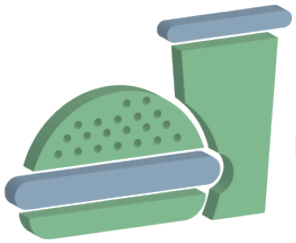
Food & Beverage



A multifaceted sector

The Food & Beverage sector is vast and includes both the production of food and beverages, and therefore the processing of raw materials, as well as quality control, packaging and product distribution. It is a sector that supplies the entire world population on a daily basis and is divided into large distribution, restaurants, fast-food chains, up to home delivery. The Food & Beverage sector has some characteristics common to other sectors and some unique.

- **Legislative aspects**: compared to other industrial sectors, the food & beverage requires regulatory requirements and guidelines that are much more stringent, with particular attention to the elimination of accumulations of food, grease and dust particles on the surfaces of products exposed to contact with the material being processed.
- **Hygiene**: the key principle for the Food & Beverage industry is the sanitization of processes and the removal of processing waste. Typically, the machinery and electrical panels used must have washable and aseptic surfaces and require routine washing at high pressure with water or detergents.
- **Protection**: the presence of food dust, water, acid vapors or detergents, present during the manufacturing and cleaning processes, require sealing and an adequate degree of resistance to corrosion, to avoid contact of contaminants with the electrical equipment housed in the electrical panels.
- **Continuous operation**: production, processing and bottling plants often operate continuously and must, at the same time, meet precision requirements. Machinery and devices must therefore have low electrical absorption and know how to modulate the power based on the product and processing (preparation, picking, handling, filling, handling, boxing, palletizing ...).
- **Space issues**: In food production, filling and packaging lines, space is usually at a premium and the layout of the entire production and logistics chain must be optimised and every single inch must be utilised..
- **Operating temperatures**: a necessary feature in the food sector where food is cooked. In these environments the temperature can reach high temperatures, up to 60 ° C.

Challenges for change

Food behaviour is constantly and frantically differing and changing. Consumers are becoming increasingly diverse: on the one hand, there is a growth in the consumption of pre-packaged food, characterised by ease of storage, preparation and consumption, and on the other, there is a growing search for selected food and attention to food safety.

Customers are more careful and critical in evaluating the quality and transparency of the product, they are looking for a more balanced diet, in some cases vegetarian or vegan, they pay attention to the distribution and packaging of the product. Part of consumers are sensitive to eco-sustainability and to issues such as the breeding and killing of animals, human rights, resource depletion, the use of plastic and the reduction of environmental impact. A company that is attentive to these issues, and therefore sustainable, can see advantages in terms of loyalty and trust.

It is not only the attitude towards choosing what to eat that is changing, but also where and how food is consumed. Recently, there has been a growing demand for home delivery, i.e. the delivery of dishes prepared by restaurants or fast food chains to the home. The end customer changes his or her relationship with food, also through phenomena such as foodtelling, i.e. food as an experience.

A final aspect is labelling and/or packaging. As well as being safe, strong and environmentally friendly, packaging must also be increasingly connective, so that it can be integrated into the product supply chain and allow complete traceability. Another aspect is its possible customisation, which is intertwined with specific marketing policies: this is the case, for example, of some big brands that have diversified the product label by introducing personal names.

Food & Beverage's response to change

Flexibility: all of the above aspects require the Food & Beverage sector to adopt a more efficient and flexible approach throughout the supply chain. Peaks in demand, the seasonality of certain foods, product variants and/or customisation of production batches and new regulations require companies to adopt an efficient and dynamic approach, leading them to equip their plants in a modular, dynamic and integrated manner. This applies not only to production lines, but also to logistics, which have to adapt production to the target markets and the customisation required by individual consumers on a global scale.

Efficiency: The electrical consumption for processing, production, filling and packaging systems is one of the most significant items of expense, because these processes operate continuously, 24/7. In addition, the types of processing or filling can differ from product to product, so it is necessary, depending on the actual workload demand, to provide the appropriate performance from each mechanical/electronic system.

Reliability: Avoiding production downtime or at least reducing start-up times or reacting to faults during operation is key to avoiding or lowering the associated costs. It is necessary to implement predictive diagnostic strategies and/or, in some applications, solutions combined with buffers or redundancy systems. The systems must be able to operate in critical environmental conditions, due to the presence of corrosive substances or considerably high operating temperatures.

