PDGS
Dry gas seals for compressors
**Features**
- Gas-lubricated
- Uni-directional or bi-directional
- Elastomer-free
- Ready-to-fit cartridge unit
- Single, double, tandem seal and tandem with intermediate labyrinth available

**Advantages**
High quality components make this a universal seal for a wide range of applications and the ideal solution for standardization. The universal gas seal for centrifugal compressors; resistant to chemicals.

Application single seal: The simplest seal is a Dry Gas Seal in single arrangement. This seal is used in case that due to the nature of the product gas no additional back up seal is required. Separation seals as labyrinths, radial clearance seals or CobaSeal™ are optionally available. This version is used as an emission-free arrangement with a corresponding flare/vent connection. Primary leakage is then discharged with the separating gas to the primary vent (flare). In the case of dirty gases the gas to be sealed has to be filtered in addition and conveyed to the seal chamber via connection “A”. The resulting gas flow from the sealing compartment prevents any dirty/wet gas entering the seal.

**Operating range** (see note on page 1)
- Shaft diameter: \( D_1 = 29 \ldots 435 \text{ mm} \) (1.14” ... 17.13”)
- Pressure: \( p = 0 \ldots 450 \text{ bar} \) (0 ... 6,525 PSI)
- Temperature: \( t = -170 \degree \text{C} \ldots +230 \degree \text{C} \) (-274 °F ... +446 °F)
- Sliding velocity: \( v_s = 0.6 \ldots 200 \text{ m/s} \) (2 ... 656 ft/s)

**Materials**
- Seal face: Silicon carbide (Q1) with DLC coating
- Seat: Silicon carbide (Q1) with DLC coating
- Secondary seals: Polymer rings
- Metal parts: 1.4006 and other stainless steels

**Recommended applications**
- Oil and gas industry
- Refining technology
- Petrochemical industry
- Hydrocarbon gas
- Ammonia
- Nitrogen
- Refrigerants
- Air
- Centrifugal compressors
- Turbo expanders
- Blowers

**Standards and approvals**
- NACE

**Main components of the dynamic secondary seal of the PDGS**
are made of the extremely rigid material tungsten carbide which allows an optimum control of the extrusion clearance over the full range of operation. The specific design of the polymer cup seals ensures minimum sliding forces combined with wear-free operation.

**Note**
- Available with DiamondFaces

**Important note**
All the technical specifications are based on extensive tests and our many years of experience. However, the diversity of possible applications means that they can serve as guide values only.

It should be noted that the extremal values of each operating parameter cannot be applied at the same time because of their interaction. Furthermore, the operating range of each specific product depends on the respective shaft diameter, materials used, mode of operation and on the medium to be sealed.

A guarantee can only be given in the individual case if the exact conditions of application are known and these are confirmed in a special agreement. When critical conditions of operation are involved, we recommend consulting with our specialist engineers.

Subject to change.
Application: Where small product leakages of process gas are admissible, e.g. on gas pipeline compressors. Seal on the atmosphere side acting as a safety seal. The tandem arrangement provides a particularly high degree of operational safety. The seal on the product side and the seal on the atmosphere side are able to absorb the complete pressure differential. Under normal operating conditions the full pressure is reduced only by the seal on the product side. The space between the seal on the atmosphere side equals the flare pressure, so the leakage to the atmosphere side is pressurized with buffer gas (nitrogen) via connection "B" to the flare. The pressure of the buffer gas ensures that a current flows via the labyrinth to the primary vent outlet.

The entire process gas leakage is discharged via connection "C" at a higher pressure than the product pressure. One part of the buffer gas leakage escapes to the atmosphere side and the other part to the vent. If the main seal fails, the second seal acts as a safety seal.

Buffer gas leakages into the product must be admissible (buffer pressure $p_3 > p_1$). This seal is used when a neutral buffer gas of suitable pressure is available. Typical applications are to be found mainly in the chemical industry, e.g. on HC gas compressors. A buffer gas, e.g. nitrogen, is fed between the seals via connection "C" at a higher pressure than the product pressure. One part of the buffer gas leakage escapes to the atmosphere side and the other part to the vent.