

ITALIAN MACHINE TOOLS, ROBOTICS & AUTOMATION INDUSTRY ~ NEWS

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PIATTAFORMA INDIA PROJECT

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PRECISION AND MULTITASKING FOR GENERAL INDUSTRY

MCM-Machining Centers Manufacturing S.P.A. is a historic Italian company, with important references all over the world, specialized in the design and manufacture of machining centers and flexible production lines with innovative process solutions. Over the years, diversification into various market segments has been a driving force of continuous innovation for MCM, and today the company is an international benchmark in the Aerospace industry. Small and medium-sized companies and large OEMs recognize the top-level know-how of MCM, now branched out into a wide and structured range which allows to offer advanced, high-performance and reliable solutions for every production need.

Goizper S. Coop., a Spanish cooperative company based in Euskadi, was established in 1959 and is organized with three business activities: industrial, spray systems and biotechnology. Goizper Industrial designs and develops power transmission solutions and components for a variety of different industrial sectors: products such as clutches, brakes, gearboxes, gauges, cams, rotation systems, etc., with high level of complexity and extreme precision, to serve a wide variety of companies in highly demanding sectors, such as automotive and aeronautics, packaging, construction, maritime industry or machine tools, among others.



MCM TANK 1300 Multitasking Multipallet

Partnership

The partnership between MCM and Goizper dates back to 2010, with the supply of a flexible manufacturing system (FMS) consisting of four 5-axis multitasking Tank 1300 machining centers for milling, drilling, turning and grinding precision components. The machines were implemented in several steps (2010, 2013, 2015, 2020), thanks to the

modularity of MCM linear automation and special solutions designed together with the customer to make the most of the limited availability of space at Goizper factory, and above all to meet the need for production of extremely precise parts, even in unmanned mode. The customer's integration with the jFMX supervision software developed by MCE - the IT division of MCM - is very advanced and allows to manage the production flows of all the FMS centers installed. Flexibility and the ability to develop ad hoc solutions together are leading Goizper Industrial to define a new project with MCM, already under construction, whose development includes an FMS consisting of 5-axis multitasking Clock 800 EVO machining centers, with the integration of a smart vertical automatic workpiece magazine, integrated with the machining centers through the jFMX supervision software. The plant features new advanced functions, such as data collection and analysis for predictive maintenance through the JFRX software module installed on the dedicated computer unit with which the machines are equipped.



Components for power transmission during machining

Customized multitasking

The initial need of the customer was to be able to machine several complex components by carrying out milling, drilling, turning and grinding operations on the same machine. In the line currently installed, the first two machines are interfaced by a shared Mirror tool magazine with 740 tools that allows the two machining centers to exploit the same resources, thus optimizing tool use and saturating the available machining hours. The third and fourth machines, instead, have their own tool magazine with 399 tools due to space limits. The project with Goizper Industrial required a great customization from the beginning, also because the customer had constraints due to such space limits. The machines and the operator stations have therefore been recessed, to solve the height problem, while an additional part of the factory has been built to contain the automation for 70 pallets with 1000 mm diameter. In the latest machines installed, Goizper Industrial also requested the possibility to perform Power Skiving, a special toothing operation that further increases the line versatility. The need to manage extreme precision in 5-axis synchronized machining has led MCM, in collaboration with the customer, to study and develop special solutions.

The difficulty of machining complex parts, such as cams with a 5-axis kinematics, means that there is a greater possibility of error compared to linear machining. This is why MCM has developed, together with Goizper Industrial, special wheel dressing and surface probing cycles with probes

that check the geometric shape of the workpiece during the various cam machining stages. Then a profile calculator has been integrated which, where necessary, allows the tool path to be regenerated in order to rework the workpiece with different values and shape. This solution allows the machine to perform extremely precise operations, ensuring process automation and thus maximizing the machine utilization rate, even without operator supervision.

