

Centrifugal and Axial Compressors

Product line overview

50+ years of compression solutions



Innovating with our customers

Serving multiple markets



Refinery

- Fluid catalytic cracking
- Reforming
- Hydrocracking



Chem/petrochemical

- Syngas and fertilizers
- CO₂ for urea plants
- Ammonia synthesis
- Methanol synthesis



Upstream

- Oil production
- Gas production
- Gas lift
- Gas re-injection
- Gas storage
- Subsea

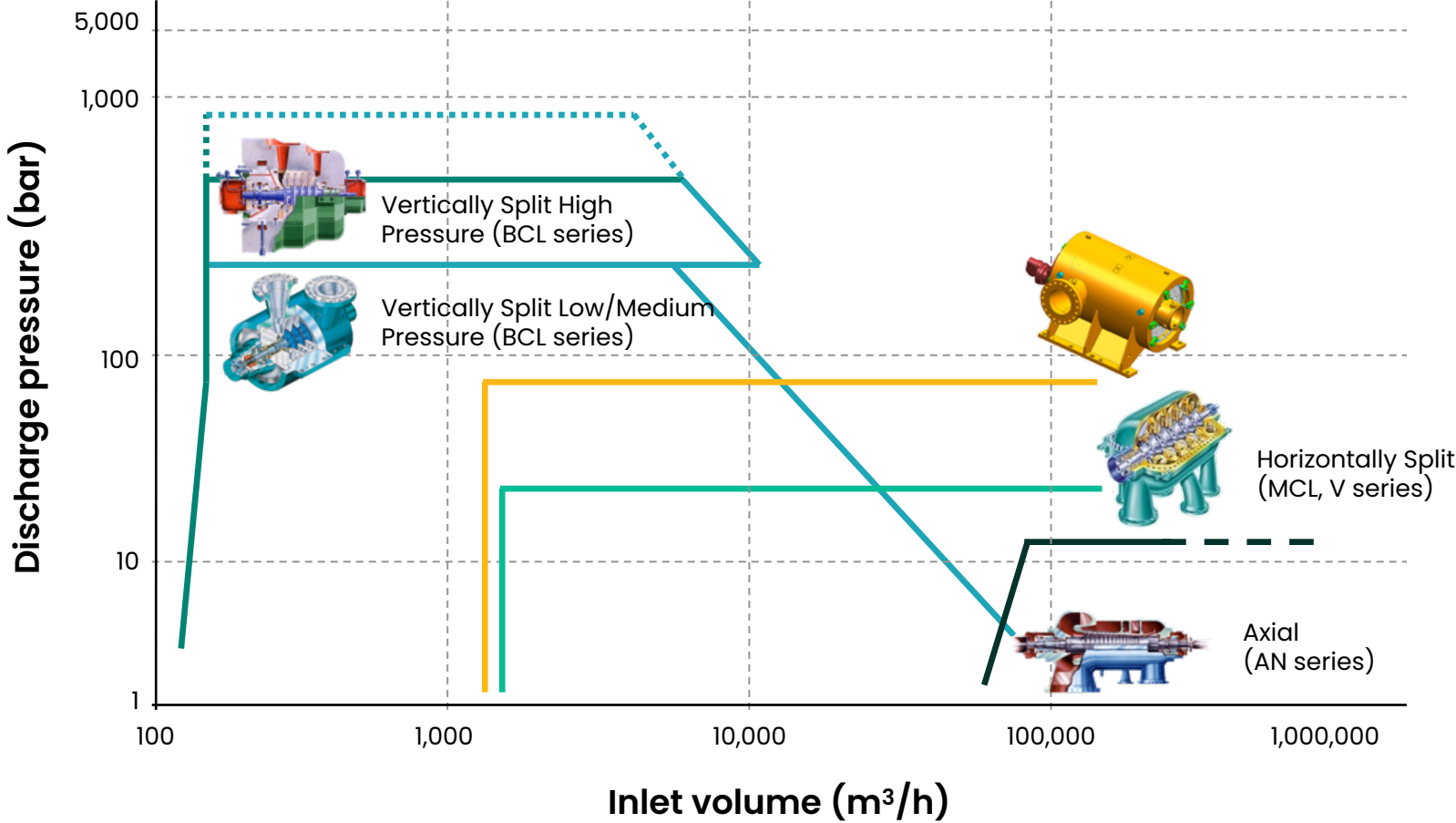


Downstream and distribution

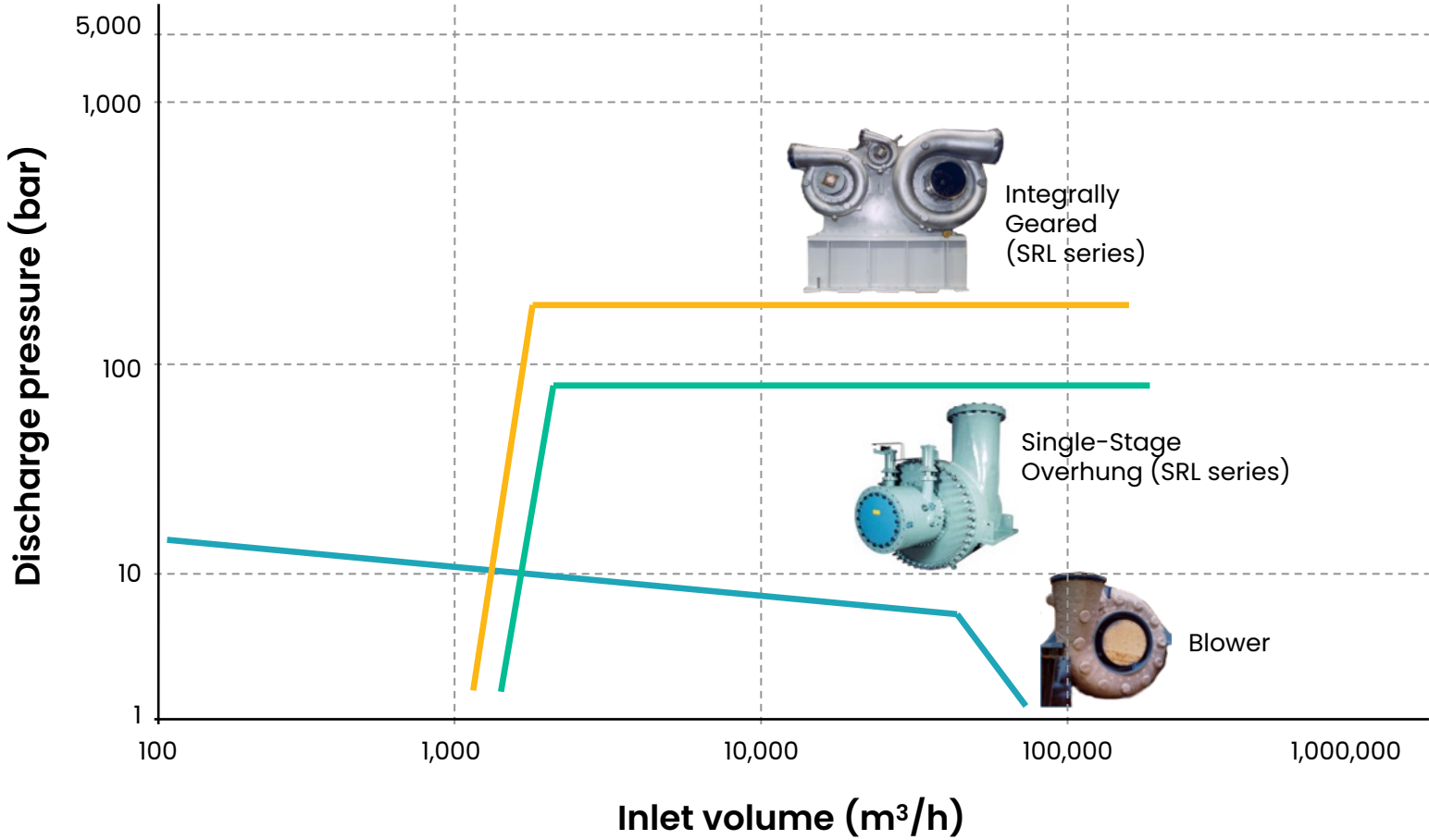
- Liquefied natural gas
- Gas to liquid
- Pipeline

