



CUSTOMER REFERENCE

# AIRBUS ATLANTIC

## Flying Safe with the Digital Twin

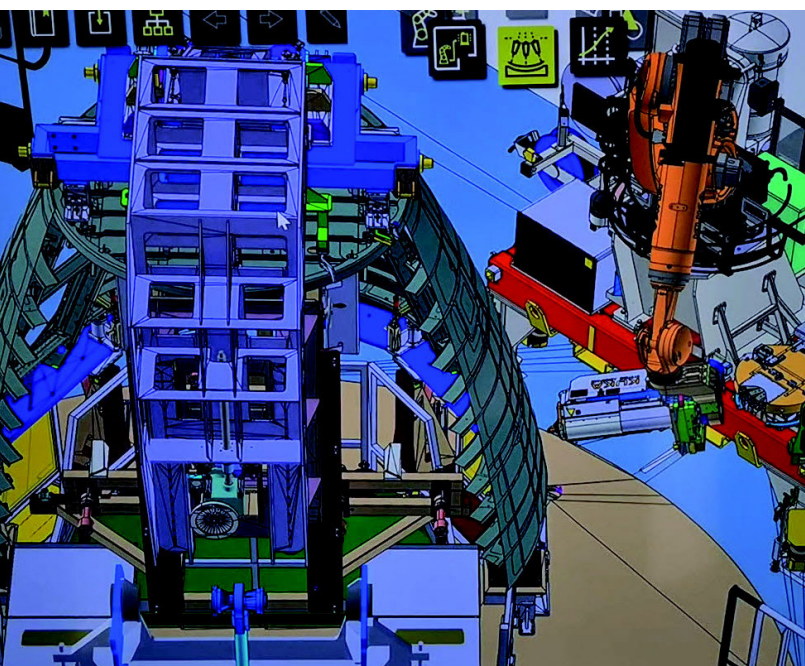
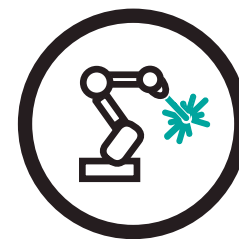
Airbus Atlantic relies on FASTSUITE E2 for virtual control validation and digital twinning

Sometimes, a few simple numbers can express great accomplishments: **Worldwide No. 2** in the market for aircraft structures, **worldwide No. 1** in pilot seats, and **No. 3** in Business and First Class passenger seats, marketed under the **STELIA Aerospace brand**. Airbus Atlantic, the name behind these numbers, is a **100% subsidiary of Airbus** – and, with about **13,500 employees** in five countries on three continents, a **Tier 1 aviation industry player** in its own right.

All these numbers make a statement – and simultaneously cement the company's ambitions in terms of performance and competitiveness.

Together with the Airbus mother corporation, Airbus Atlantic intends to play a pioneering role in sustainable aviation. It's a goal that demands new approaches, and one that can only be reached through innovation, process efficiency and sustainably designed digitalization.

In 2021, Airbus Atlantic achieved a major milestone on this journey at its French plant in Méaulte, on the back of a project involving robot programming and virtual validation. A project that started small but turned out to be the seed for the company's digital twin design and the validation of its virtual workshops.



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**Jonathan Schaubroek,**  
Robotics and Riveting Machine Programmer  
at Airbus Atlantic

## TECHNOLOGY GOALS FUEL INNOVATION

Technological and situational challenges served as a trigger: The Méaulte plant already relied heavily on robot production, “but we had to concede that the software solutions we were using didn't meet all our performance expectations. For this reason, we already began a gradual changeover to the CATIA V5 / DELMIA solutions a few years ago”, says Jonathan Schaubroek, Robotics and Riveting Machine Programmer at Airbus Atlantic.

But the company didn't want the technology change to end at offline programming. On the contrary: They also wanted to introduce a digital twin that would make downstream virtual validation of the programs generated by offline programming – also called virtual dryruns – an integral part of its workflows.

