

Product profile

**BITZER SE**

Peter-Schaufler-Platz 1
71065 Sindelfingen // Germany
Tel +49 7031 932-0
bitzer@bitzer.de // www.bitzer.de

Unser Zeichen // Our Ref.

Abs. // Sender	Stefanie Holst
Abt. // Dept.	Head of Corporate Communications and Marketing Content
Tel Dw. // Ext.	+49 7031 932-4327
E-Mail	stefanie.holst@bitzer.de

BITZER expands its portfolio for transcritical CO₂ applications with new ECOLINE 6-cylinder reciprocating compressors

With the ECOLINE 6-cylinder reciprocating compressors, BITZER is expanding its portfolio for transcritical CO₂ applications. The compressors are designed for industrial refrigeration and heat pump applications and meet growing demands for cooling and heating capacity with the natural refrigerant R744 (CO₂). System manufacturers and operators benefit from high energy efficiency¹, operational reliability and flexible application options.

With the new 6-cylinder reciprocating compressors (models 6MTE, 6KTE and 6JTE), BITZER is expanding its ECOLINE CO₂ series into a scalable portfolio of 2-, 4-, 6- and 8-cylinder reciprocating compressors. This provides consultants, planners and system manufacturers with the right compressor size for transcritical CO₂ applications across the entire capacity range and for a wide variety of project requirements.

Future-proof with CO₂

R744 (CO₂) offers clear advantages for system design. The natural refrigerant is non-toxic, has a low global warming potential and is regarded as a future-proof choice in view of environmental regulations worldwide, such as the F-Gas Regulation (EU) 2024/573. This provides planning and investment security for consultants, planners and operators whilst reducing investment risks through long-term availability. At the same time, the high volumetric cooling capacities enable compact system designs, an advantage particularly where installation space is limited.

¹ Cf. <https://www.bitzer.de/empco>

Product profile



High performance in industrial refrigeration systems and heat pumps

The new ECOLINE 6-cylinder reciprocating compressors cover a wide application range with displacements of 50.3, 59.4 and 71.9 m³/h at 50 Hz, cooling capacities of up to 166 kW² and heating capacities of up to 344 kW³, ranging from industrial refrigeration systems to high-performance heat pumps. Typical applications include cold stores, food processing and storage processes as well as applications in the pharmaceutical industry. In addition, the compressors enable flexible solutions for district heating networks and maritime applications.

Robust industrial design

The specialised industrial design of the 6-cylinder ECOLINE CO₂ series enables simple and targeted maintenance. Combined with a low-wear drive gear and a suction-gas-cooled motor, it delivers high efficiency. Low oil carry over rates also reduce the effort and cost associated with active oil management components such as oil separators and oil receivers.

The compressors are also characterised by smooth and stable operation. Low gas pulsations and reduced vibrations contribute to high reliability and minimise mechanical stresses.

Integrated intelligence for safe and efficient operation

The compressors are equipped as standard with the IQ MODULE CM-RC-02, which simplifies installation, commissioning and service. In addition to monitoring key compressor operating parameters, it features intelligent operating functions designed to enhance efficiency and reliability. The user-friendly concept reduces wiring and configuration effort and simplifies the integration of additional compressor functions.

The range of functions can be easily extended using separately available extension boards. For example, the CR mechanical capacity control can be connected and operated via the IQ MODULE with minimal wiring effort in the control cabinet. The capacity control optimally matches compressor capacity to the system's actual cooling or heating demand. As an option, the compressors can also be operated with variable speed control via the external VARIPACK frequency inverter.

² Operating points: $t_0 = -10^\circ\text{C}$, $t_{\text{GC, out}} = +35^\circ\text{C}$, $p_H = 90 \text{ bar}$, $\Delta t_{0h} = 10 \text{ K}$ at 50 Hz.

³ Operating points: $t_0 = 0^\circ\text{C}$, $t_{\text{GC, out}} = +32^\circ\text{C}$, $p_H = 90 \text{ bar}$, $\Delta t_{0h} = 10 \text{ K}$ at 50 Hz.

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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 74 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 2025, 4,500 employees generated a turnover of €1.135 billion; expenditure for research and development totalled €67 million.

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Image: ECOLINE 6-cylinder reciprocating compressors for transcritical CO₂ applications