Product line overview

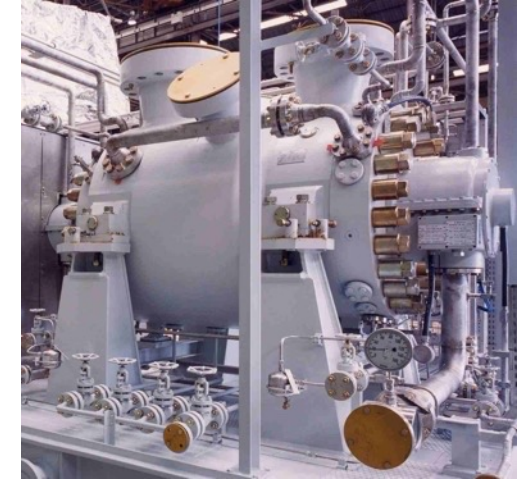
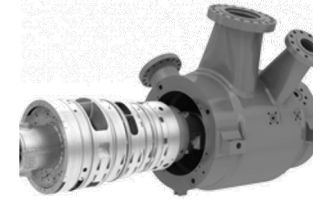
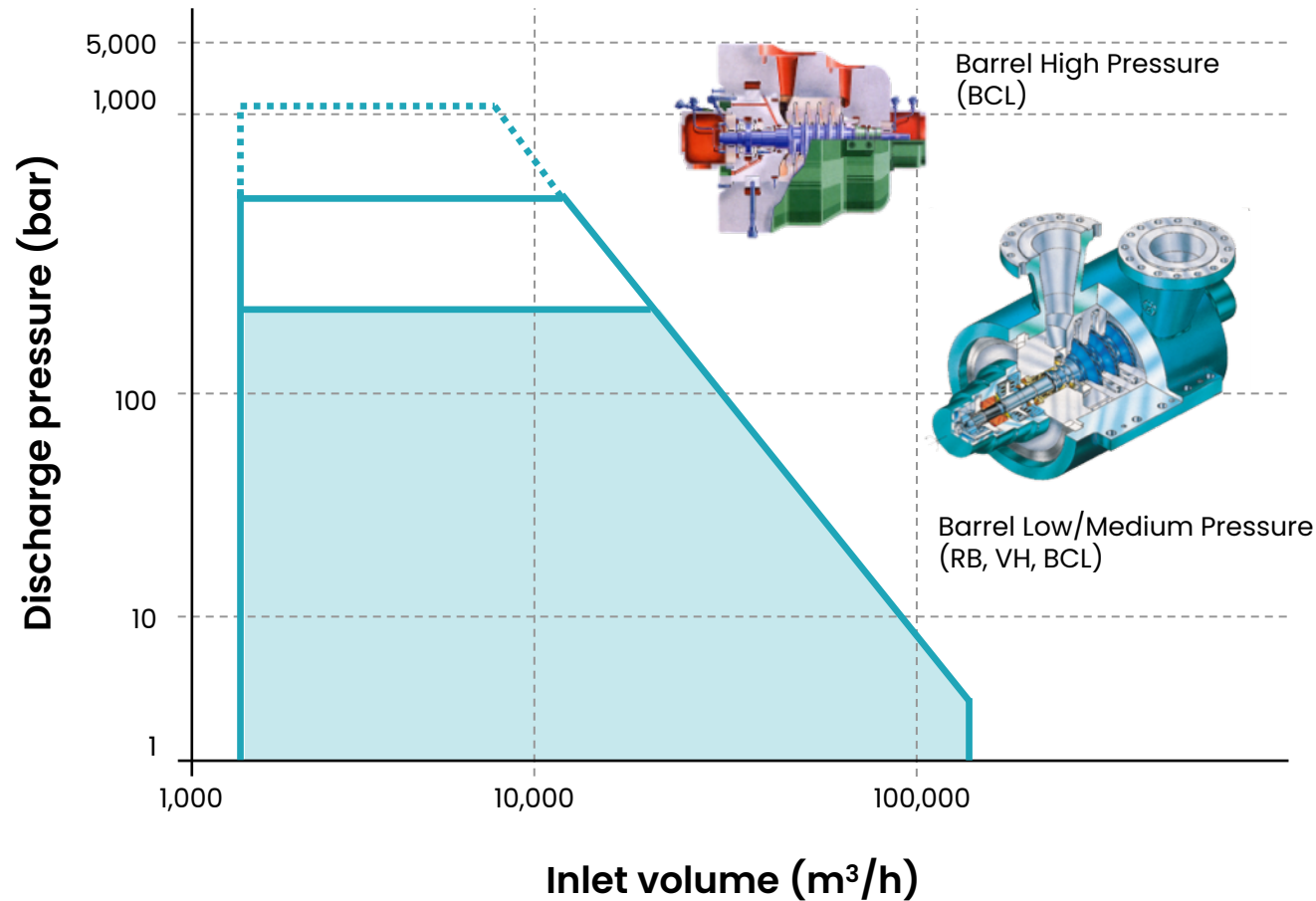
Product line: between-bearing design



