



## MACHINERY & EQUIPMENT

### FANUC for Cabe Stozzatrici

**Task** To equip the machines with drives and numerical controls, capable of satisfying the high standards, in terms of reliability, precision and programmability, requested by the complexity of the newly introduced innovative processing, impossible to achieve with traditional electronic controls.

**Solution** Thanks to the collaboration with FANUC, control solutions based on 0i Mate-MODEL D and 0i-MODEL D have been studied, in order to allow the programming and the optimal execution of even the most complex processing.

**Result** Today, the advanced level of the controls allows our machines to carry out innovative processing, which requires simultaneous movement and interpolation of the axes, with high precision and particular ease of use and programming.

## Innovative processes with FANUC controls.

Cabe constructs grinding, slotting and broaching machines with avant-garde technology and FANUC CNC controls.

### Slotting Machines, breakthrough processes.

In 2004 the historic company Cabe joins the important BR1 group, leader in mechanical processing. With renewed enthusiasm, the brand becomes an increasingly rich and



stimulating company, both culturally and technologically. The product range is reinforced by the introduction of brushless technology with electronic control and the first slotting machine with 4 controlled axes is launched on the market.

To improve the quality and the performance of the machines, Cabe continually studies new and innovative solutions. When reaching the limits imposed by the traditional systems, the technical improvements find its maximum expression in the latest ST4 models equipped with FANUC controls and motors. The traditional rod-

crank system for tool handling has been replaced by a servo-controlled linear axis, that guarantees constant cutting speed and optimises the durability of the tool. The four axes (three linear, one rotary) are driven by brushless motors and guarantee incomparable precision, even in interpolated movements. Breakthrough technology to obtain superior performances and new and unique processing, such as conical and helical slots (obtained with the interpolation of two axes), blind slots without discharge hole (with discharge inclinations of up to 45°, impossible with other slotting machines), Maag cutting method, single and double trapezoidal slots, hexagons and squares.

The software is designed to guide the user in the setting of the machine. Thanks to the customised pages, parameterized ISO programs are generated, which help the operators and avoid the need of long training periods, even in case of very complex operations. The "VCT", virtual tool change system (Cabe patented), allows two processes in sequence with different tools without having to stop the machine to make the change. All of the processing elements (tools, origins, cycles composed of queued processing) are saved in organised libraries inside the control and guarantee quick machine set-up.

### Grinding machines, unique processing.

In 2013, Nesi, the historical Italian company specialized in the construction of grinding machines, joins the group. Optimized in all of its parts and with an entirely new design, the new line of grinding machines is equipped with FANUC control systems. For configurations without interpolated axes the Oi-Mate-MODEL D is used. The models that perform movements with interpolated axes,



required for complex geometrical shapes, are equipped with the 0i-MODEL D with touch screen.

The most recent SMART PRO 500 model is top-of-the-range with up to four interpolated controlled axes. This machine is the result of a special design project run by the team of Cabe engineers, who, with this model, have re-defined the historical standards of the Nesi machines. The new grinding machine is characterised by brushless motors (axes X, Z, Y) and torques (axis A) for top-level operating dynamics and high-precision positioning. The longitudinal axis (working table) and the transversal axis (carriage support head) run on rails with rolling friction, while the linear axes obtain maximum accuracy thanks to the pre-loaded and rectified recirculating ball screws. The machine, that automatically grinds mills, taps, reamers, countersink and turning tools, and performs the grinding of both internal and external flat and cylindrical surfaces, boasts fantastic cutting precision and flexibility of use. Thanks to the dedicated software developed in collaboration with FANUC, the grinding of complex geometric shapes (e.g. cutters or cylindrical, conical or helical mill rake angles) is executed automatically with maximum simplicity. As with the slotting machines, all of the elements (grinders, origins) and the processing sequences are memorized in the NC and can easily be recalled. Even the addition of new operations based on client-specific requests is immediate, thanks to the modularity with which the user interface has been conceived and realised.

#### **Broaching machines, avant-garde technology.**

In 2014 Manaca joins the group. The company's entry enriches Cabe with a complete range of electromechanical and hydraulic broaching machines with fixed or mobile table. High-quality and innovative contents define the entire range, today revisited by Cabe's team of designers.

For the electromechanical machines, in particular, the re-

engineering process has led to the installation of FANUC motors and controls. A decision that ensures a number of key factors such as: improved dynamics that guarantee the minimisation of "downtime", a uniform broaching speed, the reading of the position of the piece being processed and the punctual checking of broaching stress with warning thresholds and alarms. The control being used, the 0i-MODEL D with touch screen, guarantees versatility and ease of use.

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The operating logic developed represents genuine innovation within the broaching machine sector: the "self-learning" function allows for the memorisation of the important working positions during the tool change phase, thus drastically reducing data insertion time and the subsequent possibility of errors.

The correct dimensioning of a broaching machine is characterised by extensive customisation on the basis of the customer's specific requirements: commencing with an attentive and scrupulous analysis of the features of the pieces to be broached and the broaches to be used, one or more work cycles are defined. It is essential that the work cycles are executed with equal uniformity and precision and without overloading the motor. For this reason, the range of FANUC brushless motors represents an irrevocable advantage in terms of flexibility and scope.

#### **Tailor-made machines and software.**

With the desire to grow, learn and continually exceed its own limits, the Cabe group is composed of a team of specialist, capable of studying even the most complex

drawings, identifying the most suitable solutions and subsequently supporting the customers throughout the decision-making process.

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