Virtual validation enables upstream detection of mismatches between robot programming and the actual production process, to get it right the first time. It therefore represents a significant industrial and financial challenge.

The search for a software solution that could optimally satisfy the defined technical and technology requirements led Airbus Atlantic's experts to consult with CENIT. The two companies had already been collaborating in robot programming projects since 2015.

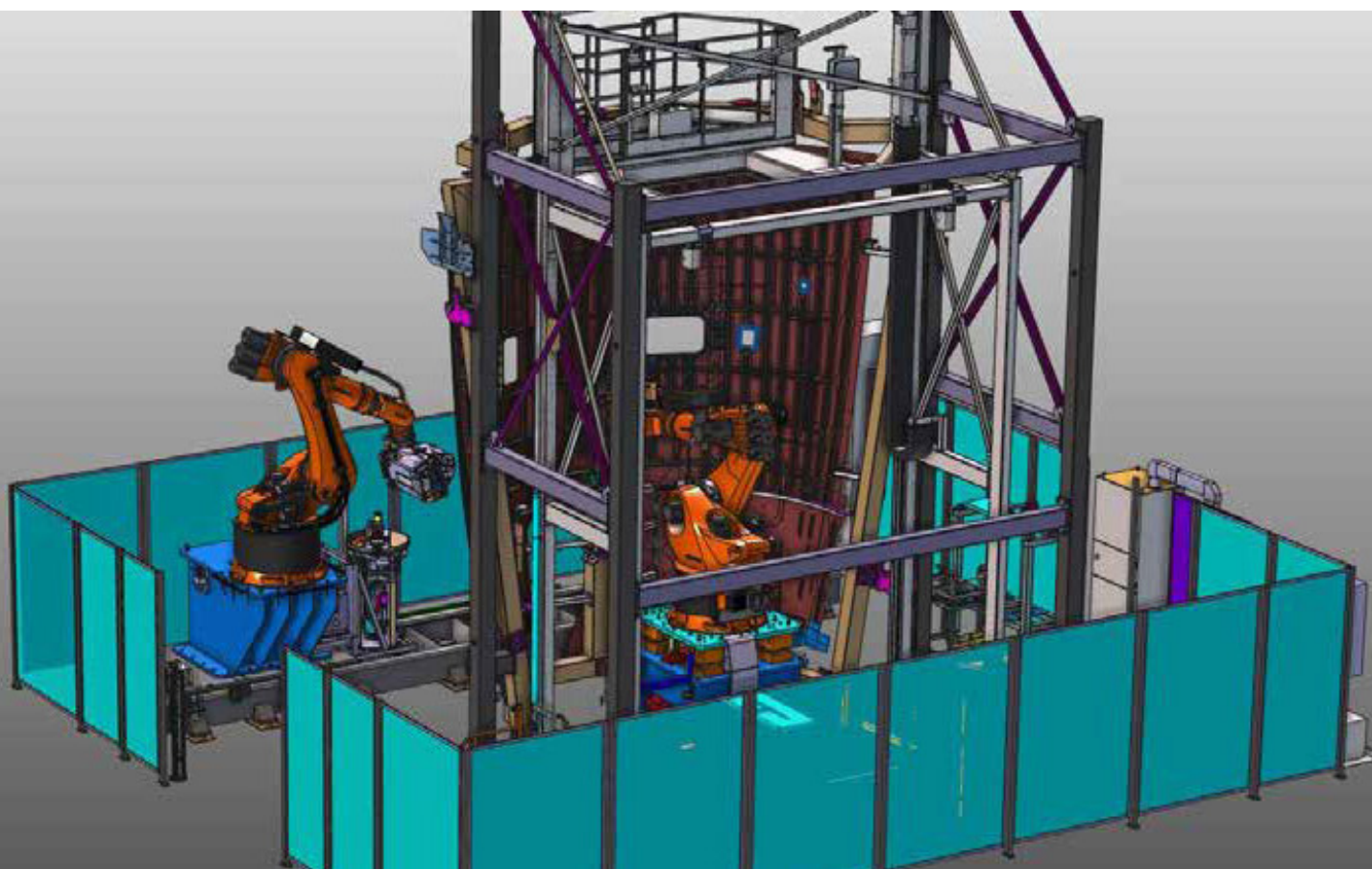
“In our previous work with the experts from CENIT, we benefited from their software expertise and their profound understanding of robotics and our industry. Interpersonally and language-wise, the collaboration with our local CENIT contact partners was a good match as well”, says Mr. Schaubroek. Together with the experts from CENIT, the team from Méaulte thus immersed themselves deeply in the world of FASTSUITE Edition 2 – CENIT’s 3D simulation suite for the digital factory. They were impressed by the solution’s potential for validation of digital factory processes and 3D layout planning, and with its extensive component library for robots and machines. “I had never seen a system that could generate such high-precision virtual replicas of what our workshops had by way of robots”, says Mr. Schaubroek. Until then, his team needed blind faith that their online programming would yield the intended results during robot use, meaning they had to accept that some planning or programming errors would only come to light during production. Now, they had a solution that could offer parameter-based certainty and security right from the outset.