Product line: overhung design



Vertically split compressors



Sizes

- From 300 to 1,200 mm, in-line or back-to-back
- Pressure ratio up to 30:1

Pressure

- Up to 800 bar
- Highest running pressure: 760 bar

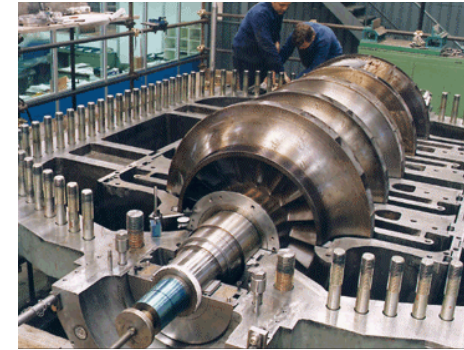
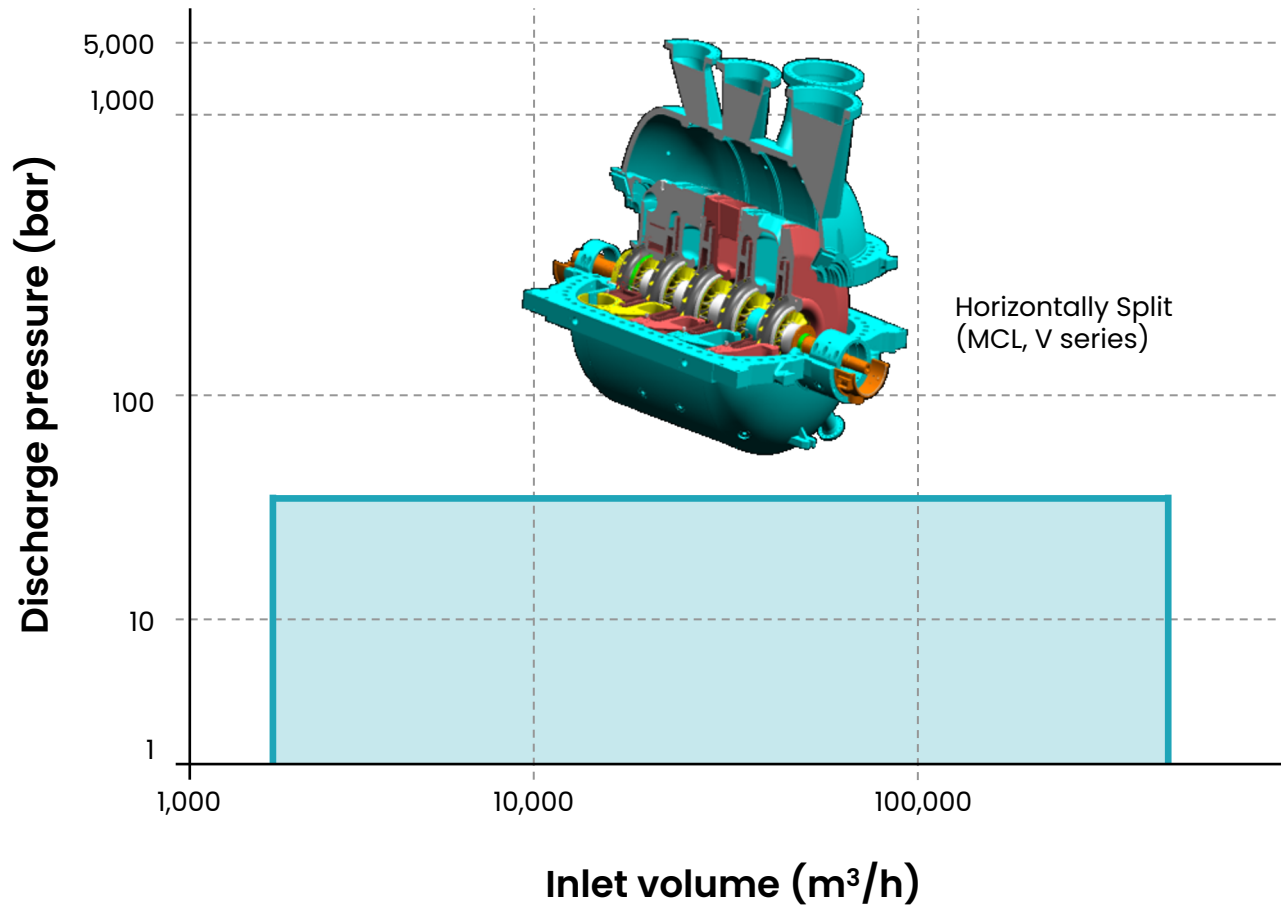
Applications

- Primarily for high-pressure applications such as ammonia, urea and methanol synthesis, refinery recycle, natural gas compression, gas injection, re-injection, and hazardous gases

Over 2,400 units installed worldwide

Versatile, reliable designs for high-pressure and corrosive conditions

Horizontally split compressors



Sizes

- From 300 to 1,800 mm, in-line or back-to-back
- Flanges up to 86 inches
- Largest diameter impeller 1,850 mm

Pressure

- Up to 50 bar

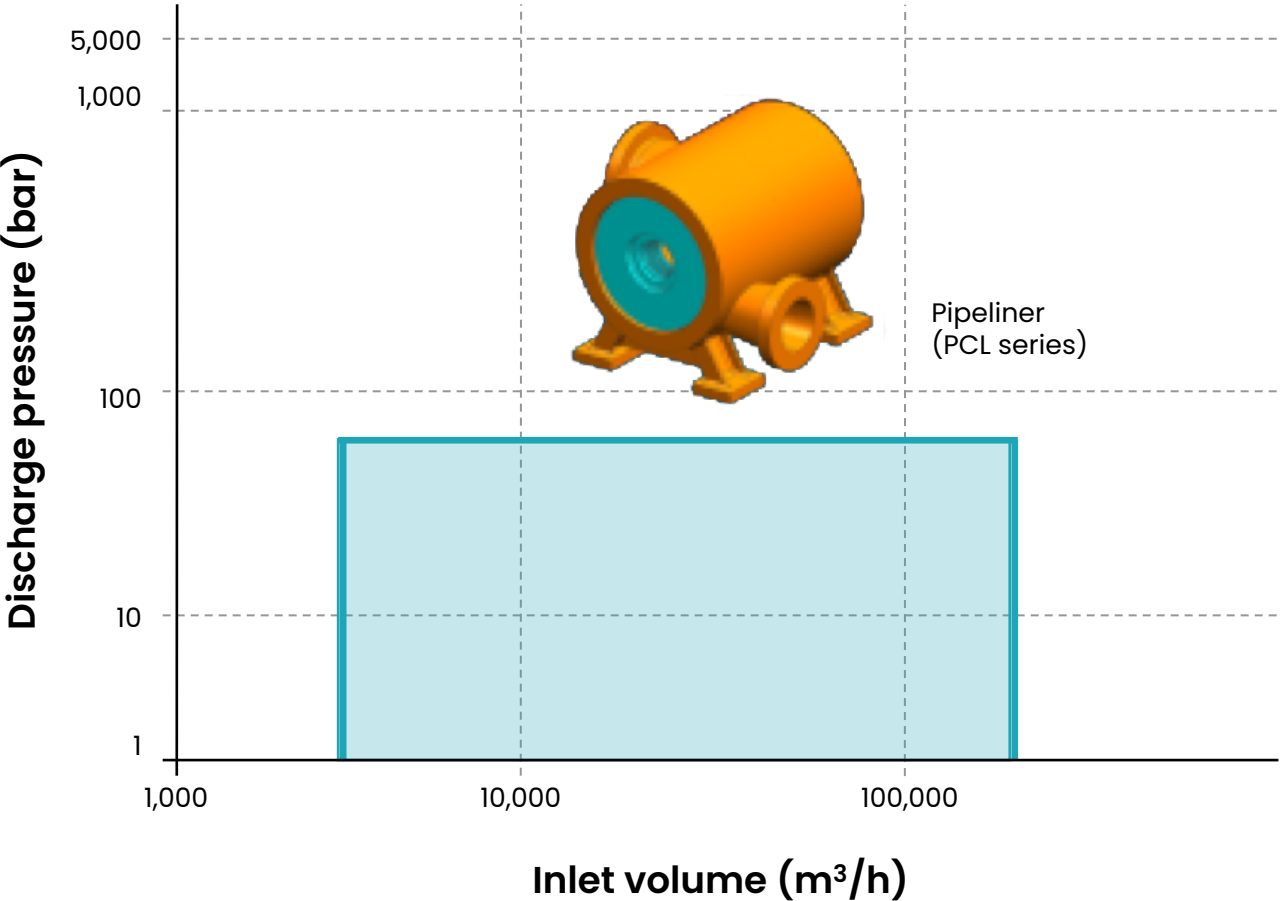
Applications

- Primarily for low and medium pressure applications including: ethylene and fertilizer plants, refineries and petrochemical plants, LNG for refrigeration and air compression (typically handling wet gas), hydrocarbon refrigerants or natural gas

