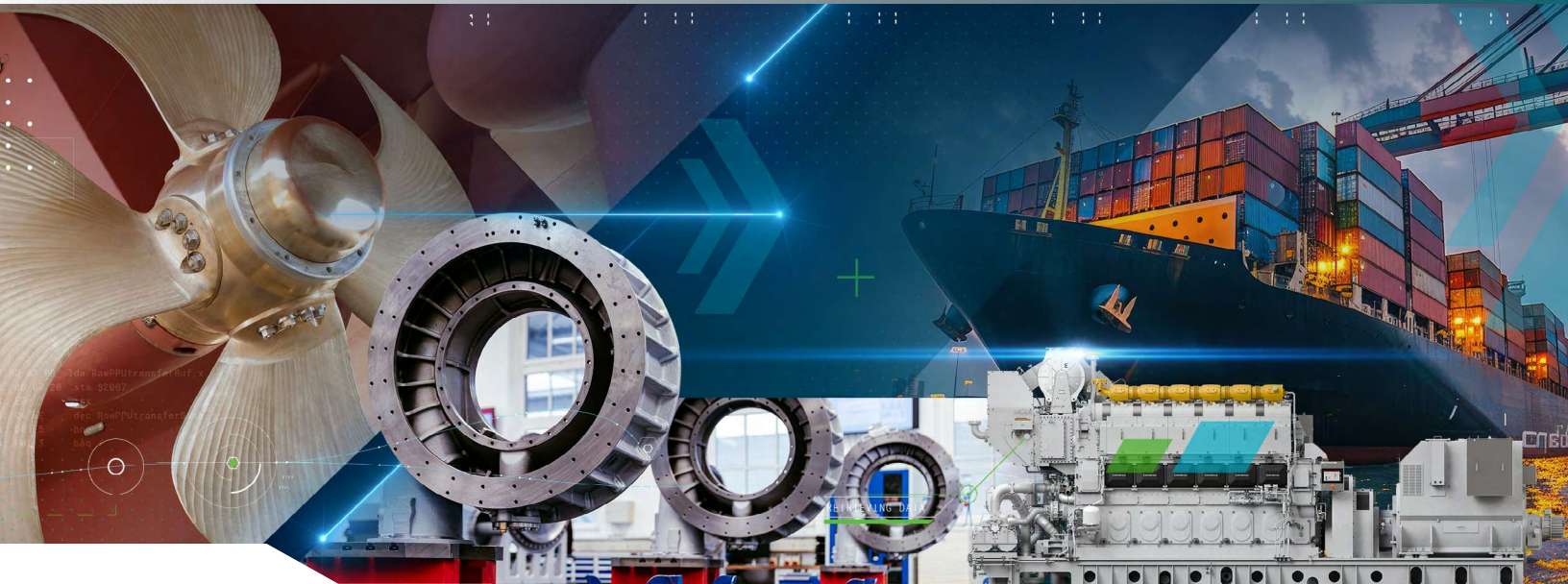


Engineering for a Net-Zero Future

How Everllence accelerated production and reduced costs to meet the demands of large-scale, mission-critical manufacturing.



Everllence, formerly MAN Energy Solutions, is a global leader in propulsion, decarbonization and efficiency technologies for shipping, energy and industry. Guided by its mission "Moving big things to zero," the company develops solutions that help reduce hard-to-abate emissions. With more than 15,000 employees across 140 sites globally, Everllence delivers highly engineered components where reliability is non-negotiable.

Within Everllence, Numerical Control (NC) programming acts as the bridge between engineering and physical manufacturing. The NC team manages the process of converting complex 3D models into precise machining instructions, enabling Everllence's manufacturing team to then generate accurate toolpaths, control complex milling and turning operations and ensure every high-value part is produced reliably and repeatably.

Challenge: High-Value Parts, Zero Margin for Error

Because Everllence manufactures extremely large, high-value components, such as two-meter-long connection rods, zero-part failure is the only acceptable outcome. The cost of raw materials, combined with the fact that many assemblies allow for only a single prototype, means that every machining step must be both precise and repeatable.

Traditional roughing toolpaths - which remove large amounts of material quickly and safely before the finer finishing can begin - took a long time to machine individual parts, slowing production and driving up cost. This inefficiency not only increased internal expenditure but also risked making the company less competitive.

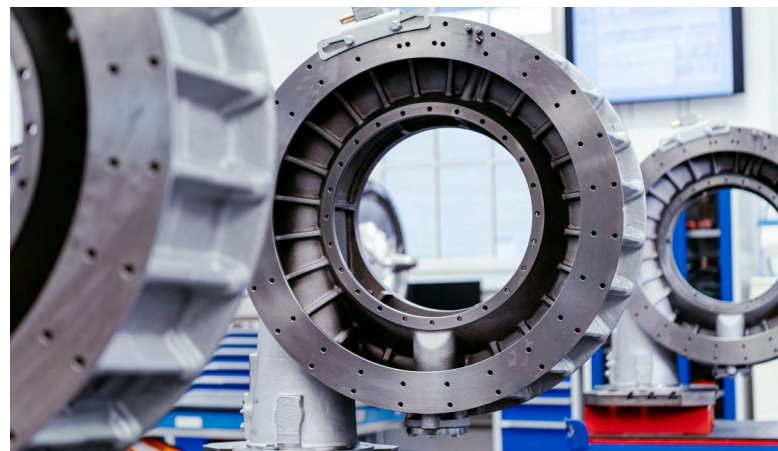
Everllence needed a faster, more reliable way to generate toolpaths, especially for complex 3D shapes that were impossible to program efficiently with legacy tools.

