Style and energy efficiency are the key elements that identify Costan, an important company specialising in the manufacture and marketing of refrigerated cabinets and cold rooms. “The origins of the brand date back to 1946 when brothers Mario and Alberto Costan built the first artisan laboratory in Turin to produce iceboxes and refrigerated cabinets”, comments Massimo Sommacal, Production Manager of Costan. “At the start of the Seventies, the production plant moved to Limana, in the Province of Belluno, where it remains today. Thanks to continuously increasing demand and technological innovation, Costan quickly became the leader in retail refrigeration in Italy and its expansion began in Europe. In 1986, it became part of Epta, a leading international group in the supply of equipment and services of the highest quality for retail refrigeration. The group also includes other important companies, such as: Bonnet Névé, established by merging two prestigious French brands of refrigeration equipment, and George Barker, the proven leader in The U.K., distinguished for its advanced know-how. The plants manufacture both under their own brand and the group’s brand name”.

Flexibility lies in manufacturing the piece without changing tools For over sixty years Costan has been synonymous with maximum quality, an excellent service and technologically advanced products for retail refrigeration. The company has always focused

The refrigerated cabinet configured to requirements

The historic Italian brand Costan for over sixty years has been synonymous with pure quality, excellent service and technological and highly reliable products for retail refrigeration: from the production of refrigerated cabinets and cold rooms to an installation, maintenance and post-sales service. To offer increasingly reliable, innovative and high quality products, Costan has installed three, advanced technology FMS lines manufactured by Finn Power, part of Prima Industrie Group.

by Mariarosa Colonetti
on innovation to optimise the performance of its products and enhance their ergonomic features, to reduce environmental pollution and save energy. In this context, an important contribution was made by installing Flexible Manufacturing System (FMS) lines by Finn Power, part of Prima Industrie Group. “We realised in the Nineties that we had two problems: on the one hand, even though the systems were still efficient, they were starting to look a bit dated, while on the other, the market was becoming increasingly competitive”, continues Massimo Sommacal. “In Costan we mainly work to order, making refrigerated cabinets for supermarkets configured according to customer requirements. Back then, the level of flexibility required was ever increasing and we found ourselves in difficulty dealing with this due to the technologies we had available to us. Our customers require refrigeration machinery quickly and as close to their needs as possible. Despite being happy with the machinery park installed, from a robustness and reliability point of view, we saw what the market offered and after careful assessment in terms of performance, price
and, in particular, flexibility we chose the FMS systems by Finn Power. For our production requirements and for the parts we made at that time, especially the plastic or galvanised metal sheets, we believed it was best to use punching machines combined with shears by the Italian-Finnish group also because they already offered a turret with a very equipped tools capacity.

With production of around 10,000 difference pieces, with the previous technologies each time we changed production we had to change tools; this required at least 10/12 min each time. Today, with the current machinery park, we never have to change tools and not because we decided to make all the pieces the same, but because the advanced level of Finn Power system technology enables installation of the dozens and dozens of tools needed. For our requirements, being able to produce any piece without ever having to change tools is an ambitious achievement. The possibility to immediately equip the machine with a wide range of complete tools has allowed us to almost totally eliminate the set up times and therefore gain time.”

The punching machines work 24 hours a day
Aside from the flexibility offered, an important role was also played in costs optimisation. “In Costan, especially for the most burdensome systems, we try to use them as much as possible”, adds Massimo Sommacal. “However, the machines power downstream less expensive machinery, so it is impossible to work over three shifts, especially at night, with cheap solutions. As it is designed now, the system works 7 days a week, 24 hours a day. The Night Train by Finn Power acts as a buffer to enable bending staff to work over two shifts instead

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of three. This means taking maximum advantage of the machines without night shifts for operators. Furthermore, as aforementioned, we can change the piece and produce it when we feel it is necessary without ever having to change the tools. Thanks to electronic innovation, today we can also implement variable nestings and produce pieces each time they are needed, whereas before a set program was required. Waste was also reduced by 30%.

In Costan, Finn Power installed: punching machines, universal Shear Brilliance (SB) with shears and universal Laser Brilliance (LB) with a laser head, both equipped with linear motors for dynamic management of movements along the X and Y axes; the FMS Night Train system and the Express Bender EB5 panelling machine.

