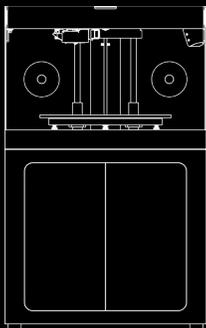


Spectrum Technology

From €220 per part to €27:
How One Design Decision Changed
Spectrum's Machine Development



Industry: Machine Building
Application: Custom Machine Components, Production Parts
Technology: X7™
Material: Onyx®
Software: Eiger™ with Simulation & Performance Advisor

Spectrum Technology



Spectrum Technology, led by Jonas Zitek, designs and builds advanced machinery for customers with demanding requirements and fast-moving timelines. Their projects often evolve during development, requiring an engineering approach built around flexibility, rapid problem-solving, and speed from concept to production-ready machines.

“As soon as we saw how many parts the new machine required, it became obvious. CNC machining would slow the project down,”

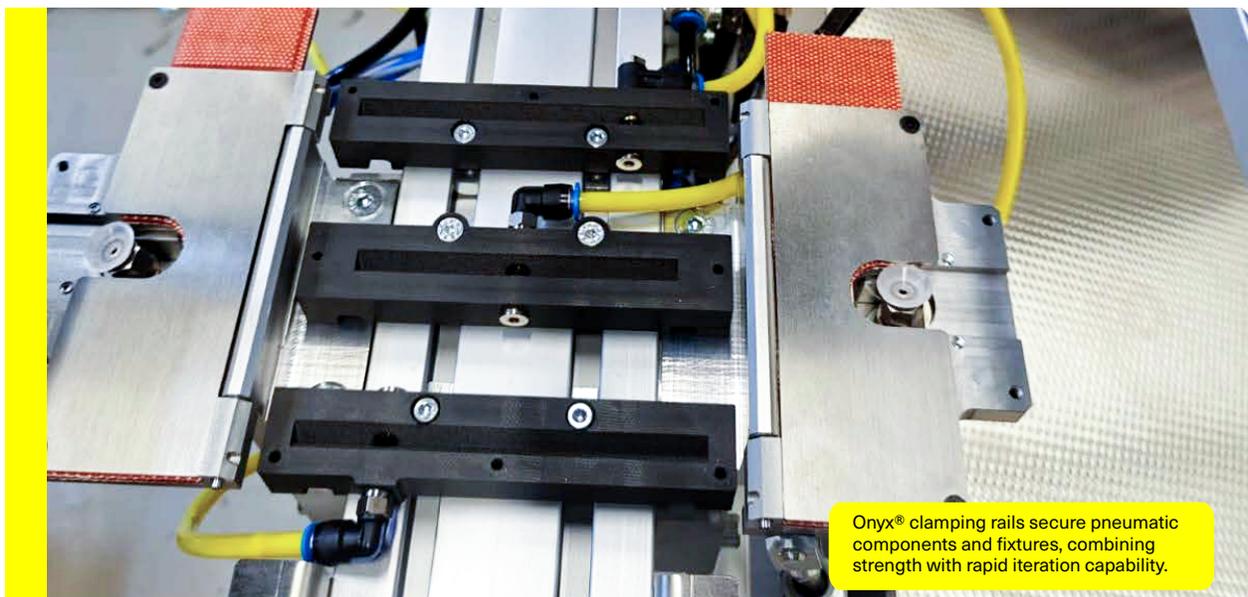
— Jonas Zitek
CEO of Spectrum Technology

The Challenge

In a recent project for a Swedish customer, Spectrum was tasked with developing a system for repacking and marking EX-classified products. While the process itself was straightforward, opening boxes, verifying components, applying EX markings, and ensuring traceability, the mechanical design told a different story.

As the system took shape, it became clear that the machine would require 25 - 30 custom mechanical components, many of which were traditionally CNC-machined from aluminum. Outsourcing these parts meant long lead times, high costs, and limited flexibility for iteration.

Each design change risked becoming a costly bottleneck, forcing conservative decisions simply to avoid delays.



Onyx® clamping rails secure pneumatic components and fixtures, combining strength with rapid iteration capability.

The Solution

Rather than working around the limitations of conventional manufacturing, Spectrum chose to fully leverage their Markforged X7 printer. Components originally designed for aluminum were re-engineered for Onyx, a stiff, durable composite material well suited for mechanical parts that did not require thermal resistance.

But speed alone wasn't enough. To ensure printed parts could reliably replace metal, Spectrum integrated Eiger Simulation into their design workflow. What started as a verification step quickly became a powerful optimization tool.

"Simulation removed the guesswork," Jonas explained. "We know exactly where a part needs reinforcement and where material can be reduced."

Using the Performance Advisor, the team optimized strength, stiffness, and material usage, allowing them to confidently move from aluminum to additive without compromising performance.

"Our projects rarely stand still. Requirements change, designs evolve, and we need to adapt quickly without slowing everything down."

— Jonas Zitek
CEO of Spectrum Technology



A custom 3D-printed rotary component shown before and after assembly, combining precise geometry with integrated fastening features for reliable motion control.

The Result

The impact was immediate and measurable.

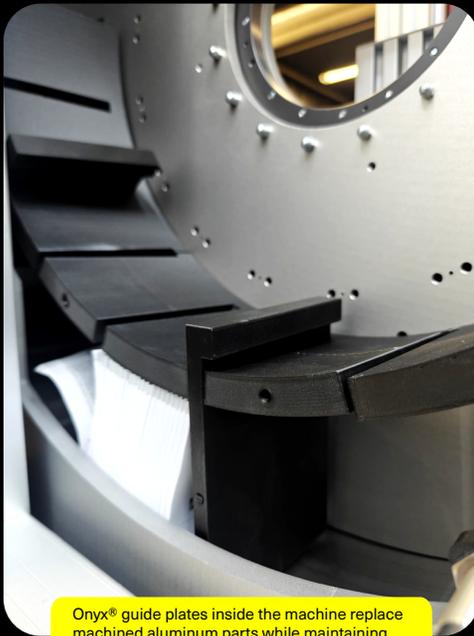
CNC-machining the aluminum parts would have cost approximately €220 per part, while the average printed cost was around €27 per part, an 85% reduction in part cost.

For a machine containing dozens of custom components, the savings quickly added up, especially as designs continued to evolve. Beyond cost savings, Spectrum gained the freedom to iterate instantly. Design changes that once took weeks to validate could now be redesigned, simulated, and printed within hours.

“We stopped designing around supplier lead times and started designing around what the machine actually needed,” Jonas said.



A 3D-printed robot interface plate enables fast tool changes and geometry updates during automation development.



Onyx® guide plates inside the machine replace machined aluminum parts while maintaining stiffness and precise part flow.

“A part that used to cost us around €220 to machine now costs about €27 to print

That’s an 85% cost reduction
And we can even iterate it the same day.”

— Jonas Zitek
CEO of Spectrum Technology