“Our targets were best-possible digital simulation of reality, shorter dry-run and calibration times, and reduction of costs caused by rejects and errors. The solution let us address all of these targets directly”, explains Arnaud Varlet, Sales Manager at CENIT. “And to some extent, we also wanted to be a technology pioneer – introducing the solution meant living up to Airbus

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Atlantic’s claim of always running the very latest technology”, adds Jonathan Schaubroek in describing the reasons for selecting FASTSUITE E2 as a virtual validation tool at Airbus Atlantic.



## IMPLEMENTATION PRECISELY ACCORDING TO PLAN

During the introduction and final go-live of FASTSUITE E2, the experts from Airbus Atlantic and CENIT collaborated with a team from KUKA SYSTEMS AEROSPACE France, the company that had previously installed and integrated four new robot cells at Airbus Atlantic. These cells were tasked with various drilling operations and were meant to replace the previously used systems. “It made sense for us to focus on these cells first: It let us develop a common software foundation for simulating the four new, different technologies”, says Arnaud Varlet.

The work assignment: Simulation using digital twins of the cells, yielding precise virtual validation of the respective production processes.

Since the target framework was clear on all sides, the actual implementation and programming went precisely according to plan, though the time corridor was defined quite loosely: Project completion at some point in 2021. “I should mention that we ran this project during the Covid pandemic, when we weren’t operating at full capacity. That gave us the time we needed to really think the important steps and aspects through, making our robot deployment even more efficient and future-proof in the way we used FASTUISTE E2”, Jonathan Schaubroeck remembers.



## FIRST TIME RIGHT

It's now been two years since FASTSUITE E2 and virtual validation were introduced at the Airbus plant in Méaulte, so one can draw some meaningful initial conclusions. One of the most important results is a clear increase in production quality thanks to the interplay between online programming and simulation of the digital twins. "Moreover, simulation has made the processes more efficient in their own right.