Over 1,000 units installed worldwide

High performance in applications from high-temperature cracking to extreme cryogenics

Pipeline compressors



Sizes

- From 500 to 1,000 mm

Pressure

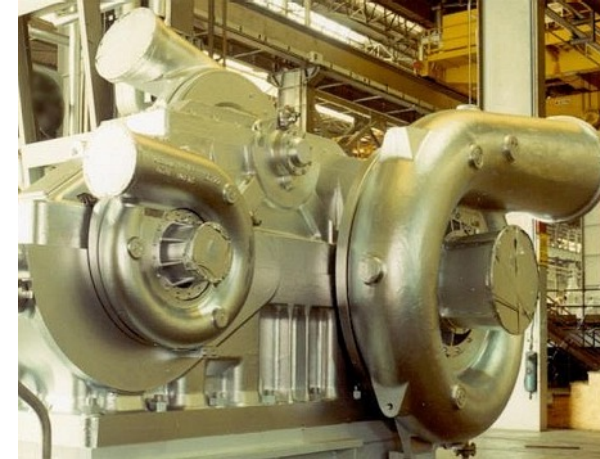
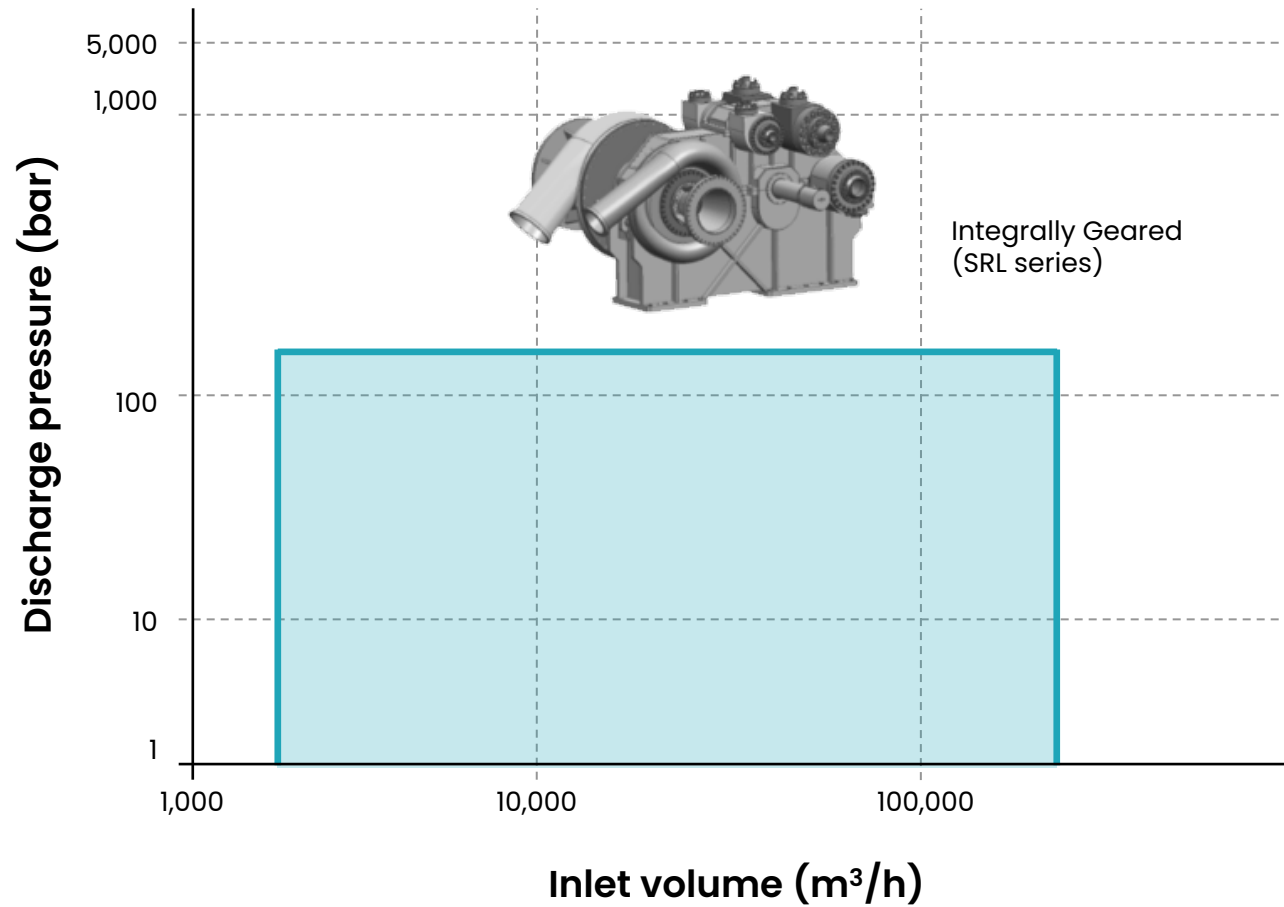
- Up to 100 bar

Applications

- For low and medium pressure ratio pipeline service

Over 500 units installed worldwide
High efficiency and power in a compact package and small footprint

