

ABB and Frigel

Efficiency and sustainability in the beverage industry



Before reaching the store shelves, the drinks of the most popular global brands flow through Frigel Group's cooling plants, resulting from several years of experience in the plastic industry and now very appreciated in Food & Beverage also for the energy efficiency and accurate control ensured by ABB drives.

Real innovation results from an effective combination of performance and sustainability. This has been the guiding principle of Frigel Group since the 1960's, when Frigel Firenze was established in Sesto Fiorentino as the first vendor of heat exchange fluid coolers with ambient air. With this system, mainly designed for the plastic industry, Frigel set new quality and quantity standards in the industry, combined with huge energy and water saving compared to conventional technology. In the new millennium, the company has grown into an international group, expanding rapidly in different geographies (from North America to Thailand, from Germany to Brazil, from India to Eastern Europe) and different markets beyond the plastic core business. A key target market is Food & Beverage, as Leonardo Losappio, purchasing manager of the Florence-based company, explains. "We were already active in this domain with our packaging cooling systems, originally for preforms and then for bottles and closures," Losappio says. "Expanding our focus to the entire beverage processing and bottling process, we realized that our technology was perfectly fit to produce all kinds of beverage, including soft drinks, beer and soy milk.

So, a new "PET & Beverage" division was created in Parma, the capital of Italy's biggest food district, to develop the production and sale of big plants for high-end customers, with repetitive orders and installations replicated in many regions around the world, for the most popular beverage brands.

Focus on environment and energy saving

Filippo Malvolti, R&D manager at Frigel, explains that cooling systems for the beverage industry are centralized plants engineered to the specific load requirements of each application. The key components are 3FR modular chillers with screw compressors, which allow to adjust the cooling capacity to cover all heat variation and flow rate requirements. Frigel's plants basically replace traditional ammonia chillers with modular chillers that minimize safety risks using very small quantities of eco-friendly refrigerant for each module (R134a; R513a) instead of a fluid like ammonia.

With this technological proposal, Frigel Group generated new business in markets like Beverage, where potential end customers quickly realized the benefits of this solution, not only in terms of efficiency and environmental sustainability, but also energy and cost saving, thanks to the possibility to accurately control the cooling capacity of the pumps and compressors that circulate the vector fluids.

Solid partnership

Frigel's mission builds on resource, water and energy saving and the company's expansion in Food & Beverage has been boosted by the increasing use of drives (frequency converters) to control pumps and compressors. The company is now ripening the fruits of its hard work, having allowed the necessary time for the market to understand and appreciate the benefits of drive-controlled motors compared to fixed speed. Using frequency converters ensures a very accurate regulation of the the speed of motors that drive screw compressors and pumping units. In this area, Frigel has chosen to rely on ABB technology through Marini Pandolfi, the partner of

the Swiss-Nordic corporation in the Tuscany region. The business relationship between Frigel and Marini Pandolfi dates back to more than twenty years ago and has consolidated over time with mutual satisfaction. "For us, ABB is Marini Pandolfi," Losappio says. "We rely on them for support from selection to early prototypes, up to the development of real products, as well as to solve inevitable problems that arise in the field when you test new applications. And we have always received effective response within a short time."

It was a natural choice for Frigel designers to turn to their partner to identify the most suitable inverter to control the operation of new cooling plants for big customers in the beverage industry.



To offer very accurate control of compressors and pumps, and consequently an accurate adjustment of the cooling capacity, Frigel has adopted ABB's ACS580 drive, combined with ACS310 auxiliary units mounted on the pumping groups to circulate the vector fluid between chiller and users. Each drive is controlled by a PLC programmed with proprietary logic. Marini Pandolfi's support was critical to develop the interaction between PLCs and ABB drives. Frigel's engineers wanted the drive to offer the best combination of sturdiness, easy programming and service. All these requirements were met using ABB technology supported by Marini Pandolfi.

According to Franco Soldi of Marini Pandolfi, "our task is to help customers find their way in a market that offers plenty of options. As the connecting link between ABB and end customers, we are expected to support customers in the selection of the most suitable products, especially in terms of functionality. To face competitors in very competitive markets, companies need to identify products with properly designed functionalities, combined with top efficiency in terms of costs and benefits.

Leveraging our twenty-year experience in this kind of projects, we can speed up development time to provide customers with benefits resulting from the selection of the right product for each application." A recent order received by Frigel is the supply of 39 ModularChiller 3FR cooling modules for a manufacturing site in the Far East, operated by the world's most popular beverage brand.

The different modules are connected hydraulically by pumping units that can be made up of 2 to 4 pumps, each controlled by an ABB drive. So, Marini Pandolfi delivers several hundred frequency converters every year for installations all around the world. For this reason, the Tuscany-based company is strongly focused on aspects such as the easy provisioning and implementation of products around the world, as well as costs and performance. At present, according to Gastone Bettarini, sales and technical manager of Marini Pandolfi, the ABB partner is delivering products to Frigel Group worldwide, directly from the Scandicci headquarters.



The Frigel group includes manufacturing sites in four continents and integrates the following companies:

- Frigel Firenze S.p.A, (Scandicci, Firenze Italy) Headquarter and Sales, Engineering, Service, Production
- Frigel North America inc., (Chicago - USA) Sales, Engineering, Service
- Frigel Asia Pacific Company Ltd, (Bangkok - Thailandia) Sales, Engineering, Service, Production
- Frigel Latino America Ltda, (San Paulo - Brasil) Sales, Engineering, Service, Production
- Frigel GmbH (Rheinfelden, Germany) - Sales, Engineering, Service
- Green Box Srl (Piove di Sacco Padova - Italy) - Sales, Engineering, Service, Production
- Frigel Intelligent Cooling Systems (Greater Noida, India, Join Venture with Matsui). New plant
- Frigel Eastern Europe Sp. z o. o. (Wielgolas Brzeziński - Poland)

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