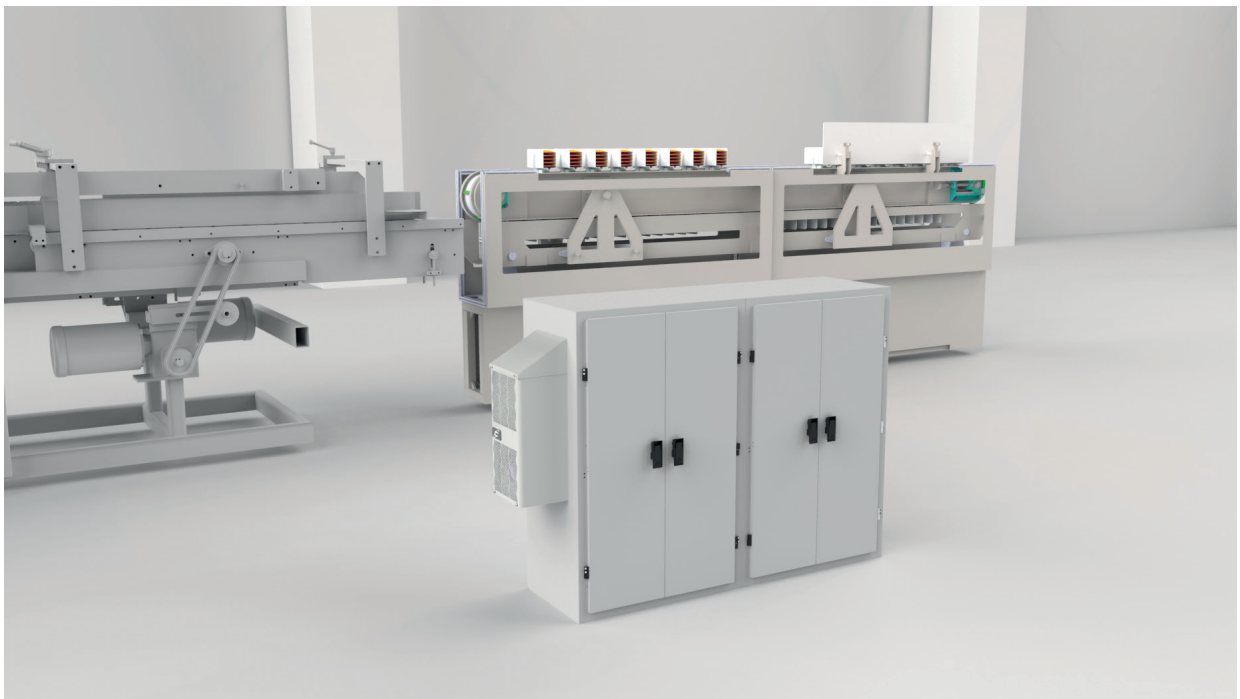
Connectivity: Both local and remote control systems must be introduced to monitor the correct operation of production processes at any time and in any location, to ensure high standards of safety, reliability and traceability. By collecting and processing data, it is possible to obtain useful information for production activities in real time and carry out predictive maintenance, anticipating the occurrence of faults and malfunctions and avoiding costly downtime.

Predictive maintenance: possible savings in the food & beverage sector

Technological evolution is favouring the implementation of predictive maintenance concepts, which can bring a number of concrete advantages, also in Food & Beverage.
Thanks to the advent of the Internet of Things, the road to proactive maintenance, based on the collection of data from the field, makes it possible to control in real time the operation and, therefore, the reliability of systems and equipment. In this sense, predictive maintenance can reduce both operating costs and the number of unplanned maintenance interventions, as well as the cost and frequency of repairs.

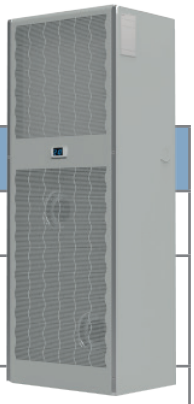
What part of the infrastructure needs to be cooled?

In the Food & Beverage industry there are complex automation systems, robots, modular and flexible systems (e.g. conveyor belts for glass and plastic bottles...), which require electrical components to carry out production, processing and packaging tasks.
These systems must be cooled in such a way as to maintain the working temperature within certain limits, protecting them from excessive heat, as well as from contaminants in the environment and meeting strict hygiene standards.
In addition, there may be an electrical panel at the edge of the production line, for example to cool servers for managing production or logistics data; these panels individually have low thermal loads.
Control cabinets not only require cooling of the internal components, for correct and efficient operation, but also high reliability, efficiency, flexibility and connectivity, being part of Industry 4.0 and edge computing systems.



