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FROM THE SHEET TO THE FINAL ASSEMBLING

TO MAXIMIZE ITS COMPETITIVENESS LEVEL IN THE SUPPLY OF AIR TREATMENT UNITS, A COMPANY LOCATED IN SONDRIO MAKES USE OF THE FLEXIBILITY AND PRODUCTIVITY OF A HIGH-PERFORMANCE LINE THAT PROCESSES SHEET METAL STARTING FROM AN AUTOMATIC MAGAZINE, UP TO THE PRODUCTION OF BENT PARTS.

Since 1975 C.L.A. (Carpenteria Leggera Aerotecnica) in San Giacomo di Teglio (Sondrio) produces components for air treatment systems. This activity, which takes place over a total area of 22,000 square meters (of which 8,500 square meters fully covered) is also equipped with an internal laboratory for products tests, a reverberation room for sound tests, certified UNI EN 23741 and a room for diffusers. «Our range – states the owner Luigi Lapsus – includes items primarily made of galvanized steel, including multi-leaf dampers, sealing dampers, pressure relief dampers, silencers, intake grilles. To these are added then also flow inlets, diffusers of various types, plenums, filtering caissons and flow regulators». Therefore air treat-

ment aerulic products, intended to the market over the border in Europe for about 70-75%, with references involving supplies for subways, cruise ship, tunnels and so on. «These are customers – adds Lapsus – with predominantly commercial connotation and of significant size, used to request high-quality products, combined with an attentive service in terms of delivery time, punctuality and reliability». And it is just in the view of a continuous and constant process improvement that the company has chosen to have a Prima Power processing line. More in detail it concerns a compact PUB (Punching - Shearing - Buffering - Bending) line, capable of processing sheet metal starting from an automatic warehouse, up to the production of high quality bent pieces. All connected by the Night Train FMS system that automates

the management of material and information of a production unit, combining individual production processes in a fully flexible process.

MORE FLEXIBILITY AND LESS WASTE

«The decision to use the system proposed to us by Prima Power – points out Lapsus – has depended essentially on precise operational needs and the performance offered, tailored to our needs. First of all the possibility of having an incorporated shearing unit, in favour of less waste and better management of the sheet metal, to which is added flexibility from the programming point of view. The latter is a very important prerogative taking account of our production lots that are usually numerically small, and very small, but equally different between them». PUB by Prima Power, therefore, is characterized as a compact and very flexible processing line that, starting from sheet metal, manufactures high quality bent parts. Technological heart and fulcrum of the whole process is the Cartesian robot PSR 6/2, used to manage the various components and the

Fig.1 - View of the Prima Power Shear Genius SGe 6, integrated punching and shearing machine operating at the C.L.A. (Carpenteria Leggera Aerotecnica) plant.



processing steps that compete to the various machines, optimizing time and cycles in relation to the parts to be made. «The system – explains Lapsus – is able to follow the operational programming arranging itself to better manage the flow of incoming components: the pieces can be picked up and palletised directly after processing, rather than being retrieved and intended to bending at a later stage». In this context, the magazine (referred to as Night Train) allows the processing components made of

Fig.2 - The EBe 5 bending machine chosen by C.L.A. (Carpenteria Leggera Aerotecnica) is able to perform the bending lengths up to 2,650 mm.

different materials, which can be automatically changed and programmed. The sheets are then transferred to the Shear Genius shearing-punching cell, which is a servoelectric machine of latest generation can offer rapid, and at the same time fully controlled, processing movements. The combination of these two phases allows to optimize the production cycle, while the ser-





Fig.3 - C.L.A. (Carpenteria Leggera Aerotecnica) in San Giacomo di Teglio (Sondrio) produces components for air treatment systems since 1975.

vo electric technology has allowed Prima Power technicians to refine and optimize the various functions such as tool change, rotating stations speed, punch-shear exchange times, minimizing the sequences with a significant increase in production. The version chosen by C.L.A. is SGe6, able to process sheets up to 3,074 x 1,565 mm in size, with a ram force of 300 kN, for a maximum drill speed of 1,000, positioning speed up to 150 m/min and tool rotation index up to 250 rpm.