Software and flexibility

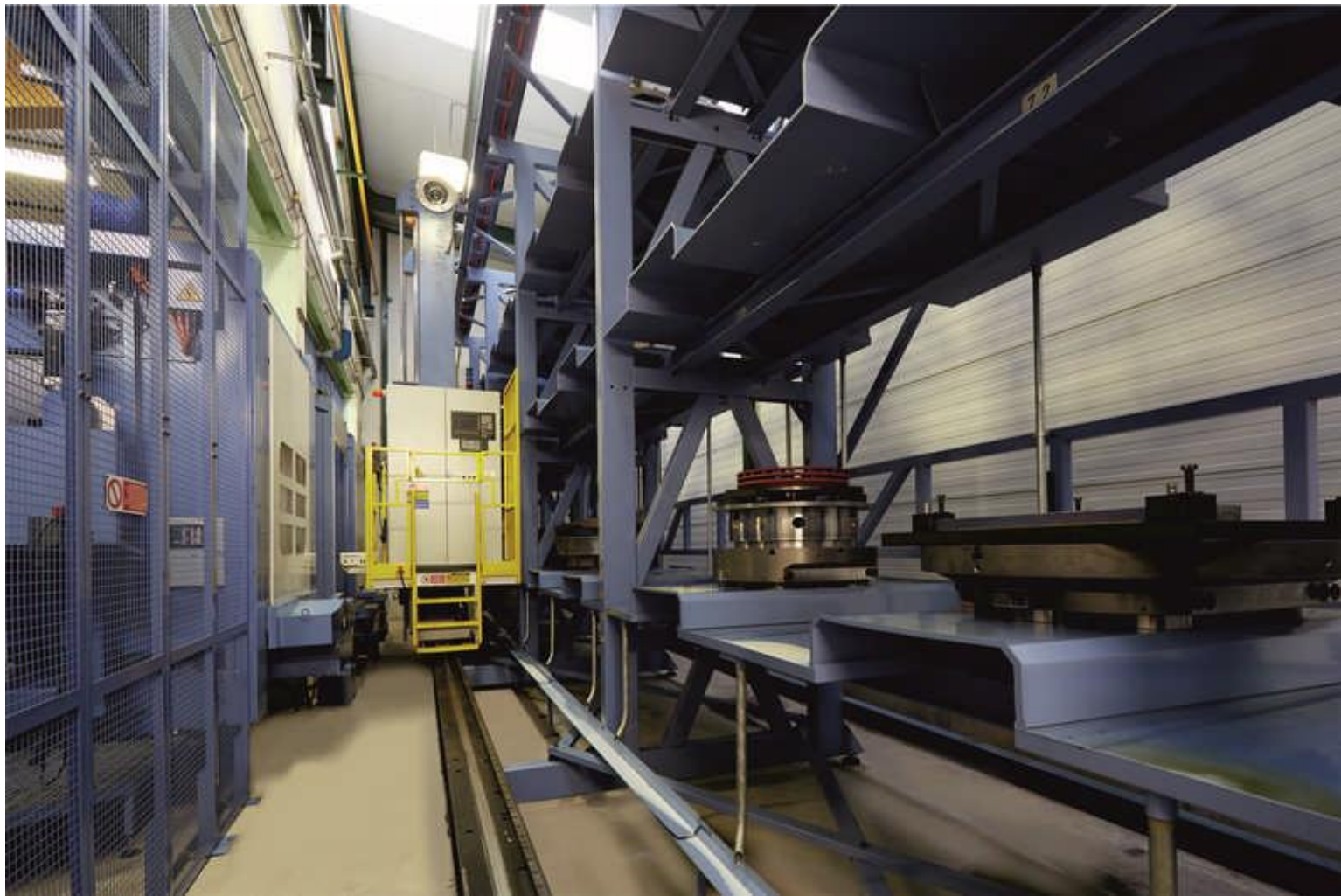
In addition to the high complexity and precision of the machining operations, a further issue is the vast number of parts produced by Goizper Industrial. Around 1,300 part types are machined on Tank 1300 machines in FMS configuration. Furthermore, machining of some parts requires to remove them from the line after initial machining, to undergo heat treatment, and then return them to the machine for grinding. This results in a total of around 2,600 active machining programs. Efficient management of the wide variety of machining operations at Goizper Industrial is ensured by jFMX supervision software, developed in-house by MCE, the IT division of MCM. Being the owner of the source code is a great strength for MCM, as this allows to provide the user with software products that accurately match the specific machining needs.

In short, the jFMX supervisor coordinates all the production system resources, processes all the data generated by the machines, makes available essential information for optimal production management, thus enabling maximum productivity for complex production mixes and variable production schedules.



Cam grinding operations on TANK 1300 Multitasking with wheel dressing on board

Thanks to the strong aptitude of Goizper to Industrial 4.0 principles, the integration with MCM software has been pushed even further, as the role of the jFMX Level 2 supervision software has been fully understood by the customer. In fact, the MCE platform is not only able to monitor individual cells, but can be extended to manage the entire plant. For Goizper Industrial, in particular, the Level 2 software management - already implemented from the second machine supplied - makes the solution suitable to manage all the MCM machines installed at its premises, also offering the possibility to interface the lines with the company ERP and directly receive the production orders.



MCM TANK 1300 Multitasking FMS

The project Piattaforma India has been promoted by UCIMU – Association of Italian Machine Tools Manufacturers and AMAPLAST – Italian Plastics and Rubber Processing Machinery and Moulds Manufacturers Association. The two associations agreed on the idea that promoting a network of associations and entrepreneurs who have developed knowledge and experience on the Indian market, can be useful in favoring of new paths of development for business. The Indian companies who are interested to form JV, cooperation, technical tie up, purchase machinery etc from/with Italian companies can contact below mentioned address for any assistance:

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