What Cosmotec products offer

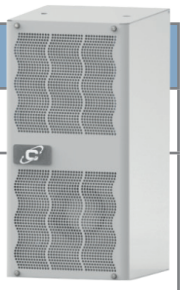
Cosmotec products offer adequate cooling of electrical panels, high energy efficiency, reliability and protection from external agents, also offering some specific solutions for Food & Beverage.
The various ranges guarantee the correct **degree of protection** against the ingress of dust and water into electrical panels (IP54/55/56 and Nema 12/4/4x).
The products are designed to operate continuously, while presenting high performance, with **high EER**, and **small dimensions**, so as not to create problems for the complex layouts of this sector.
Both the air conditioners and the exchangers, as well as the protective casing for the filter fans, are available in stainless steel and the air conditioners can be ordered with a protective treatment on the condenser to ensure **protection against the effect of corrosive agents** in the environment.
EXW wwater/air heat exchangers are suitable for operation at high temperatures, but **FlexIn** and **SlimIn** air conditioners can also be operated **up to 60°C**.
In addition to what has already been described, the **Compact Protherm** range offers features, such as a sloping roof and accessories, to prevent waste or water from collecting on the air conditioner.
The air conditioners allow a connection to a remote system via Modbus protocol. The FlexIn air conditioner, via an **integrated Ethernet port**, provides an HTTP/SNMP/TCP-IP connection without the need for additional devices, as well as having the possibility of modulating the cooling capacity according to the actual thermal load via Inverter technology.



Protherm Indoor & Outdoor - CVE/CVO

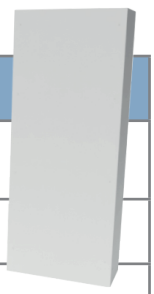
What is needed	Why	What Protherm CVE/CVO offers
Efficiency	Energy Savings	• High EER
Reliability	Avoid Network Dysfunction	• IP54/55, Nema4/4x Protection Degree • Electronic board in the internal circuit • Sequencing available
Connectivity	Remote Monitoring	• Modbus RTU
Easy Installation	Reduced installation time	• Quick Connection • Testing Procedures • Inserts for easier positioning

Compact Protherm - CNE/CNO



What is needed	Why	What Compact Protherm CNE/CNO offers
Efficiency	Energy Savings	• High EER
Reliability	Avoid Network Dysfunction Avoid dust and water deposits	• IP54/55, Nema4/4x Protection Degree • Electronic board in the internal circuit • Sequencing available • Sloping roof • Accessories 30° roof and inserts closure caps
Connectivity	Remote Monitoring	• Modbus RTU
Easy Installation	Reduced installation time	• Compact dimensions • Single cut-out • Quick Connection • Testing Procedures • Inserts for easier positioning

EXW



What is needed	Why	What EXW offers
Reliability	Resistant	• IP54-55/Type12 Protection Degree • High Fans MTBF
Easy Installation	Reduced installation space	• Reduced depth
Flexibility	Power Supply Installation	• 230/115 Vac power supply • Wall or roof • External temperature

Slim In - CDE

What is needed	Why	What Slim In CDE offers
Efficiency	Energy Savings	• High EER, not just at nominal conditions but even at high ambient temperatures
Reliability	Avoid Network Dysfunction	• IP54 Protection Degree • Electronic board in the internal circuit • Operation up to 60°C with peaks up to 62°C
Connectivity	Remote Monitoring	• Modbus RTU (on request)
Easy Installation	Reduced Installation time	• Gasket already installed • Quick Connections • Testing Procedures • Inserts for easier positioning
Flexibility	Reduced Installation Space	• Reduced projection from the panel • External , semi-flush or flush installation • No additional space inside the panel

Flex In - CDI

What is needed	Why	What Flex In CDI offers
Efficiency	Continuous operation, 24h/7 Energy Saving	• Very high EER values through the use of inverter technology and high performance components
Reliability	Avoid Network Dysfunction	• Temperature control accurate down to 0.2°C under stable load conditions • Sequencing function to create system redundancy of the system • Continuous monitoring 24 hours a day
Connectivity	Digitisation of the supply chain	• Direct connection to the network, via http, snmp or modbus TCP/IP protocols, thanks to the integrated Ethernet port
Flexibility	Variable thermal load, depending on the amount of data handled	• Adjustment of the cooling capacity according to the thermal load inside the cabinet • Inlet, outlet or remote probe temperature reading

Kryos³- GS

What is needed	Why	What Kryos³ GS offers
Reliability	Resistant in harsh environments	• IP54/Type12 Protection Degree • IP56 Protection Cap • High fans MTBF • Mechanical and UV resistance
Easy Installation	Reduced Installation time	• Screwless mounting system • Easy grid opening for cleaning / filter replacement • Quick Electric Connection (GSV15…30) • Gasket already installed
Flexibility	AC or DC power supply Air Flow	• Power Supply 230/115 Vac • Power Supply 24/48 Vdc • Fan Reversibility