

PRESS RELEASE

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Frigel is a Global Solutions Provider for cooling and temperature control applications, with more than 12.000 customers worldwide. Our innovation and expertise offer unique systems designed to match the specific needs of each industrial process.

Our innovative solutions are focused on:

- **Maximizing profitability** through highly innovative process cooling technologies
- **Reducing overall operating costs**, through significant energy and water savings
- The **highest sustainability standards**, with the lowest environmental footprint in the market.

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Frigel, a global solutions provider for cooling and temperature control applications, is proud to present two groundbreaking innovations at the K Show:

1. NEW “Mold Profit Booster” - DYNAMICO™: “**AI-assisted**” **Dynamic Mold Temperature Control Technology**
2. NEW “Modular Chiller System” – HVM: A Sustainable and High Efficiency Solution Specifically Designed for High Performance Plastics Processing.

DYNAMICO™ - The unique “MOLD PROFIT BOOSTER”

Artificial intelligence in temperature control - Redefining Profitability in Injection Molding

Frigel, a global leader in temperature control for injection molding, presents DYNAMICO™. “AI-assisted” Dynamic Mold Temperature Control Technology, that introduces a paradigm shift in cooling time management: the true untapped lever for increasing productivity, reducing energy costs per part and improving margins.

DYNAMICO is already generating important success stories in various sectors such as AUTOMOTIVE, MEDICAL, PACKAGING and in all specific molding applications for technical parts

The proven results are impressive. For technical parts, simply replacing existing temperature controllers, the cycle cooling time reduction obtained with DYNAMICO can lead to productivity increases of 20% to 50%. In polyolefin molding, installing DYNAMICO between the existing cooling system and the mold has demonstrated productivity gains of 10% to 25%.

The cycle time reduction also increases the efficiency of the entire production cell thus achieving up to 15% in cost savings per unit of product.

Therefore, the cycle cooling time reduction obtained by DYNAMICO offers measurable profit gains with a payback on the investment within few months. Results are easily proven in most applications, without any modification to the mould.

How DYNAMICO works

DYNAMICO™ is a new device that directly replaces conventional temperature controllers in any existing mold. Using advanced algorithms, according to some molding process data input by the operator, the unit interface guides him step-by-step in reducing current cooling time to the shortest possible duration that still ensures final product quality.

Basically, with this paradigm shift, the mold temperature control unit is transformed into a cycle time optimization device. In fact, the "control variable" (SET POINT) of the DYNAMICO is no longer the water temperature going to the mould, but "THE CYCLE TIME".

Unlike traditional temperature controllers based on fixed, constant and stable temperature control, the new technology is based on a radically opposite concept: 'Dynamic Mold Temperature Control'. DYNAMICO can automatically and programmatically adjust mould water temperatures in each step of the cooling time optimization process - and in some cases, even regulate flow through each half of the mould using powerful inverter-driven booster pumps.

The booster pumps on board DYNAMICO range are designed to deliver up to for 500% more flow rate than conventional temperature controllers, reaching very high turbulent flow in the water channels and maximum heat transfer rate with the mould cavities, achieving unprecedented cooling performance.

The cooling time reduction is suggested by "DYNAMICO WIZARD", exclusive software developed by Frigel. It uses "AI-Assisted" advanced algorithms built on Frigel's vast experience in high performance mold temperature control.

DYNAMICO's results are easy to verify, thanks to an intuitive interface that allows the operator to fine-tune the moulding process in just a few cycles, visibly confirming the significant reduction in cycle time. Once the minimum possible cooling time that guarantees product quality has been achieved, the operator can save the "mold recipe" in DYNAMICO's memory. This allows it to be easily reapplied whenever that mold is used again.



The unique Dynamico user interface

DYNAMICO range may also include full internet connectivity which will allow, through AI-supported tools, the DYNAMICO WIZARD algorithms to continuously learn from the process data of all connected machines and molds to the network, thus creating progressive improved performance and added value for every new mold.

The DYNAMICO product range, displayed at K Show, covers all application needs in injection molding, in both packaging and technical molding, resin throughputs up to 320 kg/h in a single unit and two different versions, with or without integrated chiller.

With DYNAMICO™, Frigel ushers in a new era for injection molding. An affordable, scalable, high impact on profitability technology that transforms a passive process (cooling time) into an active performance driver, redefining profitability standards in the industry.

HVM - The New “Modular Chiller System”

Frigel’s **Modular Chiller System** represents an innovative, scalable and sustainable solution designed for industrial applications, especially in plastics processing. This solution combines energy efficiency, operational flexibility and a fast return on investment (ROI), standing out as a strategic option to reduce both installation and operating costs.

HVM chillers are available in two environmentally friendly low global warming potential (GWP) refrigerant options: R513A, nonflammable, and R290 (propane). Its modular design allows multiple units to be connected in series or parallel, maximizing efficiency at partial loads. Each module features an advanced microprocessor that fine-tunes cooling capacity, balancing the load between installed units to optimize performance.

Among its main features, each autonomous unit includes a unique refrigeration circuit with variable speed compressor, stainless steel plate evaporator, electronic thermostatic valve, aluminum alloy condensers, axial fans with brushless motors, inverter driven process pump and an on-board digital controller that ensures efficient operation of the unit in any working conditions

The modular architecture of the HVM system offers other significant advantages. Its "Plug & Play" design facilitates installation and future expansion of the system, drastically reducing all associated costs, especially in medium or high-capacity systems. In addition, it eliminates the risk of a "single point of failure", ensuring redundancy and operational continuity. The system also incorporates a hydronic section (HDM), which can be configured with or without power distribution and an open tank. This section includes a robust control panel with weather protection and a single entrance for the main power supply.

HVM single modules are available in 90kW, 180kW and 300kW sizes, using inverter driven screw compressors with R513A and brushless Scroll compressors with R290 refrigerant. The maximum cooling capacity of the Modular Chiller System can reach up to 1500 kW.



In short, Frigel's modular HVM system is not just a cooling solution; It's a strategic investment that delivers superior performance, significant savings in operating costs, and an easy-to-maintain redundant system.

ABOUT FRIGEL GROUP

The Frigel group has an international structure with offices located all over the world and consists of five production sites, two in Europe (Florence and Padua), two in Asia (Thailand and India), one in South America (Brazil); five commercial subsidiaries (United States, Germany, Poland, Italy) and fifty-one distribution points (a worldwide network of agents and distributors). Our goal is to "Design a more efficient and sustainable industry". For decades we have been designing, manufacturing, and installing efficient and technologically advanced solutions for the cooling of industrial processes. The Frigel product range has been designed to cover a wide range of solutions, from machine-side to large centralized systems.

Frigel products and solutions are designed to meet the cooling and temperature control requirements of industries such as plastics and rubber, food and beverage, power generation and transmission, data centers, chemicals and pharmaceuticals, metals and others. Frigel has gained in-depth knowledge of the thermodynamic requirements of industrial processes, enabling it to design "tailored to the application" equipment and systems to meet the specific needs of each process.

Four key factors guide the design of optimal solutions for each customer – productivity, efficiency, sustainability and reliability.

OUR PURPOSE: engineering a more efficient and sustainable industry

OUR VISION: Be a global innovator of high performance, sustainable and quality engineered solutions for process cooling and temperature control technologies.



FRIGEL FIRENZE S.p.A.