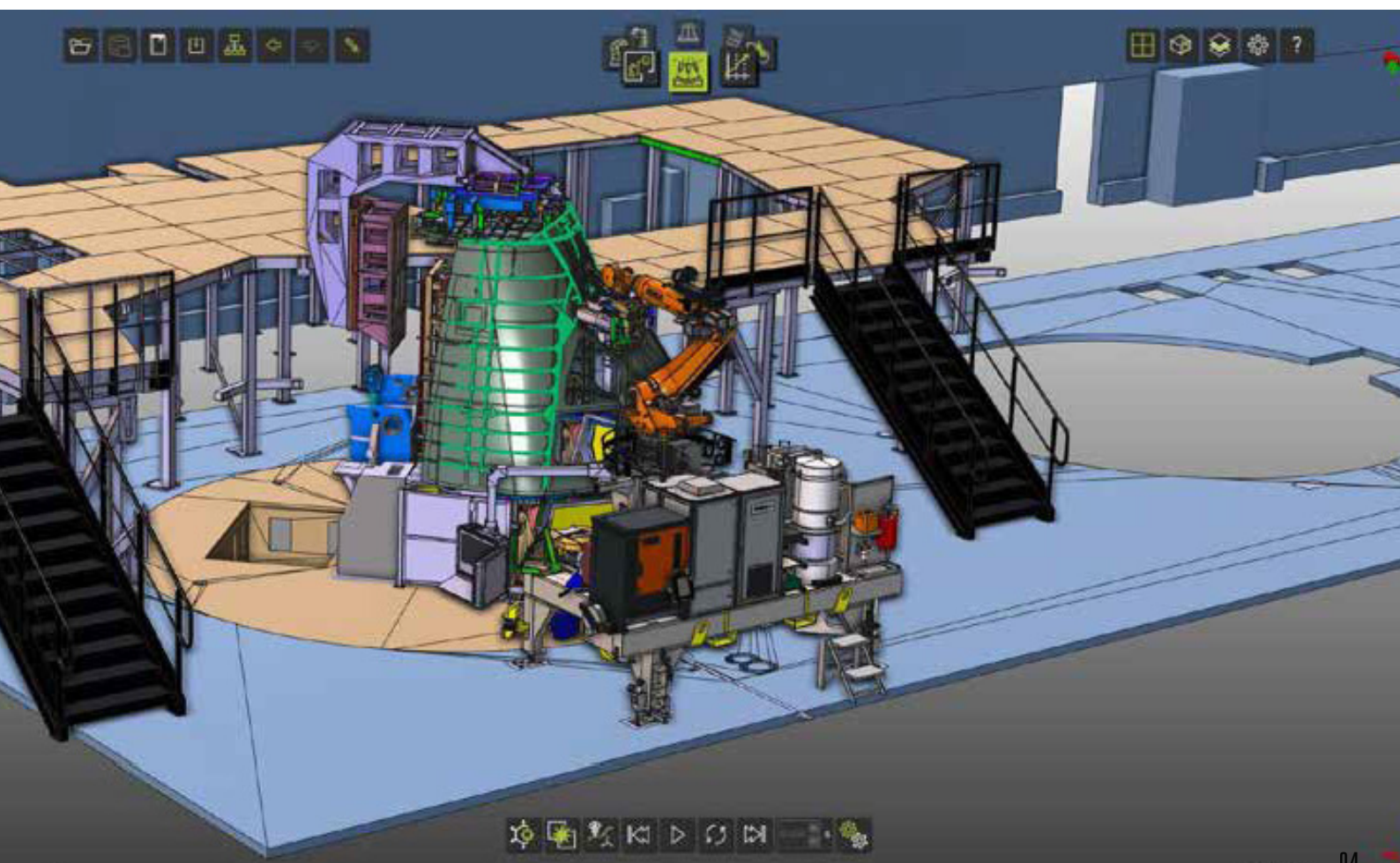
The introduction also reduced dry-run times. These are the times in which robot and plant installations have to undergo physical performance testing and process validation. That means production downtimes in which the systems don't generate added value. In a place where every minute counts, over 30% less dry-run time means a great deal.

Another key aspect is that the process that begins with program generation and ends with program execution in the cells is now clearly defined and offers parameter-based security for all stakeholders: The programmers at their terminals and the robot technicians on the shop floor.

*"Our projects for integrating new machines or new, automated, robot-based production resources now all include specifications for virtual control validation."*

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**Robotics and Riveting Machine Programmer**  
**at Airbus Atlantic**

Virtual validation is now standard project procedure: "Our projects for integrating new machines or new, automated, robot-based production resources now all include specifications for virtual control validation", Jonathan Schaubroek explains. Integrators who install new production resources at Airbus Atlantic now have to observe the aspect of virtual control validation in all their milestone planning. Mr. Schaubroek expects this to increase process efficiency and reduce reject rates at the Méaulte facility.



