Customer Interview: Simulation and Optimization

comat
INSPIRED BY SPACE

Comat is an equipment supplier to the space industry, based in Toulouse, at the heart of a unique technological ecosystem. For many years, Comat has been delivering flight instruments and equipment with a focus on excellence. From understanding client needs to ensuring product operation, Comat's expert design team and cutting-edge industrial capabilities have evolved into the digital factory of tomorrow.
www.comat.space

Interviewee
Alexis Lannay
Workshop Manager

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Comat applies its expertise to the space, scientific exploration and commercial sectors. The company mission is to design and manufacture cutting-edge technologies that deliver to customer specifications.

OPEN MIND
THE CAM FORCE

We push machining to the limit

www.openmind-tech.com

Your company operates in the aerospace sector, an industry known for its challenging parts and processes. Since 2019, you've been using the *hyper*MILL® CAD/CAM solution combined with digital twin technology. Why did you choose *hyper*MILL® and VIRTUAL Machining technology?
We switched to *hyper*MILL® because our previous CAM system was limiting our 5-axis machining capabilities. With *hyper*MILL®, we found the quality of toolpaths, the reliability of NC code simulation, and the flexibility of the tool database to be exceptional, which confirmed our decision.
The advanced calculation algorithms for dynamic machining and 5-axis roughing have significantly reduced the time required for large roughing processes, allowing us to optimize our production efficiency.

CNC machines represent a major investment. How important is it for you to have a reliable, NC code-based simulation?
With our extended cycle times and limited number of operators in the workshop, it was crucial to find a reliable solution that could streamline machining operations without sacrificing toolpath quality. The accuracy of the NC code simulation allows our operators to focus on verifying the correlation between the theoretical tool offset and

the actual measurements on the machine. This enables us to begin machining with full confidence.

When comparing simulation solutions, what does it mean to you that OPEN MIND integrates NC code simulation into their CAM software, and what advantages does this offer?
Integrating NC code simulation with the machine's digital twin allows us to achieve collision-free machining on the machine. Although it requires precise tool holder and tool assembly, the results are flawless. The reliability of this simulation process significantly reduces our setup times, enhancing overall efficiency.

In your experience, what are the main differences between CAM-based simulation and NC code-based simulation, and which technology would you recommend?
With CAM-based simulation, we encountered issues where the simulated toolpath differed from the post-processor-generated toolpath, leading to inconsistencies. Since switching to *hyper*MILL®'s NC code-based simulation, we've had no such issues – the simulation results and actual machining have been perfectly aligned. I wouldn't go back to CAM-based simulation for anything.
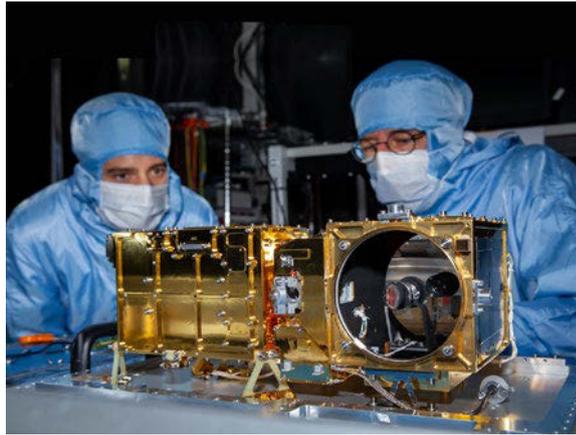
In just four years, Comat has designed and manufactured over 2,000 mechanical parts for the five prototypes and the flight model of SuperCam. Comat engineers worked closely with the teams from IRAP and CNES to integrate the instrument in a clean room.

Have your working procedures changed since you started using digital twin simulation?

Yes, we've significantly reduced process times by implementing several key changes:

- Automatic creation of tool databases and programs
- Automation of specific machining operations, such as engraving.
- Enhanced reliability of simulations through the digital twin and post-processor, especially when combined with the OPTIMIZER module.

How satisfied are you? Has the technology met your expectations?

We've made significant progress with the software over the past four years. Our focus is now on deploying scripts to automate certain programming operations, and we're planning to commission 4-axis turning by the end of the year. I highly recommend *hyper*MILL® to anyone seeking powerful and reliable software. ■
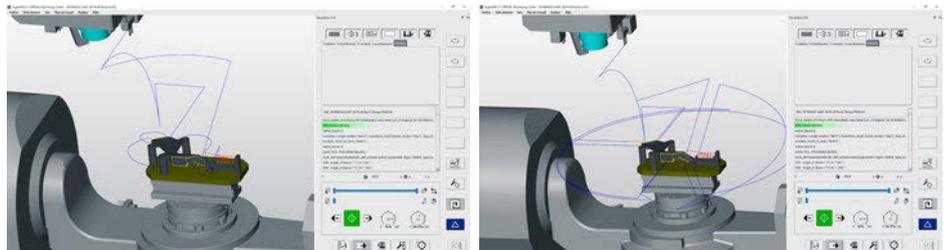
Views with *(on the left)* and without *(on the right)* Optimizer
Using the the Optimizer during NC code generation employed by COMAT, *hyper*MILL® automatically calculates and optimizes connections connections between each machining operation.

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