HIGH QUALITY BENDING

The components, after being punched and sheared, are picked up and stacked by means of the aforementioned Cartesian robot PSR 6/2 for the storage and subsequent bending, at an automatic bending cell. Or, alternatively, the same pieces can be transferred directly to the bending process, by means of conveyors. In the first case the operations are carried out by the EBe bending machine chosen by C.L.A. in the EBe 5 version, i.e. with a bending force such to process sheets of mild steel up to a thickness of 3 mm and bending lengths up to 2,650 mm (it is also available in a smaller version,

or greater, for bending lengths up to 3,350 mm) minimum length between the bends (this value is understood as a single limit which cannot be combined) of 350 mm and a minimum depth of 160 mm between the bends (always to be understood as a single limit which cannot be combined). As it was designed and developed, compared to conventional hydraulic solutions, the EBe provides significant savings in the production of components, while raising the competitiveness level. The innovative elements are based on the fact that the movement of the typical bending elements, upper and low-

LASER TECHNOLOGY AND SHEET METAL PROCESSING

Specializing in the field of machinery and systems for processing sheet metal, Prima Power's range in this field ranks among the largest on the market and covers all applications: laser processing, punching, shearing, bending, automation. Machinery Division of Prima Industrie Group, listed on the Milan Stock Exchange, the company operates in Italy with two companies: Prima Industrie SpA, based in Collegno (TO), dedicated to the production, sale and service of 2D and 3D laser cutting and laser welding machines; Finn-Power Italia Srl, based in Cologna Veneta (VR), for the production of bending machines, panelling machines and automatic bending cells. Finn-Power Italia also has a sales office in Castel Goffredo (MN), which sales and services punching machines, bending machines, combined machines and systems manufactured by the Prima Power Division. With a sales and service network operating in more than 70 countries with direct presence or through a network of specialized dealers, the company boasts a machine inventory of more than 10,000 units installed. Solutions developed in accordance with the "Green Means" philosophy, that is combining sustainability and productivity.



Fig.4 - Luigi Lapsus, owner of C.L.A. (Carpenteria Leggera Aerotecnica) in San Giacomo di Teglio and Uke in Mazzo di Valtellina, both located in the province of Sondrio.

er blades and presser (upper tool), occurs by Numerical Control electric servo motors instead of hydraulic cylinders. The machine thus ensures the required design and high quality bending level necessary for the production of industrial parts; this is made possible by an optimized control of the axes, a rapid and regular bending process and a versatile programming. The use of servo motors, also, effectively excludes the influence of the thermal conditions of the environment in which the machine operates, thereby making the EBe immediately available to the production needs. «*The material loading – continues Lapsus – according to the orders and the operational decisions made, can be arranged in a very flexible way, by virtue of the specific features of the line: moving the pieces directly to the automatic bending, balancing the different times required by the bending and punching/shearing, managing the entry and exit of new material. All this with a fast and streamlined programming as we need to better meet the needs of our customers in terms of timing and quality of the proposed service*». The flexible and versatile storage function, ensures optimized operability in terms of production costs and performance time, whatever is the processing to be performed at that time. The productivity is also increased by the afore mentioned Night Train FMS system that automates the management of material and information of a production unit, combining individual production processes in a fully flexible process.

THE VALUE OF PRODUCTION EFFICIENCY

The full satisfaction of the Prima Power line has also convinced us to purchase an additional work cell, in particular a SGe6. «*Actually – explains Mr. Lapsus – the second Shear Genius was installed in Utek, and is intended for the production of machines for ventilation, air treatment and air conditioning*». Utek in Mazzo di Valtellina



Fig.5 - Reversus, controlled mechanical ventilation unit with heat recovery for residential buildings designed and built by Utek di Mazzo di Valtellina (Sondrio).

(SO), also owned by Mr. Lapsus, works in the field of design, development and production of machines for ventilation, air treatment and air conditioning. «*In Utek – adds Mr. Lapsus – our specialization is, without doubt, energy recovery, a scope that became our core business, achieving high levels of technical excellence. We propose ourselves to the European market as OEM manufacturers, customizing our solutions for commercial companies that distribute them under their own brand*». The products developed with a different complexity than those carried out in

C.L.A., are in fact complete machines equipped with electronics, sensors etc., but at the same time have in sheet metal (and in its working) a critical point on which to aim in order to maximize the process. «*Reason for which – concludes Mr. Lapsus – we have not hesitated to acquire a new Prima Power Shear Genius to perform the integrated punching and shearing phases, relying also on an efficient and performing automatic components loading and unloading system*». Entrepreneurial farsightedness supported by the contribution of approximately 150 employees who work in C.L.A. (Carpenteria Leggera Aerotecnica) in San Giacomo di Teglio and Utek in Mazzo di Valtellina, both located in the province of Sondrio, with a turnover of approximately 20 million euro. ■



Fig.6 - The Prima Power SGe6 work cell is used also for the creation of controlled mechanical ventilation units with heat recovery Utek Crhe-V.