## A MODEL PROJECT WITH A FUTURISTIC TOUCH

The experts at Airbus Atlantic are convinced that virtual validation based on FASTSUITE E2 is an important step towards developing a full-scale digital plant twin and enabling virtual validation of entire workshops, because it permits validation of individual facilities and control of workflows. “In the near future, we want to use this technology to simulate and validate the setup and operation of our entire workshops”, says Mr. Schaubroeck.

Given the procedural and quality benefits of virtual validation with FASTSUITE E2, Airbus Atlantic also plans to roll out the solution to other tasks. Extending the scope of FASTSUITE E2-based programming solutions is also on the to-do list. Currently, a proof of concept at Airbus Atlantic is underway.

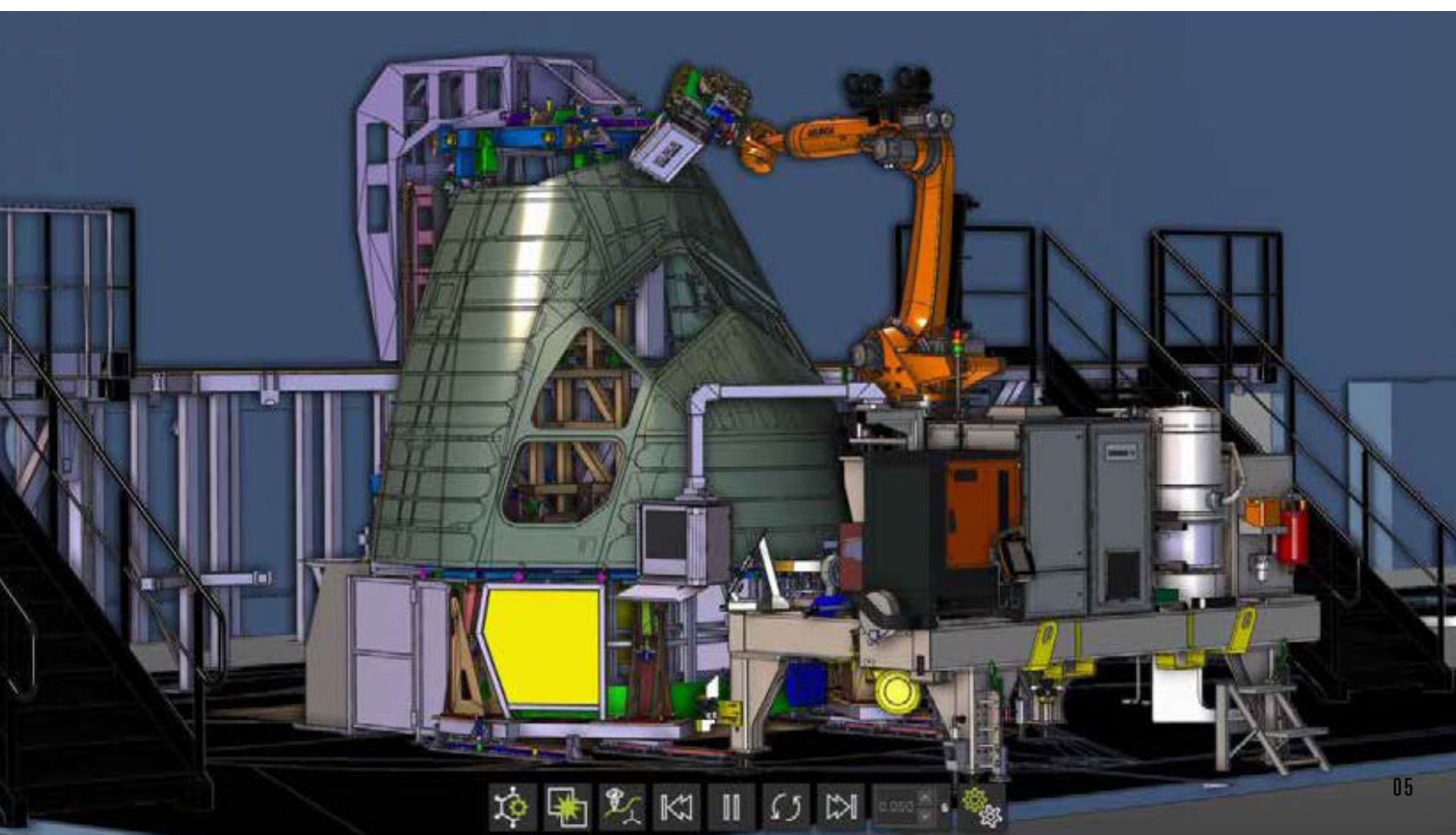
Another innovative idea is to use virtual simulation in operator training: “Today, you can use digital twins to simulate almost anything that happens in the workshop. That means we can train our future operators virtually – in the same way we would do it on the shop floor, but without having to worry about making mistakes on an actual aircraft. With this concept in mind, we’ve teamed up with the Airbus Atlantic “Industrie du Futur” project to set up a facility where operators can learn to work with the very latest technologies”, Jonathan Schaubroeck reports.