Integrally geared compressors



Sizes

- Multistages up to 10 wheels

Pressure

- Up to 200 bar

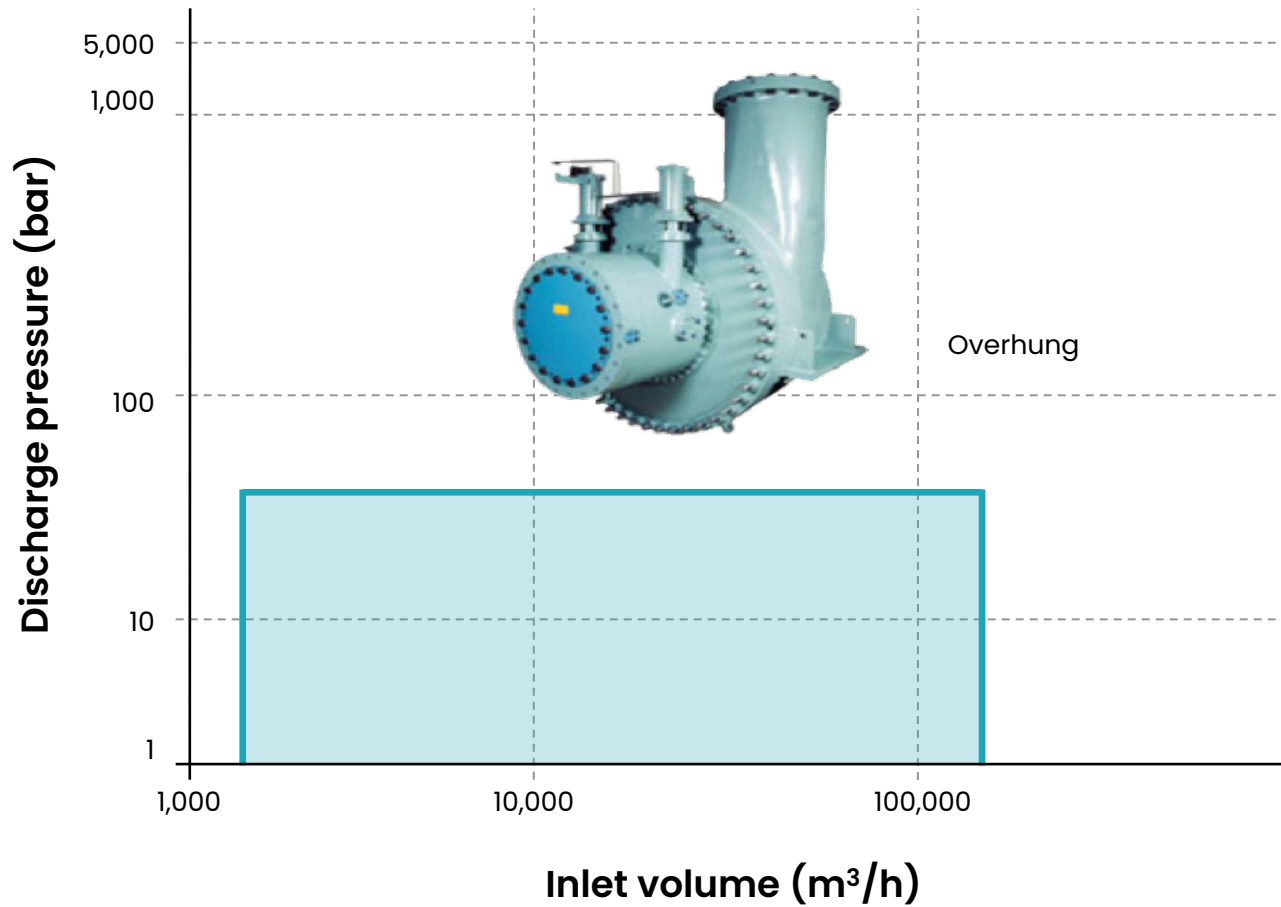
Applications

- For low, medium, and high-pressure service for air, steam, and inert gas; fuel gas services; some petrochemical and CCS applications

Over 200 units installed worldwide

Compact designs for heavy-duty applications with air, steam and other gases

Single-stage overhung compressors



Sizes

- 1,000 mm

Pressure

- Up to 76 bar

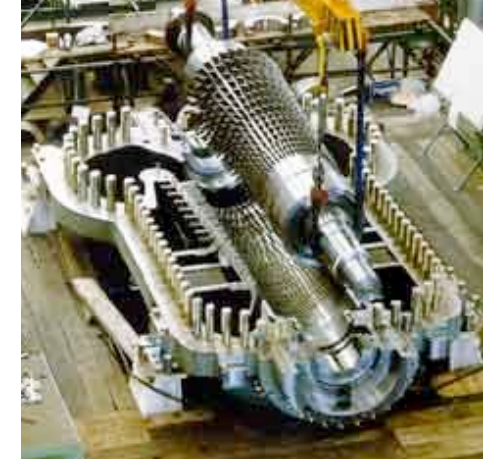
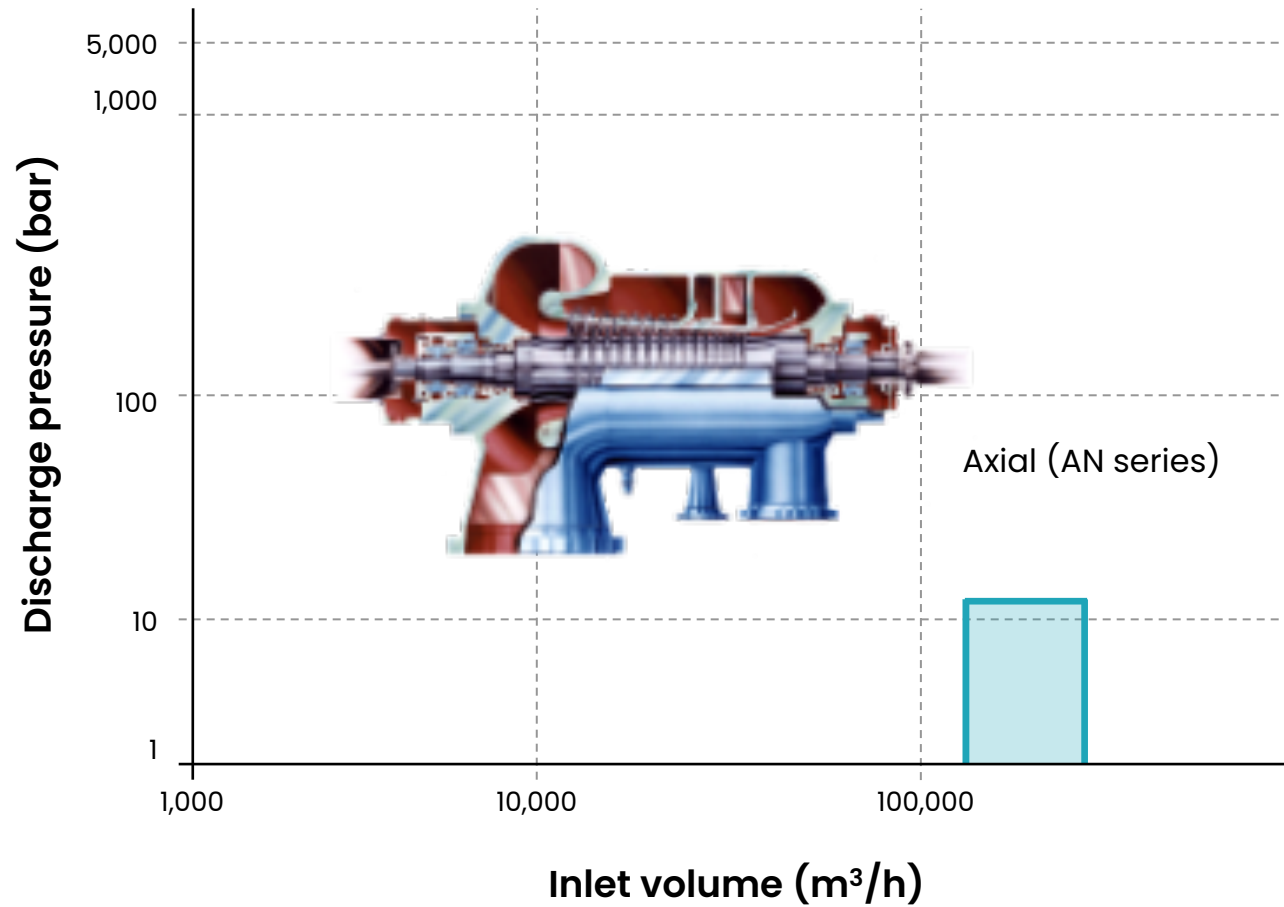
Applications

