

# Product profile



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## **BITZER CS PRO series: compact screw compressors with expanded application range for hydrocarbons as a refrigerant**

*As a natural refrigerant with very low global warming potential, hydrocarbons are ideal for future-proof refrigeration and air conditioning systems and heat pumps in Europe, and do not form persistent compounds (PFAS) as degradation products in the environment.*

*The further developed BITZER CS PRO compact screw compressor series is optimised for these refrigerants and now enables expanded application ranges. Condensing temperatures of up to +73°C are possible with R290 (propane) and up to +100°C with R600a (isobutane).*

The well-known BITZER compact screw series for liquid chillers, heat pumps and process cooling is now also available for hydrocarbons in the CS PRO series. In the emerging heat pump market, demand is rising for system designs and solutions with moderate to high capacity ranges using refrigerants with long-term availability. This also applies to the areas of comfort and process cooling. The CS PRO series enables powerful and efficient systems with a wide application range as well as exceptionally compact dimensions thanks to the integrated oil separator and suction gas cooled motor.

### **Future-proof system design with hydrocarbon refrigerants**

The existing application range of CS PRO compact screw compressors with R290 has been expanded significantly. The compressors are available in ten construction sizes with displacements ranging from 197 to 910 m<sup>3</sup>/h at 50 Hz for this refrigerant. For efficient control of the compressors and energy-saving operation of the system, they are equipped with mechanical stepless capacity control as standard. They can even operate with an external frequency inverter such as VARIPACK at up to 60 Hz. With evaporation temperatures between -30°C and +25°C and condensing temperatures between

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+20°C and +73°C, CS PRO compact screw compressors with R290 are suitable particularly for reversible liquid chillers in comfort applications, including in heat pump operation. Hot water flow temperatures of up to approximately +70°C can be achieved. The compressors also offer an alternative for process cooling, ensuring sustainable production processes with higher efficiency and the use of natural refrigerants.

The combination of a natural refrigerant with low global warming potential and exceptional efficiency throughout the full application range makes it possible to develop modern, future-proof systems which already fulfil legal requirements pertaining to refrigerants and energy efficiency with expanded temperature ranges.

The CS PRO series now enables compressor operation with R600a. Isobutane is suitable particularly for large heat pumps in industrial and commercial systems with high temperature requirements such as local and district heating networks. The CS PRO compact screw compressors are available for this refrigerant in 17 construction sizes, with displacements between 197 and 1120 m<sup>3</sup>/h at 50 Hz, and are ideally controlled by an external frequency inverter. The compressors are equipped with mechanical capacity control as standard. With evaporation temperatures between –10°C and +50°C and condensing temperatures between +25°C and +100°C, hot water flow temperatures of up to +95°C can be achieved.

## **Increased tightness for BITZER compressors**

Thanks to the design and testing of their seal systems, semi-hermetic and hermetic BITZER compressors achieve an increased level of tightness in accordance with EN1127-1, as confirmed by a certified body. Increased tightness means that the compressors are specially designed to be technically tight on a permanent basis thanks to production and testing processes at BITZER. Thus, when using hydrocarbon as well as A2 and A2L refrigerants, no ATEX zone is created around the compressor. There is no need to use ATEX components, which is not necessarily the case when it comes to manufacturers without a certified seal system including qualified process control. BITZER compressors are also free of ignition sources in normal operation in accordance with the IEC60335-2-40:2022 standard for these refrigerants, and the compressor protection device can remain mounted in the terminal box. All that simplifies the risk assessment required by the Machinery Directive, which benefits the system manufacturer.

If there is no way to avoid using the compressors in a potentially explosive atmosphere – for example, the presence of explosive gases in the environment or an increased risk of hydrocarbon refrigerant leakage in the system – different designs are available for each of the ATEX device groups.

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BITZER has supplied compressors designed for use with hydrocarbons as a refrigerant since 1990. Decades of experience make the company a competent partner to its customers when it comes to product development, system safety and the use of this technology.



As an independent specialist for refrigeration, air conditioning and heat pump technology, BITZER is present all over the world: with products and services for refrigeration, air conditioning and process cooling as well as transport, BITZER ensures optimum temperature conditions for trade in goods, industry processes and indoor climate control – always striving for the highest possible energy efficiency and quality. BITZER is represented all over the world with 75 sites in 40 countries, including its sales companies and production facilities. Trade and service partners included, the BITZER network of manufacturing, development and sales extends to almost all countries in the world. In 2023, more than 4,300 employees generated a turnover of €1.01 billion; expenditure for research and development totalled €61 million.

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Image: Ready for hydrocarbons: BITZER CS PRO compact screw compressor with an expanded application range