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The positive results of the FASTSUITE E2 introduction attracted plenty of attention: Four other Airbus Atlantic plants also plan to introduce virtual validation, and so the number of users is growing steadily.

“And who knows, maybe one day we will want to validate the way a group of robots interact with each other. And then at some point the interactions between all the technical installations in the entire workshop”, says a confident Jonathan Schaubroeck.



# FAZIT

## CHALLENGE

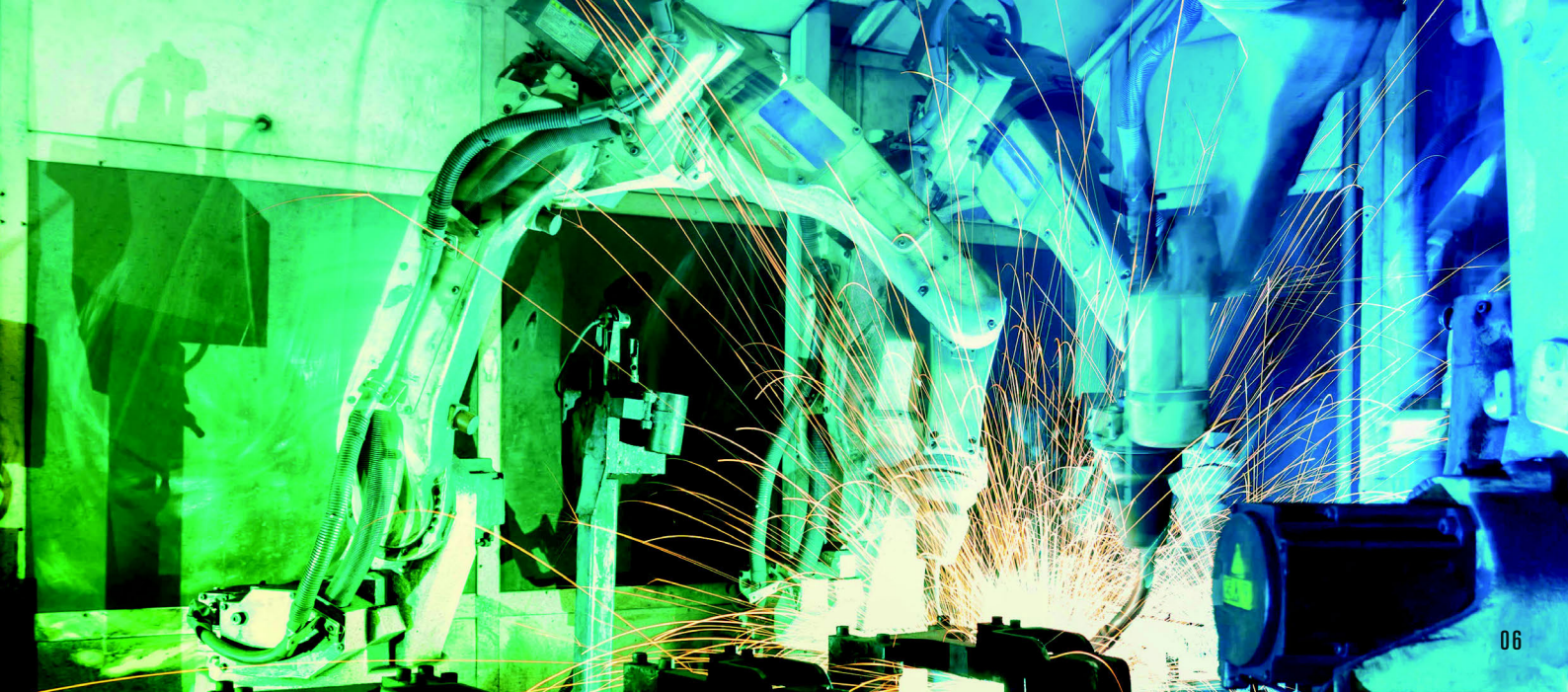
- Reduce costs due to defects and rejects
- Shortening of demonstration and adjustment times in the factory
- Accurate reproduction of machine shop programs
- Reproduction of anomalies (alignment of axes)
- Training of future operators