“Each machine is connected to the Night Train warehouse systems in the loading and unloading

For some time now, Costan has been focusing on optimising the performance of its products and perfecting their ergonomic features, to reduce environmental pollution and save energy.

Concepts similar to those distinguishing laser technology, only that at the end of the Nineties solutions were not yet available to meet the needs of working with laminated or galvanised metal sheets. Instead, subsequently thanks to considerable advanced steps, also in the punching field, we installed the universal punching machine with a laser head”.

The machinery park includes three Flexible Manufacturing System lines.

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Functioning takes place following programming established by the work loads, using the raw materials in the warehouse and returning the resulting semi-processed pieces, sub-divided and ordered for the next work phases.

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There are three Costan lines, composed of: 2 SG64 + STS connected to the NTW series 3 with over 120 drawers, (FMS 1); 2 SB8 + STR8, 1 EB5 + PR, connected to the NTW series 4 with over 250 drawers, (FMS 2); 2 SB8 + STR8, 1 LB8 + LSR8, connected to the NTW series 5 with over 300 drawers (FMS 3).

Movement of the raw and semi-processed material is managed in the drawers in each Flexible Manufacturing System.

“The first FMS was installed in 1999, while FMS 3 has recently become fully operational”, adds Pellegrini.

“The metal sheets formats which can be automatically processed on each machine and FMS reach dimensions of up to 1,500 mm in Y and 4,200 mm in X; all the raw metal sheets and semi-processed parts are managed in various warehouses using the drawers available.

In the SB machines the raw metal sheets is loaded by the suction cap picking systems and processed in the punching machine; the components manufactured are then separated using an angle shears, 1,000 mm in X and 1,500 mm in Y. The pieces, separated from the waste, are then sent to a programmable 5-axis robotic system (STR) that manages gripping and stacking in the specific drawers”.

For set up, the tools are never removed from the turrets

The work process with the combined LB laser is practically the same except the semi-processed parts are separated using a stationary laser cutting head. For the LB, a programmable 5-axis portal robot (LSR) also manages the raw metal sheets as well as selection and stacking of the lasered pieces in the specific drawers.

“In FMS 2 the EB5 panelling machine is then capable of referencing the drawers where the previous processed pieces are positioned, pick them freely from the drawer using a programmable portal robot (PR) and bend them according to the programming established”, specifies Riccardo Pellegrini.
Each connected machine works independent of the others connected to the same FMS, therefore releasing the user from any possible compulsory sequence, in fact making the system extremely flexible, even for the most demanding management requirements for orders and production changes”. Flexibility was also achieved thanks to the meticulous analysis of the tools necessary for the processes required, analyses which enabled us to configure the extremely spacious turrets of the various machines in such a way to reduce set up time to zero. Basically, the tools within the various turrets are never removed for set up, but only for normal scheduled maintenance. The linear motors also enable management of stroke lengths along the X axis over 6,500 mm with the considerable benefit of executing processes over the entire maximum length of the metal sheets (4,200 mm) without ever having to re-position it; fluid programming, greater processing speed and improved processing precision is achieved.

**Flexibility was further enhanced with the combined laser**

Today, almost all of Costan’s metal sheets production is guaranteed by the performance of the Finn Power systems.

“With Laser Brilliance we have further enhanced flexibility”, comments Sommacal. “Laser technology is increasingly innovative, but on the basis of our assessments, we feel the technological solution most feasible for our requirements is the combined solution”.

“Particularly based on requirements that are imperative for Costan: ordering and selection of pieces”, specifies Riccardo Pellegrini. “The machines produce pieces and place them in the warehouse in an orderly and separate manner. The laser solutions currently available are still not so thorough and reliable. Instead, the combined version offers solutions that enable improved selection, in certain aspects, compared to the combined versions with shears”. Furthermore, due to the dimensions of our cabinets, it was fundamental for us to work over 4 metres”, concludes the Production Manager of Costan. “Ten years ago, when the first system was installed, it was not easy to find systems for such long formats capable of automatically processing them.

The generational change occurred between the first FMS and the second where we passed from traditional solutions to machines with linear dynamics. With the third FMS, Finn Power substantially “reflected” what was implemented for the second machine, but adding the combined laser”.

Costan mainly works to order, manufacturing supermarket refrigerated cabinets configured to customer requirements

Style and energy efficiency are the key elements identifying Costan refrigerated cabinets and cold rooms.

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