

PERFORMANCE AND QUALITY, CORE CONSTRUCTION FEATURES FOR COMPRESSED AIR TANKS

SEA ITALIAN QUALITY TANKS CONSIDER ONGOING INNOVATION OF ITS PRODUCTION CRUCIAL TO PROVIDE A HIGHLY COMPETITIVE RESPONSE TO THE MARKET'S MANY DEMANDS. IN 2019 THIS PRECISE TREND HAS BEEN PRACTICALLY IMPLEMENTED BY STARTING UP AN INNOVATIVE ROBOTISED PRODUCTION ISLAND. THE INLINE PRESS MANUFACTURED BY F.LLI NAVA, A LONG-STANDING TRUSTED SUPPLIER AND QUALIFIED TECHNICAL PARTNER, IS THE KEY TO ACHIEVE EXPECTED OPERATIVE AND FLEXIBILITY STANDARDS.



With a capacity range of 5-500 litres, and 8-21 bar operating pressure, they are used in various sectors, especially automotive, farming and medical, besides the variegated industrial scene. We are referring to compressed air tanks designed and produced by SEA Italian Quality Tanks, a company that, during almost 70 years in the business, has combined handcrafting tradition and technological innovation, adapting to

the needs of an increasingly dynamic and global market. Made-in-Italy production, customised to meet precise technical specifications. Automation and process efficiency rapidly respond to the demands of global clients, ensuring very high quality standards. Fabrizio Cattaneo, the family's third generation, who runs the business with his brother Federico and father Giorgio, says, «Since the 1990s, our father's growth strategy and vision have always focused on making the most of technology to gradually replace manual and repetitive activities, reallocating human resources to duties with higher added value».

In fact, the automatically controlled production islands are the heart of the SEA system, solutions featuring ever evolving and constantly updated advanced technological content. This is evident in the recent integration of a new base moulding and welding island for tank sleeves. A completely automated system comprising a sheet metal coil unwinder and moulding press with annexed robotised edge banding and welding, conceived to reduce cycle time, increase quality (with high precision number controls) and minimise retooling time.

Mr. Cattaneo explains that «It is a

third base moulding line that not only increases our production capacity but significantly boosts our operative flexibility».

A core element of this production island is also the 160 ton press supplied by F.Lli Nava, our long-standing supplier and ideal technical partner for high quality content with exceptional performance.

He specifies that, «This press joins the other two, 160 and 400 tons, respectively, that have long been functioning in the two base moulding lines present in the facility».

OUTSTANDING FLEXIBILITY AND PRODUCTIVITY STANDARDS

Featuring a striking hammer with 1,600 kN maximum force, an 800 kN bottom blank holder and 1,200 x 1,000 mm work benches, the new press purchased by Sea is conceived as a solution for the special base moulding needs of industrial compression tanks. The production targets a superior market segment, where press quality is crucial for competitiveness by producing top quality, high performance objects under constant control. Cattaneo also observes that, «These objects produced in more fragmented batches than in the past must, howev-

er, meet high quality standards and all requirements established by strict international regulations. Indeed, ca. 70% of our production is intended for the foreign market, not only European but also American, Middle Eastern and Asian».

Precisely, the press has a striking hammer with adjustable maximum force and driven with a high guide ratio. This solution, which is typical of F.lli Nava's vision for machine design, ensures the best results in terms of eccentric strain that can develop in the mould due to the asymmetrical features of the pieces to be produced, or if the behaviour of the material to be moulded is not fully symmetrical. Furthermore, the machine has a blank holder cushion with reaction force that can also be adjusted with the utmost flexibility during the entire performance cycle. This fully meets grasping needs, which means allowing the sheet metal to flow based on the status of advancement of the moulding process. This is the only way to exploit all the devices designed and implemented on the mould to prevent excessive thinning of the piece, which would generate scrap and unsatisfactory quality of the moulded pieces. The reaction cylinder is electronically managed to ensure the desired pressure profile for the drawing run.

FOCUS ON MOULDING

In terms of man-machine interface, F.lli NAVA has made an additional effort to ensure diagnostics studied to increasingly assist the operator, who may notice at a glance any causes of machine malfunction (e.g., inconsistent processing parameter settings or wrong preparation of the machine to commence the moulding cycle).

Cattaneo says, «*This detail is essential to control the process and efficiently support intensive production rhythms and ever frequent changes of model*».

Broadly speaking, to facilitate mould

preparation and set optimal production parameters for the piece desired, press control can be improved with the addition of graphic pages illustrating process value trends as they evolve during the pressing phase. This simple but powerful process tracking function allows step-by-step supervision of the moulding process, especially during key phases implemented when the mould is closed and which are, therefore, harder to monitor externally. On the other hand, this basic function can be extended to include filing and printing of the process' dynamic image. The ultimate version of tracking history allows to use the graph obtained, both video and on paper, to reflect on the expected evolution, comparing it with the actual one obtained and with the yield on the actual piece. Particularly this function effectively supports those who might need to document the processing parameters adopted and the evolution of the processing cycle implemented for their production, comparing these parameters with benchmark ones recorded when the mould was tested.

FROM PROCESS QUALITY TO CERTIFIED PRODUCT QUALITY

The process data management function on F.lli Nava's press perfectly meets SEA's need to integrate the new robotised island with the in-house corporate management system. Cattaneo says, «*We have long implemented an MRP software for production management to process and develop the workflow of orders. Hence, every department daily receives all the processing information about the production of caps, ferrules and relative components based on order priority*».

This asset enhances the entire process in terms of powerful product customisation, which today exceeds 80% of the overall production.

From technical design to engineering and prototyping, SEA has made process automation its distinctive trait

to ensure the utmost competitiveness. A production in which robotics (for subservience, welding and handling) perfectly merges with activities concerning logistics and product finishes. Cattaneo concludes by saying, «*Optimised management of our processes and the large warehouse for finished and semi-finished products ensure rapid delivery and supplies for the client*».

CORPORATE INSIGHTS

SEA SpA was established in 1950 by Giorgio Cattaneo. He enthusiastically converted the original mechanical workshop into a dynamic company that designs, builds and markets compressed air tanks. Today the head office based in Agrate Brianza (MB), just outside Milan, covers a surface area of more than 12,000 m² and is organised into departments and production islands with high technological standards. Robotised moulding and welding systems rapidly meet the demands of global clients with very strict quality standards. Every tank is entirely produced in-house, starting from the processing of coils and carbon steel sheets with automated welding for ferrules, bases and related components (brackets, feet, base-plates, sleeves, etc.). The company records a mean production of more than 12,000 tanks a month, built with an efficient and optimised operative pathway and the support of 50 employees.

More than 15% of the turnover is yearly invested in new high technology machines: a winning strategy that has been rewarded by the rapidly growing 2018 turnover both in terms of volumes and of values, compared to the previous year.

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