
MITSUBISHI MATERIALS & MPI - MÉCANIQUE PRÉCISION INDUSTRIE

SUCCESS STORY



THE SECRETS OF SUCCESS: A FULL MACHINING
SOLUTION AND COLLABORATIVE PARTNERSHIP



Arnaud Panaget (MMC Metal France Sales Engineer)
Aurélien (MPI Process Technician)



AJX: Indexable insert milling cutter

About the VQ range

Solid carbide end mills

- Irregular helix 37/40°
- Ultra micro grain carbide
- Smart Miracle coating
- Application versatility

About the AJX range

High feed cutter

- High level of application versatility
- Low cutting resistance
- Wide range of insert grades including the new MP9140



In order to meet the various machining challenges posed by a complex aircraft part, the precision engineering company MPI (subsidiary of the MPO group) called on the technical skills of the MMC Metal France team, the French sales office of Mitsubishi Materials. Following a collaborative partnership between the two companies, the entire machining process for this component was based around milling tools and drills from Mitsubishi's DIAEDGE brand.

Normandy is home to some big names in industry as well as many small and medium-sized enterprises (SME). These SME's are just as important to the region's overall industrial fabric. MPO, for instance, is an industrial group consisting of around one thousand employees from 20 companies specialising in mechanical engineering. More specifically, the group's companies bring together extensive expertise in the areas of press tooling (its historic core business), forging, welding, injection moulds, design engineering, sheet metal prototyping, precision machining and machining of small turned parts; with this highly diversified portfolio, the group's companies often produce highly complex parts, ranging from small to large batches (up to 5 million parts per year for the largest).

MPI is among the MPO group's precision machining specialists.

Based in Vire, in the French region of Calvados, this company of around forty-five employees is responsible for manufacturing components across a wide range of industries. These business areas are fairly evenly divided between the medical, automotive, aeronautical and the petrochemical industries, with additional areas including food and beverage processing equipment. "Following the 2009 financial crisis, we chose to diversify our business", says François, the company's Mechanical Business Manager. We used to work predominantly for the automotive industry, whereas nowadays this sector now only makes up 10% of our turnover." Since arriving on the scene around 12 years ago, MPI has always been able to adapt: "Our new focus has allowed us to significantly boost our expertise, invest in new means of production and meet ever higher quality standards; we now apply these same standards to all business areas, and our customers are certainly seeing the benefits." Quality is certainly one of MPI's key priorities, as well as recruitment and training, with the aim of continuously meeting growing customer demands and requirements. With this in mind, MPI has partnered with local actors to promote training for engineering careers in Vire. "Faced with recruitment issues, we decided to take control by launching our first training programme, which welcomed ten people in November 2019", says Loïc, Director of MPI.



VQ: solid end mill



MPS1: solid drill

QUALITY AND INVESTMENT TO MEET COMPLEX MACHINING CHALLENGES

These high standards of quality therefore apply to all kinds of parts, whether on the three elements (rotor, stator and flange) of a fuel pump, one of MPI's original products, or replacement parts for light commercial vehicles, or even motorcycle wheel hubs. "These complex geometry aluminium hubs are created on a multi-functional machining centre and finalised in just one set-up" says Laurent, the company's Purchasing Manager.

When a renowned manufacturer called on MPI to help develop an ultra-lightweight part with a 6-micron tolerance, the Normandy-based company knew it had an ambitious project on its hands. After several attempts using existing means of production using standard cutting tools, the team quickly realised that they could only truly tackle this component by investing in a five-axis machining centre equipped with a loading robot and a 50-pallet carousel. "This new machining centre, together with the other thirty machines in the workshop, has really helped us to accurately assess the machining tests", says Laurent. The production team also knew they needed to go much further than investing in the latest generation five-axis technology, no matter how well it performed. The cutting tool, a real link in the machining chain, was the missing piece needed to meet the challenge posed by this project. Already working with Mitsubishi Materials end mills on certain parts, especially for the larger batches, MPI called on Mitsubishi's French application engineering team.

MAKING THE DIFFERENCE WITH CUTTING TOOLS AND CONSTANT SUPPORT

When they contacted Arnaud Panaget, Sales Engineer at MMC Metal France, MPI were already familiar with the excellent reputation of Mitsubishi Materials' Diaedge-branded tools and knew of their ability to work reliably and help them tackle the challenges of the required machining. "Before using Mitsubishi tools, we struggled to obtain a suitable surface quality and machining times were far too long to commit to this kind of project", says Aurélien, Process Technician at MPI. "We needed a technical, high-end manufacturer." The MPI process technician and Arnaud Panaget of MMC Metal France worked together to optimise the machining process: from programming to selection of the most suitable tools and defining the best machining parameters, the duo put a successful process in place. "We worked step by step, with a dedicated tool for each operation; then narrowed that down to make the best use of the cutting tool on each operation and increase process repeatability and reliability, before optimising the economic aspect. All done of course while meeting the stringent standards for quality and precision."

The results were more than conclusive. The tools used from the VQ and VF solid end mill ranges and the through coolant drills used in the numerous drilling operations helped to save more than two hours per component; making the process economically viable and sustainable. "For this, we needed a full range of tools and Mitsubishi Materials was able to supply

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Laurent
MPI Purchasing Manager





ABOUT MPI

MPI is the MPO Group's main machining site. Specialising in the development of production projects, MPI has evolved its operations to meet its clients' needs, all while seeking the perfect balance between technical quality and value for money. MPI is now a key player in turning, milling and drilling of medium to large-scale batches. MPI's expertise is also reflected in its ability to manage complete projects that can involve the supply of drawings, machining, sub-contracting operations and assembly. MPI operates in a three 8-hour shift pattern to ensure delivery capacity for all its customers, all year round. This machining subsidiary of the MPO Group has been growing for several years and achieved a turnover of €5 million in 2018 thanks to its team of 45 employees.

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ABOUT MMC METAL FRANCE

MMC Metal France, based in Orsay (France), is one of the seven European branches of the Japanese company Mitsubishi Materials Corporation cutting tools division. MMC Metal France reports to the European headquarters in Germany and since its establishment in 1992, the company has been supplying precision cutting tools and providing integrated solutions for the automotive, aerospace and medical sectors as well as the mould and die industry. MMC Metal France is in a position to offer French industry a varied range of precision tools for turning, milling and drilling. Mitsubishi Materials Corporation employs over 23,000 people in 77 countries, operating with various head offices in Europe, India, Brazil, China, the United States, Japan and Thailand, as well as having modern research and development centres in Japan and Spain and at different production sites across the world.

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From left to right: Arnaud Panaget (MMC Metal France Sales Engineer), Laurent (MPI Purchasing Manager), François (MPI Commercial Manager), Aurélien (MPI Process Technician) and Loïc (MPI Director)

what was needed, with both solid end mills and drills", Laurent says. Arnaud Panaget adds that "each step in the machining process has been perfectly matched to the process, whether it's drilling with MPS1 solid carbide drills, MVX indexable insert drills, or milling with the AJX, VF and VQ tools from the milling range, or for extreme precision, the IMX interchangeable end mills, each has performed really well."

Apart from MMC Metal France's ability to offer a complete machining solution, the team's proximity,

availability and ability to listen enabled rapid communication and close collaboration on this joint project. For Aurélien, who set up the project at MPI, "working closely together as partners was new to us. And it was a wonderful experience!" "A continuing experience which may well be repeated in the future: "we're now up-and-running, and we're open to new projects", says François.