



Boil Off Gas Compressors

For Your Low-Temperature Applications

.....
Dresser-Rand Company products reflect 250 years of combined experience from names like Dresser-Clark, Ingersoll-Rand and Worthington
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Dresser-Rand horizontal balanced-opposed PHE, HSE, HHE and BDC process reciprocating compressor frames are heavy-duty API 618 designs suited to the most demanding services at powers to 28,340 kW (38,000 bhp). Our products reflect 250 years of combined experience from names like Dresser-Clark, Ingersoll-Rand and Worthington. No other manufacturer offers such a wide variety of machines to handle most applications. From such a wide selection, our application engineers can readily choose a compressor that meets your specific needs and offer the best possible solution to meet your process requirements.

Highly versatile compressor designs are available for single, multi-stage or multi-service compression applications, up to 10 compressor cylinders. Cylinder materials are selected to best suit the inlet temperature (e.g. ferritic or austenitic alloys) and piston and valve materials are selected to meet the required service conditions.

Boil Off Compressor Products

The reciprocating compressor products offered by Dresser-Rand are well suited to accommodate the changes in flow rates in boil-off applications. Our products include the PHE & HSE balanced-opposed designs which provide a compact and rugged machine for services up to 398 kW (550 bhp). The HHE & BDC balanced-opposed designs provide a rugged, heavy-duty machine capable of up to 28,340 kW (38,000 bhp) and are well suited for applications which require high gas volume at high operating or differential pressures.



Boil off applications are cryogenic applications with operating temperatures as low as -160 degrees Celsius (-256 degrees Fahrenheit), thus special features and materials are required for these services.

Liquefied gasses are stored in containers (tanks) where the pressure is close to atmospheric pressure. As heat is absorbed into the container from the surrounding environment, the liquid boils and liberates gas, pressurizing the container. During the filling of the system there is a larger volume of gas liberated due to system cool-down.

The boil off vapor compressor takes the evaporated gas at the storage temperature and pressure and compresses it. The compressed vapor is then cooled and expanded to re-liquefy it – or it is cooled and injected directly into a pressurized liquid stream for sale of gas.

DRESSER-RAND

For a complete listing of products and services, visit us on the internet at www.dresser-rand.com or contact one of the following Dresser-Rand locations.

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Typical Applications

Typical boil off applications include:
LNG at -160 degrees Celsius (-256 degrees Fahrenheit)
Ethylene at -104 degrees Celsius (-155 degrees Fahrenheit)
Propane at -42 degrees Celsius (-44 degrees Fahrenheit)
Propylene at -48 degrees Celsius (-54 degrees Fahrenheit)
Ammonia at -33 degrees Celsius (-28 degrees Fahrenheit)

Dresser-Rand Boil Off Compressor Design Benefits

Boil off compressors designed by Dresser-Rand, with rider bands and compression and packing rings, offer several advantages compared to compressor designs that use vertical labyrinth pistons.

Features	Benefits
API 618 design (refinery and petrochemical continuous service specification)	Offers high reliability and availability
Negligible gas leak across piston and rider rings during compression	Reduces power consumption
Large clearance between piston and replaceable liner (5.5 mm diameter clearance on first stage cylinder)	<ul style="list-style-type: none"> • Easy start-up without extensive cool-down time • Lower risk of metal-to-metal friction with rider rings
Purged distance piece	<ul style="list-style-type: none"> • Independent cylinder assemblies • Eliminates leakage of process gas in the crankcase, enabling the use of Bicara-type relief devices to minimize the risk of crankcase explosion or fire
Horizontal opposed cylinders minimize vibrations and reduce shaking forces and moments (no vertical forces and reduced vertical moments)	<ul style="list-style-type: none"> • Lower cost at grade installation minimizes building, platform, and overhead crane costs • Reduced foundation requirements
Adequate-sized dampeners at inlet and outlet of each cylinder	Reduces gas pulsation to minimize noise and risk of piping vibration and fatigue
Horizontal arrangement	Quick, easy maintenance due to ready access to all components
Clearance pockets and end unloading capacity control devices	<ul style="list-style-type: none"> • Minimize bypass requirements • Reduce power consumption
Austenitic stainless steel cylinders for suction temperatures below -107 degrees Celsius (-160 degrees Fahrenheit)	Improves safety due to increased ductility at low temperatures
Replaceable cylinder liners	If a piston contacts the cylinder bore, it can be economically repaired in the field without removing the cylinder and pulsation vessels

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