

# Expanding supervision



*Polystyrene production processing needs precision and flexibility in order to maintain the high standards required by the various sectors that use it.*

Commonly known as polystyrene, Expanded Polystyrene foam (ESP) is made from the aromatic monomer styrene, a liquid hydrocarbon that is commercially manufactured from petroleum by the chemical industry. It is commonly produced in three forms and is used in a wide range of applications: extruded polystyrene, expanded polystyrene and extruded polystyrene foam. The expanded polystyrene looks like a mass of

fused small pearls. As raw material it is expanded in the pre-expander machine using vapor to inflate the pearls to 20-50 percent of their original size. After being pre-expanded they are left to stand in ventilated storage silos to eliminate residue and water vapor and to obtain the right density for the next process stage.

When ready, the foam is then injected into block presses of different sizes and shapes

according to the size of the block molder. The pearls are then re-saturated with water vapor at 110-120° within the block molder machine, inflating them even further until fused together in the form of the block they have been injected into. These foam blocks are then left to stand and cool down again before being worked on accordingly by using different techniques: polystyrene slabs, formwork, matrices and other.

HIRSCH ITALIA has been building machines for producing polystyrene products since 1975 and became part of the Hirsch group in 1988, by specializing in building block molders and recycling systems. EPS is in fact totally recyclable and eco-friendly.

### The Hirsch Machines

The blocker molder is substantially a presser in which the pre-expanded polystyrene is injected in the form of small spheres measuring a few millimeters in diameter. Vapor is then injected into the polystyrene which is then left to cool creating bigger bubbles filled with air, obtaining different shapes of polystyrene in various sizes (volumes measuring up to 10 cubic meters) within 3 minutes.

This fast process requires a predesigned and intricately calibrated system to control each individual phase in order to guarantee best result repetitiveness. Density uniformity is a crucial factor in determining end product quality. Polystyrene is in fact used in many different sectors: packaging, industrial

coatings, building insulation and protection such as crash helmets etc., which require different shapes and types of material conforming to the different standards and safety regulations in act.

Therefore, it is essential that all batches be traceable to obtain the history of each product type processed.

### Machines not just with HMI onboard..

To satisfy the reliability and performance requirements needed for such a delicate process, the Hirsch Group has chosen Movicon out of all the various software they evaluated. Since the optimum results obtained from using early versions, Movicon was chosen by Hirsch as the supervision system for all the block molder machine types currently in production benchmarking its adaptability and easy-to-use data management. The multiple product versions require dynamically configured applications, which has never been done before with just the one software. Using Movicon has made it possible to create one application where the machine type can be defined by accessing to a setup page and simply entering the settings starting with the number of vapor valves. In this way, and with extreme configuration simplicity, the supervision application auto-configures by setting up active pages, graphical objects, trend and functions and automatically calculates the relating and specific process parameters.

Just one standard software to manage all the production line machinery was need to achieve all this, resulting in significant reductions in maintenance complexity and start-up times. The type of interface designed allows easy visualization and regulation of the processes on board the machines by exploiting stored recipe files for quick production changes.

By using the powerful Movicon Data Logging functions, the Hirsch designers have implemented a production data recording of each block produced, using a relational database on the central server and remote control (via Ethernet),



A Hirsch machine with a Movicon display screen onboard.

obtaining complete production traceability and process data access at all business enterprise levels to manage resources, optimize production and logistics. These features were requested by those working in the building sector where severe polystyrene quality standards must be maintained and where logistics is a crucial factor.

The machines are also equipped with a remote system via internet for controlling and carrying out maintenance at a distance, optimizing time and intervention costs.

In reality, block molders are usually the most difficult to implement within a system and Hirsch have greatly appreciated the ease in which Movicon has been able to integrate them together with the other plant components (pre-expanders, storage silos, unloading lines) creating one unique supervision system to run and control the entire plant.

Hirsch is an international company that exports its products worldwide (from north/south America to the Far East) therefore, in accordance to international trading laws, must supply applications in the client's own language. This is where Movicon is also very open and flexible in managing texts, strings (Unicode, UTF16) in solutions that are simple and efficient for managing texts translated into various languages.

### **Conclusion**

Hirsch is launching a new production line of molding machines for shaping expanded polystyrene and have decided to use and standardize Movicon in the new line due to their complete satisfaction and trust in Progea and end clients' appreciation who recognize the benefits of added value gained from using Movicon.

*Ing. Marco Ceriani*