QUALITY IN MOULDING

by Gianandrea Mazzola

GREATER PRODUCTIVITY EVEN FOR ITEMS WITH FORMING COMPLEXITY AND IN LOW VOLUMES

THERE ARE CERTAIN MARKET NICHES WHERE MOULDS HAVE TO BE MADE USING UNCONVENTIONAL CRITERIA AND REQUIRE MORE VERSATILE AND FLEXIBLE PRESSES, WHILE STILL ENSURING QUALITY. THESE REQUIREMENTS ARE PERFECTLY MET BY THE PRESSES DESIGNED AND BUILT BY F.LLI NAVA.

Eng. **Andrea Nava,**
one of the partners of F.lli Nava of Monza (MB)

For over 50 years, F.lli Nava has been specialising in the construction of hydraulic presses and systems for forming metals and various materials. Highly technological solutions based on a strong focus on innovation, aimed at meeting the needs of the diversified fields of industrial application served, both at national and international level.

According to your core business, which factors should be considered when installing a sheet metal moulding equipment in order to meet constantly increasing quality levels?
«The core business of our company - says one of its partners, Andrea Nava - has always focused on hydraulic presses for deep and very deep drawing, mainly of stainless steel, where the application of our solutions can make the difference in terms of quality of the moulded parts, durability of the moulds, productivity and continuity of service, while also adding IT verticalisation thanks to specialised software developed for Industry 4.0. There are many concurrent factors to take into account when planning and building a new deep and very deep drawing equipment or station. The first step is to interview the customer in order to define the planned and feasible production mix, taking into account whether the production will be in-house or widely variable, as in the case of subcontractors.

This is considered to be one of the most important points for assessing the range of applications to be covered by the press in terms of machine

performance first and then also for investigating what mix of technological functions to be included in the press itself.
In particular - explains Mr. Nava - we can range from a basic solution equipped with ram and blank-holder to control sheet deformation in order to complete deep drawing without tearing or, on the contrary, producing wrinkles in the sheet, also implementing further technological functions for checking parallelism, for the third forming effect and for shock absorbers/ load balancers offset on the moulds».
One of the most important aspects of the customisation of the company's forming equipment is the integration of several moulding functions for the management of a concurrent pressing of several moulds with different regulation and control requirements, but in any case, coordinated and monitored as a whole by the press control.
«Other aspects to be taken into consideration - continues Mr. Nava - are linked to the possible automation requirements for parts handling and rapid production changeover. In the sense that they have an impact on more specialised solutions for the construction of the press in this regard».

What are the criteria for choosing between a servo press and a conventional press?
«With regard to the selection of the type of machine to be purchased," confirms Mr. Nava - we analyse the choice between a specialised hydraulic press for deep drawing and, alternatively, a mechanical press, from the basic version to the servo press.
In fact, there is often an area of partial overlap between the performances of the two opposing solutions and, therefore, it is strategic to decide which investment to prefer according to a reasoned assessment of the terms of the application. The first important consideration, we believe, is the joint need for deep drawing with important blanking on the part to be made: where this co-presence prevails, and deep drawing is very difficult, often a specialised hydraulic press is the best solution».
A further distinction is the production volume and the work rate required.
«The specialised hydraulic press - explains Mr. Nava - is also capable of prevailing when production is very high if there is a need for deep drawing, because it allows less fragmentation of the forming steps and therefore a significant reduction in equipment costs. What is certainly critical is the technological aspect of the depth and complexity of forming, where the blank-holder of a specialised hydraulic press is very often non-replaceable and a real "must have"».

IDEAL FOR DEEP AND VERY DEEP DRAWING

Another of the presses manufactured by F.lli Nava is a 5,000 kN press, with 1,600 x 1,000 mm plates, with three totally independent "third effect" moulding functions and differentiated blank-holder adjustments. These are the features that make it the solution to the special requirements of deep and very deep drawing of parts, including those in stainless steel, dedicated to a variety of industrial sectors, where the quality of the press necessarily makes the difference, making it possible to manufacture parts that would be impossible to achieve otherwise. The machine is equipped with fully controllable third effects with a very high force compared to what is required for the simple extraction of the piece, allowing on the contrary the creation of pre-forming to recall the material to be used in subsequent phases of the process.

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Details on integration with loading by decoiler

Although sheet metal moulding is more commonly used for the production of large batches, how do your machines also try to meet the demands of greater operational flexibility, even in relation to the increasingly less excellent quality of the raw material?
«Operational flexibility - explains Mr. Nava - has always been in the DNA of the hydraulic presses we produce. The machines manufactured by our company are therefore not only well suited to high-volume, high-productivity production lines, but are also particularly well suited to medium-small productions, often made with "manual" moulds, i.e. not provided with automated loading/unloading and without the high costs of moulds designed carry out fragmented forming and increase the overall speed of the forming cycle. It is typical of our customers who operate in very specialised technological niches to have to manage and co-exist with high forming complexity to achieve the required products combined with low production volumes. For this reason, in order to limit the investments on the equipment, the moulds must be made according to non-conventional criteria and the press must be suitably more versatile and flexible in order to be able to meet the particular needs arising from this optimisation, without compromising the quality of the production».