- Booster or recycle compressors in many petrochemical applications including polyethylene, polypropylene, and ethylene oxide

Over 300 units installed worldwide

Best-in-class reliability for downstream applications

Axial compressors



Sizes

- Up to 25 bar
- Pressure ratio from 3:1 to 7:1

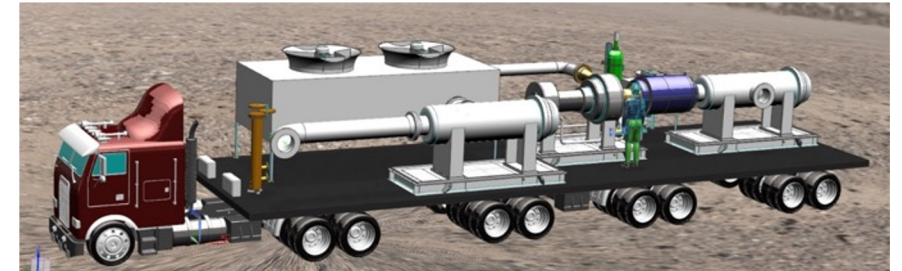
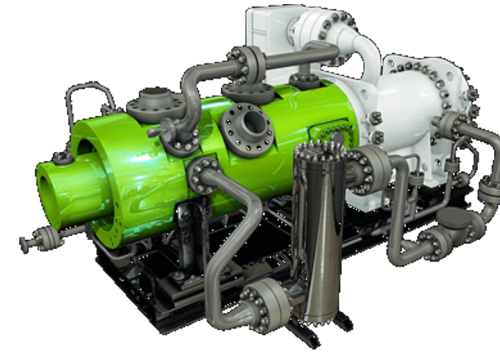
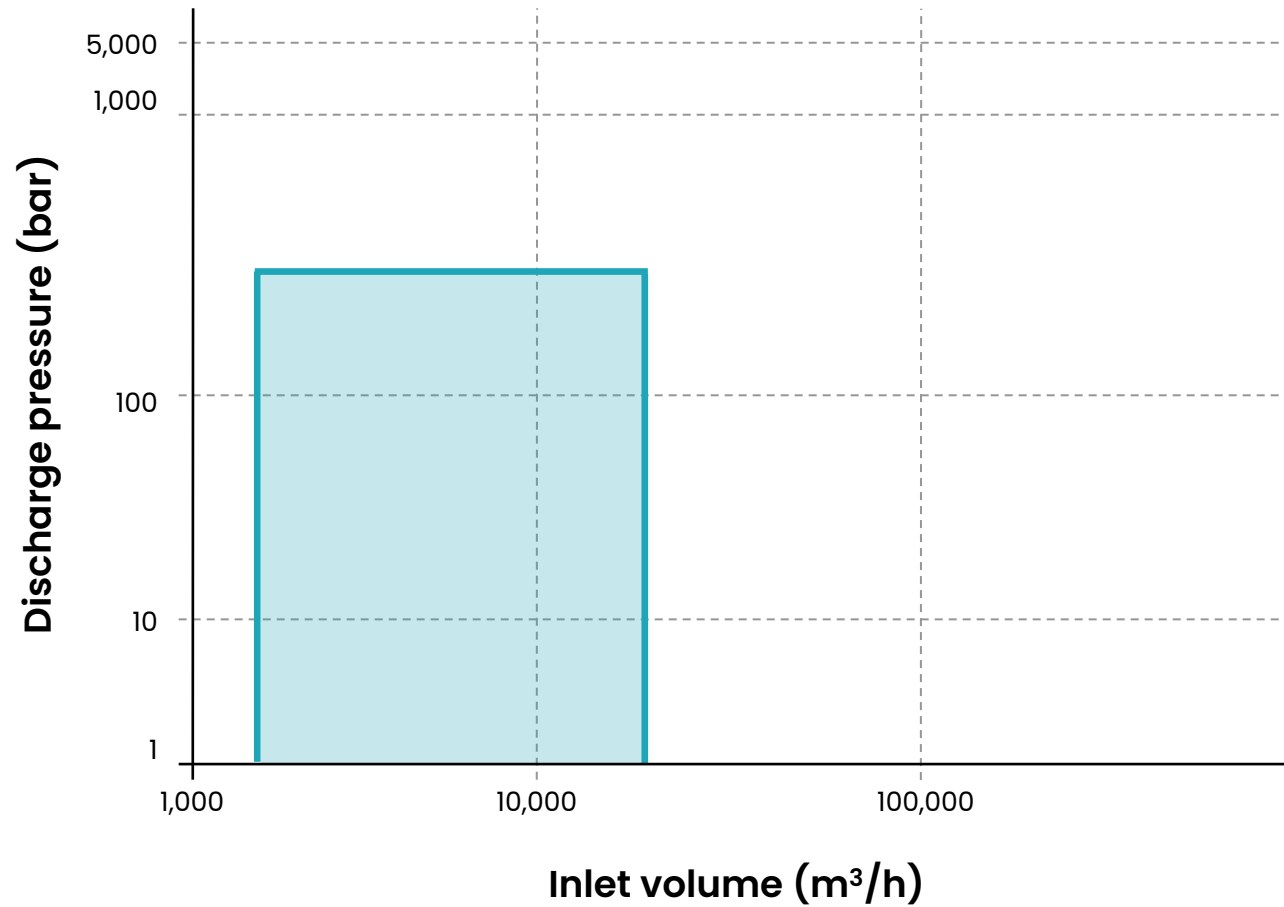
Applications

- Used for low-pressure, high-flow applications such as catalytic cracking plants, air service, air separation, LNG, nitric acid, and GTL