## SOLUTION

Airbus Atlantic Meaulte chose to implement the FASTSUITE E2 solution because of the simplicity and ergonomics of the software, which provides a seamless interface with KUKA tools, and due to the expertise of the CENIT team.

## BENEFITS

- Significant gain in production quality due to the interaction of online programming and the simulation of the digital system twins
- Significant savings in demonstration times in the factory (>30%)
- Detection of anomalies before program delivery
- Savings due to the prevention of quality defects
- Offline training of operators enabled in an augmented reality environment
- Additional competence benefit for programmers



## ABOUT CENIT

CENIT empowers sustainable digitalization. With a broad solutions and services portfolio, CENIT enables clients to optimize their horizontal and vertical business processes. Our solutions are based on innovative technologies in: product lifecycle management, the digital factory and enterprise information management. With interdisciplinary knowledge of the processes involved and their considerable expertise in the field, CENIT consultants provide customers with end-to-end advice to ensure that solutions are implemented with an understanding of the entire value chain.

With a holistic approach and based on trusted partnerships, CENIT takes responsibility for solutions on behalf of our clients. From the initial consultation to the introduction of innovative IT solutions, right through to ensuring a cost-effective operation. The CENIT team adapts to each client, taking a practical approach, which enables measurable operational optimizations. CENIT has been helping prestigious customers in key industries to gain competitive advantages for over 30 years.

CENIT has nearly 900 employees worldwide who work with customers from: automotive, aerospace, industrial equipment, tool and mold manufacturing, financial services, and trade and consumer products industries.

## ABOUT AIRBUS ATLANTIC

With a business volume of 4.6 billion euros estimated in 2023 and 13,000 partnerships in 5 countries and 3 continents, Airbus Atlantic is a champion on a global scale: number 2 in aerostructures, number 1 in pilot seats and among the top 3 in seating for First Class passengers, marketed under the STELIA Aerospace brand.

The company calls on the technical expertise of its Design Office engineers, spread over 9 sites and subsidiaries in France, and across a further 7 international subsidiaries. This global presence makes it highly responsive and competitive, ensuring the satisfaction of its customers.

A wholly owned subsidiary of Airbus, positioned right at the heart of aircraft manufacturing's industrial processes, Airbus Atlantic's objective is to deliver the highest standards of quality and operational excellence, both to Airbus and to aeronautical manufacturers such as Dassault Aviation, Bombardier and ATR, as well as airlines worldwide through its range of First Class and Business Class passenger seating.

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