The Ecolean EL3 aseptic filling machine for dairy products was designed in collaboration with Siemens. It produces extremely lightweight packages and represents an innovation in the packaging industry.

Ecolean made a decision to expand into the aseptic packaging market and heavily banked on a new innovative and environmentally friendly, lightweight packaging material using chalk as basis. One of the success factors was to select a supplier that was accepted globally and at the same time capable of providing most of the products required along with the associated technical competence. Also relevant was the possibility to have the cabinets built by Siemens.

The Siemens solution

Ecolean selected Siemens as the automation supplier for their new range of high-speed aseptic filling machines. The solution comprises SIMATIC S7-319, S7-315F and SIMOTION D445 with 18 SINAMICS S120 axes, approximately 1000 ET200S I/O and a custom-designed HMI panel MP377. The stainless steel cabinets are built by Siemens WKC in Chemnitz. Siemens was selected for their comprehensive product range, technical competence, global presence and their high-performance hardware.

Advantages

Aseptic packages are designed to protect liquid food from production all the way to the consumer, keeping taste and texture as consistent as possible. Aseptic packaging delivers healthy, flavorful food products to people all over the world. It can travel long distances and tolerate harsh environments – without the limitations associated with refrigerated distribution. Not only this, energy is not needed to keep dairy products or other fresh beverages cool during distribution. Further, it involves less waste and product spoilage.
The material

The packaging material is folded, formed and sealed in proprietary Ecolean machines to manufacture various rolls of foils ready to be filled. Each package is hermetically sealed and sterilized, and the process is monitored and can be traced down to individual packages.

The finished rolls, which are shrink-wrapped for hygiene and distributed on pallets, can be transported and stored without special temperature and humidity control systems.

Sterilization at Ecolean

Sterilizing the inside of the package at the Ecolean production plant shifts a considerable part of the aseptic process from dairies and other beverage companies back to Ecolean. The electron-beam technique is used for sterilization – a safe method with a low environmental impact. This process has no effect on material properties, and doesn’t generate any odors. The package is completely sterilized, and the process is compliant with the ISO standard for medical products, thus ensuring defined package sterility levels.

The EL3

The Ecolean EL3 has a small footprint and high efficiency, designed for the aseptic filling of low-acid food products into Ecolean Air Aseptic packages. All interfaces connections are isolated with steam barriers to ensure the full aseptic integrity of the product supply line, as well as that of the filling machine itself. To reduce the manpower requirements and downtime, the Ecolean EL3 not only features automatic roll-changing and material splicing, but also an advanced monitoring system and operator interface.

Conclusion

The total performance of an aseptic packaging system depends on a multitude of small elements – not a single one of which may fail. The design of the Ecolean Air Aseptic packaging system is based on proven standards for hygienic production environments. The technologies that have been selected are robust, proven and efficient. Each aspect of the process chain has been calculated and verified, both separately and as part of the complete system. Ecolean are confident that their Air Aseptic system, with its combination of technologies, will perform to industry standards or better in terms of sterility levels and productivity.

Highlights

- SIMATIC PLC, PROFINET and PROFIBUS communication protocols that are well known and recognized all over the world
- SIMOTION D motion controllers, together with SINAMICS S120 drives, create very compact and high-performance drive systems
- Improved machine safety through Advanced Safety PLC S7 315 F and drive-based Safety Integrated
- A revolutionary lightweight package with environmental benefits produced using Siemens motion control and drive technology.