Over 20 units installed worldwide

Ideal for catalytic cracking, air compression, nitric acid, and gas to liquids

Integrated compressors



Sizes

- Up to 450 mm

Pressure

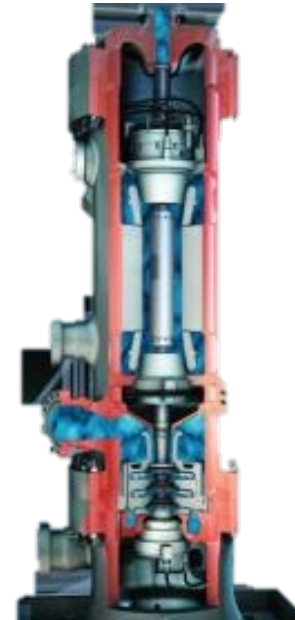
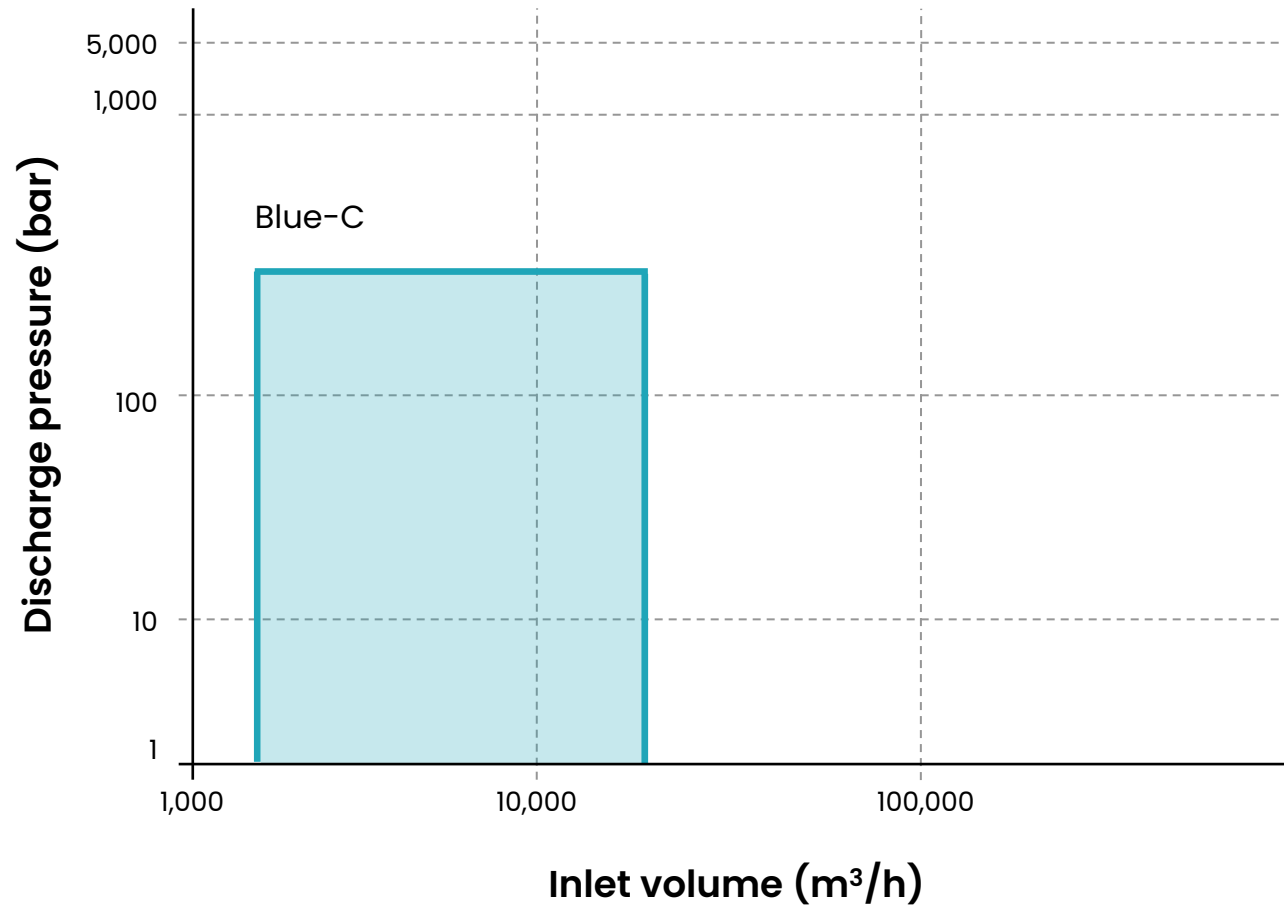
- Up to 300 bar

Applications

- Ideal solution for high efficiency, small footprint, low noise and minimized OPEX

26 units installed to date, mainly for pipeline and storage

Integrated compressors



Sizes

- Up to 6 stages

Pressure

- Up to 175 bar

Applications

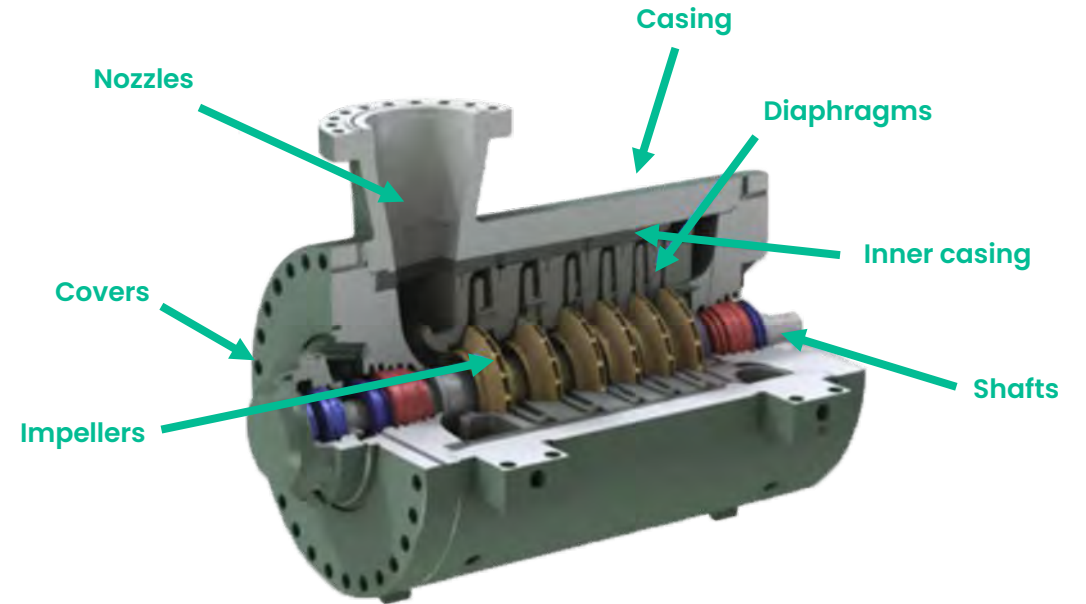
- Subsea to minimize topside equipment

Leveraging proven ICL technology to minimize topside footprint

Main components

Outer casing and head flanges

- Forging or plate carbon steel
- Martensitic stainless steel also applicable
- Coatings applicable on carbon steel for cost-effective corrosion resistance



