

# ITALIAN MACHINE TOOLS, ROBOTICS & AUTOMATION INDUSTRY ~ NEWS

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PIATTAFORMA INDIA PROJECT

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UCIMU-SISTEMI PER PRODURRE

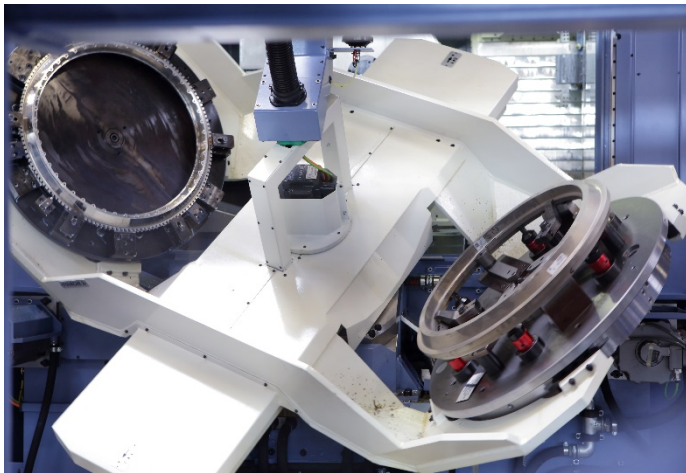


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## **MCM S.P.A. EXCELLENCE IN MACHINING CENTERS MANUFACTURING TURBINE DISKS AND ROTOR HUBS IN NICKEL ALLOYS FOR SAFRAN AIRCRAFT ENGINES**



MCM is a specialist in the design and production of Flexible Manufacturing Systems. The core of them are 4 and 5-axis horizontal machining centres, achieving maximum performance with no compromises. MCM is able to incorporate, into the production lines, machines featuring complementary technologies and integrating the engineering of complete and customized solutions, giving customers the benefit of a single, competent and reliable partner.

THE TECHNOLOGICAL CHALLENGE. SAFRAN Aircraft Engines, OEM French manufacturer of engines for civil and military aircraft, as well as for satellites, found itself faced with a significant new technological challenge in the production of new aerospace components in advanced materials, including the turbine discs for

the LEAP engine, engine produced and marketed by SAFRAN Aircraft Engines and GE within CFM International.

The new fan casings for the LEAP motor are made from a nickel alloy with advanced mechanical properties, having high structural strength even at very high temperatures, typical of the interior of jet engines. but limiting the material's ductility due to the poor thermal conductivity.

In the case of fan casings, requiring strong cutting force and having particularly thin walls, the risk of permanent deformation of the component is very high. As such, the most significant technological challenge was to develop a correct machining strategy involving machines, process, technology and workshop organization.

MCM's SOLUTION. MCM, in complete synergy with the customer, developed a dedicated solution to all technical hurdles encountered in the Safran Aircraft Engines turbine disc production line, including a new specific industrial building for optimizing the work-flow.

MCM's PRODUCTION SYSTEM. Up to date, MCM has supplied 12 machining centres TANK 1600 MTG and set up three FMS lines, each one composed by four Tank 1600 machines. These machines are multitasking, capable of combining milling and turning operations for reducing the cycle time and its associated production costs.



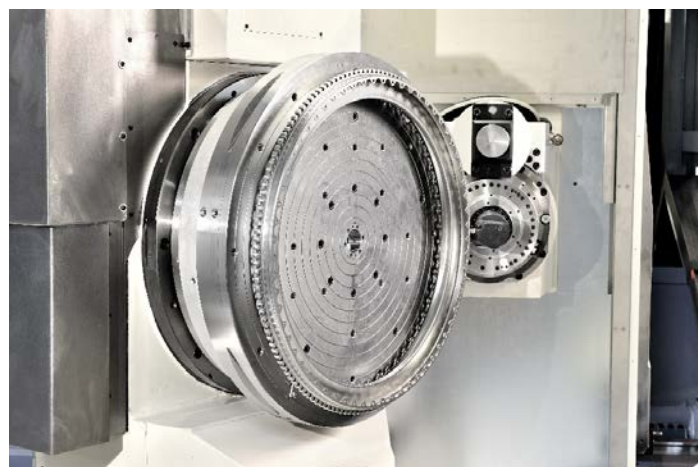
To undertake a revolutionary machining strategy, an unusual characteristic of the installed machines is the presence of a system known as a "5-axis vertical table"; this is installed on the rotary table and is able to position the workpiece & the pallet as part of a group with a horizontal rotation axis. This also optimizes the turning operations and provide ideal chips' removal from the component. Integral to the 5-axis vertical table is the spindle, which allows turning operations of up to 500rpm.



This solution has led to the adoption of an exclusive 45° pallet change system, which is able to take the pallet from the FMS (where the pallet is horizontal) and position it vertically in the working area of the machine, with a horizontal rotation axis.

The necessity to remove high quantity of chips, to protect the cutting tool and the quality of the component demand a great quantity of coolant flow (300liters/mnute) and a controlled high pressure coolant (up tp 250bar) during the turning and milling operations.

jFMX SUPERVISOR. Each component of the system, from the tools to the equipment and accessories, is managed by special functions and dedicated software. The jFMX supervisor, software developed by MCE, MCM's IT division, operates at a higher level, provides real-time co-ordination and management of all the system's functions and resources, and is constantly processing an enormous quantity of field data. It also supplies a range of information and statistics on the productivity, efficiency and availability of the entire FMS and it fully responds to the essential principles of Industry 4.0. It's the key for understanding production trends, optimizing resources and carrying out predictive maintenance, as well as minimizing machine downtime and ensuring the highest levels of efficiency.



Visit our website [www.mcm-group.com](http://www.mcm-group.com)

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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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