EVERYTHING YOU NEED IN JUST ONE MOULDING PHASE

HYDRAULIC PRESSES DESIGNED AND PRODUCED BY F.LLI NAVA FOR HYDROFORMED SHEET METAL OR TUBES ENSURE HIGHLY COMPETITIVE PRODUCTION IN TERMS OF OVERALL PIECES, WITH NEITHER AESTHETIC DEFECTS NOR WELDING, WHICH CAN COMPLICATE THE TECHNOLOGICAL CYCLE.

With more than half a century of experience in the sector, F.lli Nava stand apart in the market also for their technological solutions with high added value and applications studied to meet the demands of the most diverse industrial sectors (e.g., cold moulded sheet metal, moulded thermoplastic materials for the automobile sector and, not least of all, hydroformed sheet metal and tubes).

WHAT IS THE POTENTIAL OF THE HYDROFORMING PROCESS?

Mr. Andrea Nava, engineer and partner of the Group, says, *«This type of technology basically creates by deforming difficult pieces when the same task cannot be competitively managed with traditional processing methods. The improvement lies in reducing the cost and number of operations involved in the overall execution of parcellised processing, rather than in eliminating the criticality of these operations born of the division of the process into multiple basic phases».*

It is widely known that hydroforming, precisely the process of cold deformation with a "liquid utensil", can be applied both to sheet metal processing and to tubes.

Eng. Nava says that «The two operational trends yield products that are more precise, with material exposed to lesser compressive stress and not subjected to residual welding tension typical of pressed pieces, which are then assembled with more uniform thickness, an even surface appearance, and better dimensions. Hence, it is an absolutely winning process, compared to the piece obtained by conventional moulding and composition of accessory parts, when required, in terms of lightness, absence of blowing, superior surface quality and almost total absence of defects».

WHAT ARE THE MOST INTERESTING APPLICATION SECTORS?

Eng. Nava explains that *«There are many application sectors for the hydroforming process. Starting from household ware and quality domestic appliances, where obtaining a better quality object with enhanced aesthetics and dimensions is rewarding. Other sectors where this technology has long been applied successfully include pump bodies, and also all areas that require moulding of parts with undercuts that have to be individually moulded and are not made up of parts carried over and joined by welding».*

Briefly, the sheet metal hydroforming process is intended for situations that require very high quality technical pieces in which the difference is appreciated in terms of operating product performance, better mechanical characteristics and dimensional stability, lesser thickness and enhanced aesthetics.

Eng. Nava also says, *«For tubes, application fields extensively involve motorbike frames, parts and/or exhaust pumps for cars and vehicles in a broad sense. Hence, parts that form the structure and various reinforcements are involved because they offer the possibility of moulding with a variable section along the development axis. The production of furnishing elements, top of the range components and tapware is also of the utmost interest. There are actually several sectors. It is only a matter of verifying, case by case, the applicability and competitive benefit that can be exploited by implementing this technology, compared to more conventional moulding technology».*

WHAT ARE THE OBSTACLES AND LIMITATIONS TO THE USE OF THIS TECHNOLOGY?

Eng. Nava concludes by saying, *«We are not speaking of a brand new technology, because it was first implemented in the early 1980s. It is true that this technology hasn't had the time to experience capillary development as it is bound to certain niches due to difficulties related to the need for unconventional skills. In this case the hydroforming machine and this technology present a very significant potential that is not entirely expressed in many ways. It is a matter of discerning which market development trends will better appreciate this technology, acknowledge its benefits, and also invest in its implementation. Indeed, it is self-evident that without investments we would remain rooted in consolidated technologies with the flip side of missing interesting and significant opportunities for growth and evolution».*

WHEN WELDING-FREE PRODUCTION ENHANCES POWER

F.lli Nava's solution involving an 8,000 kN hydraulic press stands out among their many applications. Used to close the top half of the mould with a vertical movement, it has a pressure multiplying unit that produces very high pressure water for injection into the tube to ensure perfect adherence to the hollow of the mould. With its many effective core features, this technology is significantly cost-saving for the final client in terms of unit cost of the finished piece. It has been successfully implemented in the sector of exhaust pipes and structural parts for motorbikes, and in a broad sense in sectors that require the production of tubular artefacts with complex shapes and variable geometry. Specifically regarding exhaust pipes for motorbikes, the piece obtained is winning not only in terms of cost optimisation and superior aesthetics; it also allows to "squeeze" some precious additional horsepower from the engine while maintaining the other conditions. Indeed, the absence of welding and enhanced harmonious geometry of the pipes allow combustion gas to flow with a lesser loss of load. The technological innovations proposed by the manufacturer also include the important new process adopted for heat processing of the tube, a necessary intermediate phase between curving and hydroforming. The machine produced is a flexible operative centre with a mechanical interface system. It ensures extensive freedom to direct the cylinders of contrasting caps. Hence, the client can rapidly change production based on market needs, instead of producing for warehouse stocks. The solution developed by F.lli Nava features the utmost operative flexibility and high productivity, especially with devices adopted in the inflation cycle that save precious seconds during every moulding cycle. The entire system interfaces with the operator via a supervision software with Nava's typical production features: streamlined use, Windows environment, user-friendly controls and communications for system interaction with humans.

Hydroforming press for collections of large tubes, typically exhaust pipes for the motorbike sector, designed and produced by F.lli Nava.