Casings



Head flanges



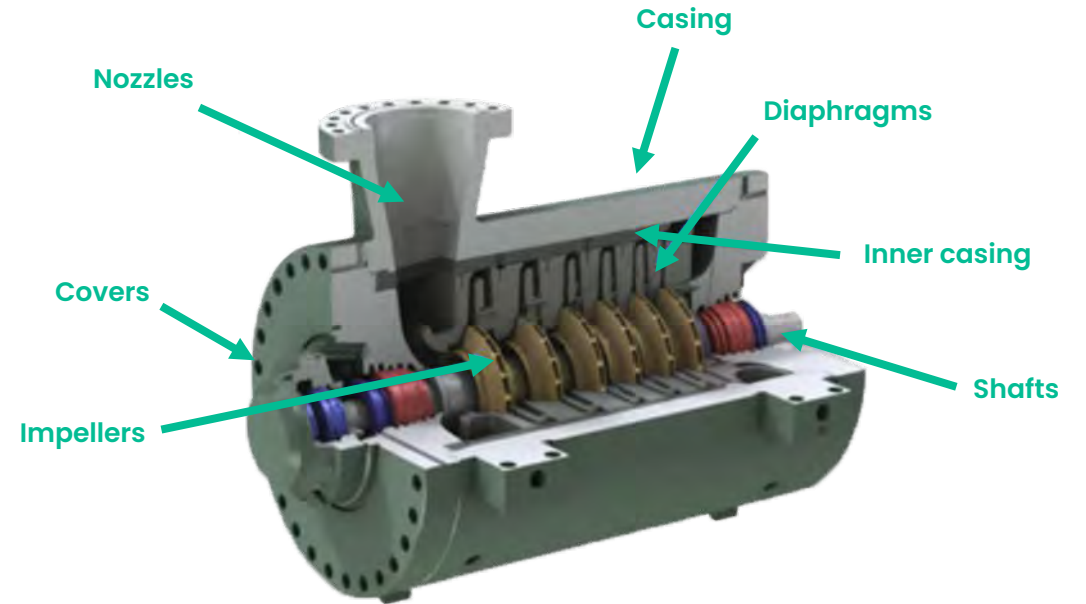
Assembled rotor



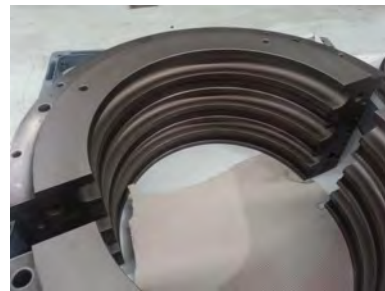
Diaphragms

Inner casing and diaphragms

- Forged carbon steel
- Cast iron or cast stainless steel
- Ni-alloys forged or casted
- Coatings applicable on carbon steel for cost-effective corrosion resistance or anti-fouling



Head flanges

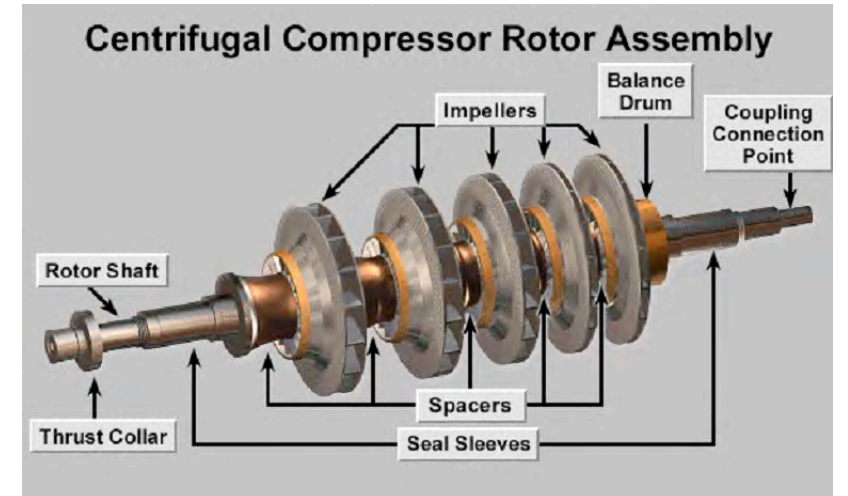


Rotor

- Shaft: forged carbon steel or stainless steel
- Impellers: full milling, EDM or brazed; forged carbon steel, stainless steel, Ni-alloys
- Coatings applicable on full assembly for cost-effective corrosion resistance or anti-fouling



Coated assembled rotor



Seals

- Labyrinth seals in aluminum or thermoplastic materials suitable for acid and harsh environments
- Thermoplastic materials offer better performance than metallic options
- Abradable seals offer better efficiency

Bulk and hybrid design (with metallic carrier) for polymer labyrinth seals

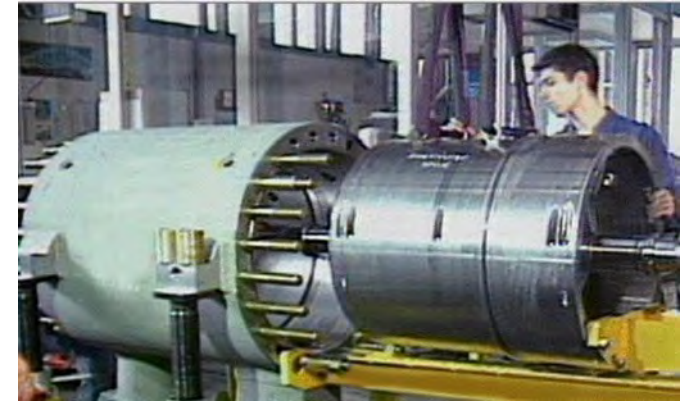
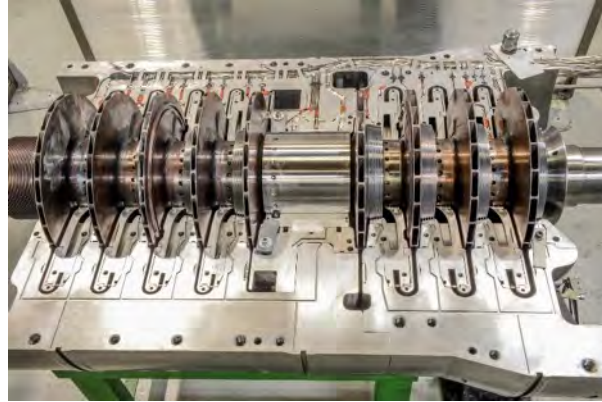
Design with and without swirl brakes



Split assemblies

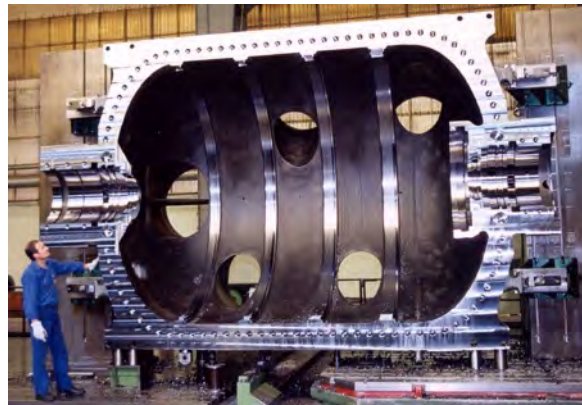
BCL

Vertically split



MCL

Horizontally split



Testing

Baker Hughes unique testing capabilities

Type of test	Test beds capacity		
	Florence	Massa	Avenza
Standard mechanical and/or thermodynamic tests on centrifugal compressor & steam turbine	18+1	4	-
Thermodynamic test for large compressors 25-61MW		2	
Running-in and/or string tests on reciprocating compressors	6	1	-
Standard & full load test (by electric generator)	4	2	-
Special string test	6+2	16	-
HSPT LM2500 spin test	2	-	-
LM2500 gas generator load test	-	1	-
Test on combined modules	-	1	10



Baker Hughes 