction of transonic / supersonic flow induced by leading-edge flow acceleration
- Stable operation under variable conditions with surge and choke resistance

Flow-path reconstruction and residual velocity loss optimization for expanders under ultra-high power density

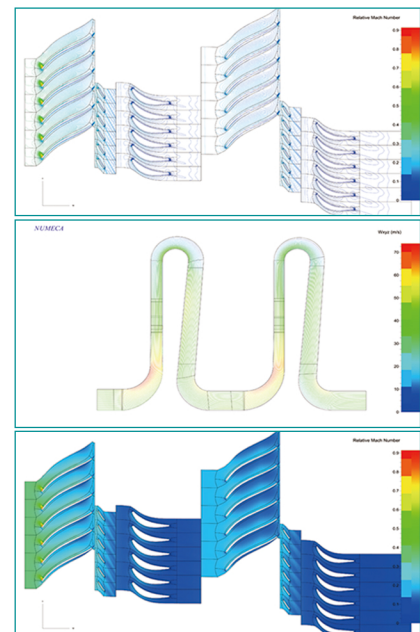
- Precise matching of impeller outlet reaction to minimize exhaust residual velocity losses
- Precise 3D swept and twisted blade design to ensure aerodynamic efficiency under high-temperature and high-enthalpy-drop conditions

Adaptation to excitation caused by high fluid density

- High-precision rotor dynamic modeling and verification for the complete shaft system under multiple operating conditions and coupled multi-physics fields
- Integrally machined honeycomb seals or hole-pattern seals are applied in critical components. Positive damping technology is introduced

Extreme thermal management and shaft seal control under severe temperature and pressure boundaries

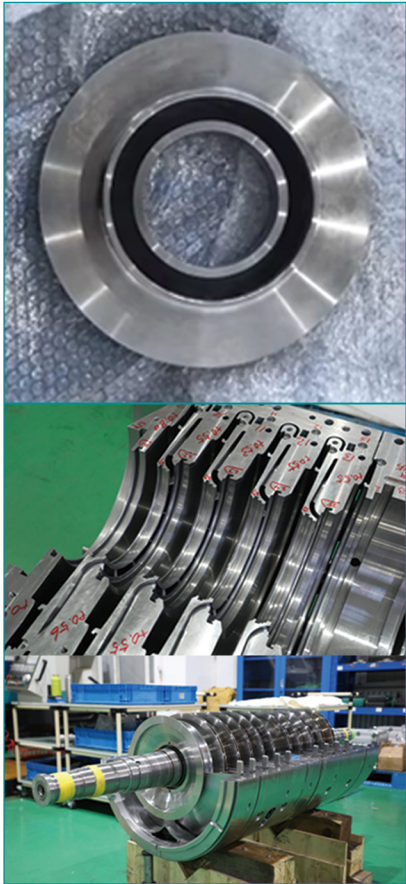
- Transient thermo-structural coupled FEA under extreme temperature gradients
- Thermal isolation design of the shaft system



sCO₂ Turbomachinery Design and Manufacturing Capabilities

• Key Components

Rotor	• High-speed rotor design and manufacturing • Dynamic balancing verification • Long-term stable operation
Impeller	• Integral five-axis CNC machining • High-efficiency aerodynamic blade profile • Application of high-strength materials
Diaphragm and Stator Components	• Precision flow-path machining and aerodynamic performance optimization • Modular structure design for easier assembly and maintenance
Casing and Pressure-Retaining Components	• High-pressure design
Tilting Pad Journal Bearing (TPJB)	• Five-pad oil-lubricated tilting pad bearing design • Long service life and low maintenance requirements • Excellent damping performance and rotor stability
Oil Lubrication System	• Supports frequent start-stop operation and long-term stable operation
Process Sealing System	• Equipped with standard dry gas seals • Minimizes process gas leakage losses
Generator and Drive System	• Standard low-speed generator solution • High reliability and low operation and maintenance costs



• Flexible Control and System Integration



Flexible Control Methods

Flow can be flexibly adjusted according to cycle load and operating conditions

- Adjustable inlet guide vanes can be used for regulation
- Speed regulation via VFD



Skid-Mounted System Integration

- Skid-mounted design for easier installation and system integration
- All rotating equipment integrated on the same skid
- Standard base unit adaptable to multiple application

• Manufacturing Capabilities : Five-Axis EDM Machining (Integral Manufacturing)



450 m/s
Closed impeller tip speed up to



Verified on rotor test bench, with
approximately **40%** performance margin



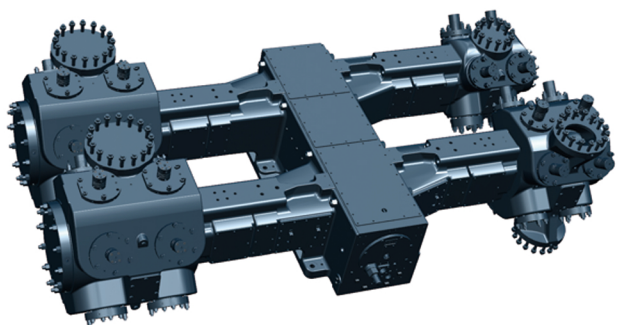
400°C 235 barA
High-temperature and high-pressure
adaptable design, up to

Reciprocating Compressor Product Series

– ZXH Series Reciprocating Compressor

**Separable high-speed reciprocating compressor
(compliant with ISO 13631; API 618 available)**

- Designed for natural gas gathering, processing, and storage applications, including CNG and LNG services.
- ZXH-H – Medium Oilfield High Speed Recip.
- ZXH-I – Heavy Oilfield High Speed Recip.
- ZXH-J – Super Heavy Oilfield High Speed Recip.



Compressor Specifications

- Power: 405 – 6,500 kW
- Speed: 600 – 1,800 rpm
- Rated pressure: Outlet pressure slightly above atmospheric pressure—55MPa

Model	Stroke (mm)	Throws	Max. Power (kW)	MACCRL (kN)	Cyl. bore range (mm)
ZXH-H	127 / 152 / 178	2,4 or 6	3,310	200	120-520
ZXH-I	127 / 152 / 178	2,4 or 6	5,370	265	120-710
ZXH-J	152 / 178	2,4 or 6	6,500	375	120-710

Naming & Interpretation of Reciprocating Compressor

X Model X – XXX XX – XXXX
Throws Compressor Model Stages Stroke L -Lubricated Cylinder Bore
N-Non-lubricated

2 ZX-B 2 - 381 N - 508X355.6

2-Throw, ZX-B Type, 2-Stage Reciprocating Compressor, 381 mm Stroke, Non-Lubricated,
First-Stage Cylinder Bore 508 mm, Second-Stage Cylinder Bore 355.6 mm.