

by Antonio Vendramini



“JUST IN TIME” PROCESSING

TO RESTORE AN ENTIRE PRODUCTION LINE THE COMPANY TECNOCLIMA DECIDED TO PLACE ITS TRUST IN AUTOMATIC MACHINES CAPABLE OF FLEXIBLY ADAPTING TO PRODUCTION CHANGES WITHOUT EVER STOPPING.

Situated in Pergine Valsugana, in the Province of Trento, Tecnoclima SpA was established in 1973 by Alfonso Vescovi, an expert technician in the heating and air conditioning field, in order to produce equipment for hot-blast heating, ventilation, air drying and air treatment and conditioning. Tecnoclima designs and manufactures equipment certified by the most prestigious International Control Authorities. The carefully selected materials and the in-depth function testing of all its products ensure the highest quality and broadest range in the sector. This business was founded by Mr.

Vescovi based on his twenty years experience as the technical manager of the Heating and Air Conditioning Division of Bini Group. As he undertook his new initiative, the technically highly experienced Mr. Vescovi faced two different problems: avoid the management difficulties previously experienced and try to use operating tools more suited to the purpose, we are informed by Mr. Vescovi himself as we are introduced: «I had more experience with the structural and operational features of the products, rather than the techniques to use to manufacture them. We immediately got manual punching machines and bending

machines to start and we used them for years over a shifts basis, but they involved a lot of labour. Thanks to the introduction into the company of my daughter Ilaria (now Chairperson of Confindustria Trento) and son Giulio in the managerial and sales side of the business, we were able to increase our presence on the international market, purchasing complementary companies in most countries in Europe; however, the problem remained of how to solve the operational problem of how to produce our manufactured parts. For many years, when working on very big batches, this was not really a problem because our production was based on warehouse stock capable of meeting market expectations. The plants had a target of renewing stock based on economical batches with temporal expiries. This problem was increasingly pressing in the early years of the new millennium when the market started to demand a range of ever-diversified products since the applications of our products over geographical areas with different climates required major diversification. As our business quickly grew we also saw increased overall production volumes, but with the number of parts per batch always decreasing. Finally, in 2005, we decided to outsource most of our processes, while maintaining within the company the obvious design skills and those of assembly and control. This situation was

successful for a few years until, starting in the second half of 2008, we saw a reduction in orders due to the recession that hit the whole world. At this point we had to reflect and see whether further changes should be made to our production structure, also due to the fact we had noted some technical problems when welding sheared and bent sheets due to the reduced precision of these processes. This prevented use of the automatic welding systems that had been introduced in the meantime».

PRODUCTION TODAY

Let's return to the production problems faced by the company. Mr. Vescovi continues: «With the sales contracts from the end of 2008, we decided to review our production structure and, to work most appropriately, we contacted a company with sheet processing and bending experience, also in small batch parts and even asked them about the possibility of working with individual parts. Of the various, possible suppliers, we were most interested in Finn Power, as the company provided us with the best credentials for a "slimline" product independent of the number of equal parts produced. This Finnish company inspired us to take on their complex solutions that involved completely changing our production mentality».

BLANKING AND DEFORMATION, ONE SOLUTION

Mr. Pellegrini, of Finn Power (the Prima Industrie Group company and now part of the Prima Power division within the same Group), who accompanied us on our visit, at this point adds: «Tecnoclima particularly decided to install a shearing and punching system that had to build the first production part for the entire production line. For this reason we suggested the Shear Genius SG solution. This punching and shearing unit by Finn Power (with a turret punch and ample availability of moulding tools, traditional and rotating multi-tools and continuous deformation tools) enabled us to propose as single blanking and deformation solution, combining it with the angle shears to optimise multiple or mixed, continuously changing nesting and enabling separation of parts as quickly as possible and a considerable reduction in waste material. Integration of the SC cell with an automation peripheral for loading and unloading further enhanced production capacity of the machine, even

PANELLING MACHINE

Front view of the semi-automatic Finn Power Fast Bend machine. (photo Lasertec)

IN THE WAREHOUSE

Overall shot of the air conditioning unit and the individual sheet parts for the unit, manufactured by Tecnoclima S.p.A. (photo Lasertec)





CUT PARTS

Small warehouse of cut and punched parts with the Shear Genius unit ready for subsequent bending operations (photo Lasertec)

for very small batches and also obtaining the operational environment target without having machinery staffed full-time. We interrupt this presentation to state that this proposed solution can solve the important problems of automation and process precision, but it cannot solve the basic issue that arose from a reduced number of equal products and therefore the need to operate with warehouses.

Finn Power is quick to reply: «The Night Train warehouse was an ideal solution for Tecnoclima, since it broadens continuous processing capacity while unstaffed, providing an adequate increase in volumes produced with a parallel reduction in input sheet formats and a subsequent reduction in the quantities of semi-processed parts to optimise production flow efficiency. At this point, the exceptional order and cleanliness must be noted, since all the raw and semi-processed materials are always stored within the Night Train».

THE BENDING ISSUE

Mr. Vescovi is also quick to add: «The Finn Power solution was also perfect for our bending needs since the volumes and batches punched and produced by the new GS system could not have been sent to bending using the normal,

manual bending machines». Finn Power's Mr. Pellegrini continues: «This is why we suggested the company purchase one of our servo-electric panelling machines, the semi-automatic Fast Bend, which in some ways was like a bridge between the old, manual technology well-known to the Tecnoclima technicians and the new automatic solution. This is because Fast Bend can work in two different ways. In "standard" mode, where the part is moved automatically from a feeder during the bending sequence on each side. By doing so, the machine can produce high volumes since the bending process is identical to what occurs on automatic machines that can bend upwards or downwards without turning the part, an operation which is instead necessary on traditional units. Only sheet loading, rotation and its unloading are still manually conducted. The result is quality, speed and eliminated errors. Instead, using the so-called "press brake" mode, for simplicity purposes, the sheet is manually moved from bend to bend, enabling processing of even the narrowest sheets, naturally with a loss of productivity. This machine correctly balanced the investment combined with a production over-capacity on a work system integrated with a warehouse».

A MORE SLIMLINE "LEAN PROCESS"

Mr. Vescovi interjects: «We therefore brought processing back into the company, thereby reducing third party work, and at the same time

reduced use of an intermediate warehouse to store semi-processed parts. Each production batch, even with few components, is continuously worked, without downtime.

We are close to the ideal of a "lean process" which is currently the fashion». We ask for clarification on this point since we cannot see any typical Japanese "lean process" tools in the plant, such as kanban signboards or small semi-processed parts warehouses. Mr. De Rossi, an engineer with Finn Power replies: «The "lean process" concepts works very well with the aforementioned peculiarities of the Fast Bend machine, even if our operating method differs from the "kanban" management of the production philosophy introduced by Toyota. Fast Bend can conduct complex bending and set-up of the machine operations quickly to adapt to product changes and always meets operating requirements of the assembly line, without having to assess the minimum economical batch, something which is otherwise necessary using normal bending presses. So, the solution in any case forms part of the "just in time" philosophy without having to use complex "lean process" operating structures».