"When your parts are this big and this expensive, you don't get a second chance. Every toolpath has to be fast, reliable, and absolutely right the first time," said Mathias Reiter, Leader for NC Programming at Everllence. "Slow roughing wasn't just costing us manufacturing time. It was costing us commercial competitiveness and agility. We needed a smarter, faster way to machine complex 3D shapes without risking a single part."

Solution: High-Speed Milling Transforms 3D Machining

To meet the demands of machining extremely large, high-value components, Everllence expanded its manufacturing capabilities by adopting PTC Creo High-Speed Milling (HSM). Everllence uses Creo as its core 3D design platform, with HSM providing the advanced machining extension to generate faster, more efficient toolpaths for cutting the model. This advanced capability allowed the NC programming team to automatically generate powerful 3-axis toolpaths tailored for complex geometries, something legacy methods simply couldn't achieve.

"Advanced NC programming like PTC Creo High-Speed Milling are a crucial part of our digital roadmap and vision," said Reiter. "Their tools support the reliability, sustainability and continuous improvement that define our strategic demands around precision, efficiency and sustainability."



By working directly from the 3D model and applying tolerances, chamfers and machining strategies within a unified environment, the team could produce reliable, repeatable toolpaths with far greater efficiency.

Creo HSM enabled Everllence to streamline roughing operations, reduce tool load and improve machining consistency across their large-scale parts. The result was a faster, more dependable manufacturing process that aligned with the company's uncompromising standards for quality and reliability.

"Creo HSM lets us create dependable toolpaths directly from the model, which means faster programming, smoother machining and results that meet our highest standards every time," said Reiter. "It gives us the power to machine these complex shapes the way they were meant to be machined - fast, stable and absolutely reliable."

Results: A Step-Change in Performance Across Hundreds of Parts

The impact was immediate and measurable. In one specific instance, for example, roughing time reduced by 60 percent for one specific step. While the time saving per component is relatively small, the cumulative effect across the annual production volume adds up to several weeks in total.

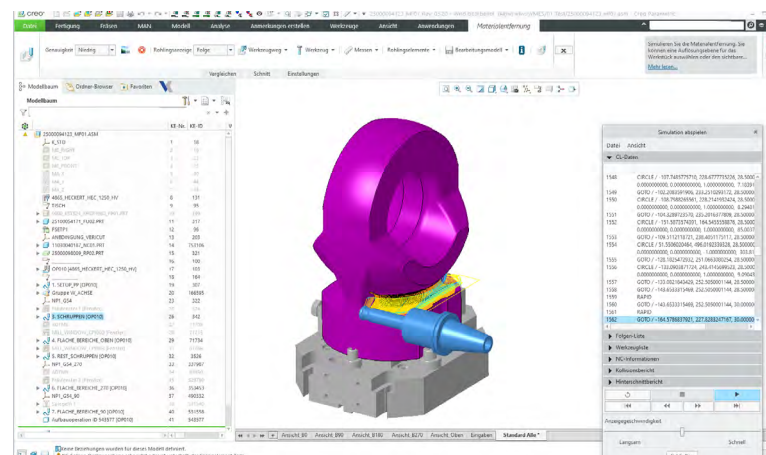
“

When you're saving weeks on a single part and doing that hundreds of times a year, the impact is enormous."

Mathias Reiter, Leader for NC Programming at Everllence

Everllence also gained several important efficiency benefits. Geometry creation became significantly faster. Automated toolpaths improved manufacturing consistency by reducing variability and minimizing the risk of rework. And with considerably faster machining, the company can now produce parts locally, dramatically improving supply chain efficiencies and can respond to customer needs more quickly, strengthening its competitive position.

"When you're saving weeks on a single part and doing that hundreds of times a year, the impact is enormous," Reiter added. "That 60 percent reduction in roughing time is accelerating our entire operation and pushing us toward a more agile, more competitive future."



Looking Ahead: Building the Next Generation of Digital Manufacturing

Everllence continues to evolve its digital manufacturing environment. While the NC team currently uses PTC Windchill primarily for data storage and version control, broader workflow integration is planned between Windchill and Creo to create deeper process integration across the business in 2028.

The company also expects to expand its use of advanced toolpath technologies across additional machines and product lines in other parts of the business.

With a commitment to reliability, sustainability and continuous improvement, Everllence is well positioned to deliver high-quality components that support the global transition to cleaner energy.

"Our journey toward a fully integrated digital manufacturing process is just beginning. As we expand our workflows and integrate new capabilities, we see enormous potential to accelerate production, strengthen quality and support the global shift toward cleaner energy," concluded Reiter.

Benefits

- **60% reduction in roughing time**, saving several weeks in total across the annual production volume of a specific component.
- **Significant cumulative time savings** across hundreds of parts produced annually.
- **Faster geometry creation**, thanks to direct reuse of the 3D model.
- **Easy updates when engineering changes occur**, reducing programming effort.
- **Improved manufacturing consistency** through automated, repeatable toolpaths.
- **Lower risk of rework** due to reduced variability in machining.
- Ability to **produce parts locally, improving responsiveness and flexibility**.
- **Stronger competitive position** through speed, reliability, and efficiency gains

Customer Overview | Everllence

Industry	Mechanical Engineering – Marine and Industry
Employees	15,000
Turnover	€4.3 billion revenue (2024)
Headquarters	everllence.com
PTC Products	PTC Creo (including High-Speed Milling)