onshape by ptc

Onshape Case Study

HORAGE

HORAGE

INDUSTRY: CONSUMER GOODS

The Challenge

At Horage, precision engineering operates at an entirely different scale. Each of their mechanical watch movements must fit hundreds of tightly integrated components into an extremely constrained space. Even the smallest design variance can be the difference between parts functioning correctly or not.

"In a watch movement like ours we need to use the space very efficiently," explains engineer Markus Lindstedt. "A tenth of a millimeter is already more than enough space for two moving parts."

That level of precision is compounded by engineering complexity. A single watch movement requires roughly 3,500 process steps to complete, all of which must remain consistent and traceable over time. For Horage, engineering is not just about geometry; it's about managing information at scale.

"We don't see ourselves as a watch company," says CEO Andreas Felsl. "We see ourselves as a tech company in the watch industry."

To challenge an industry defined by tradition, Horage needed to move faster while maintaining extreme precision. Legacy CAD systems introduced friction with file management, version control issues, and disconnected workflows between engineering, production, and suppliers. These limitations slowed iteration, constrained collaboration, and created unnecessary operational overhead.

Horage chose PTC's Onshape: A modern, cloud-native CAD+PDM system that eliminates these barriers and supports a more agile, collaborative engineering process.

Results

- **Accelerated development**
  by eliminating file-based workflows and unlocking real-time collaboration
- **Established a single source of design truth**
  across engineering, production, suppliers, and assembly
- **Eliminated rework**
  and supported late-stage design changes to interconnected components
- **Increased cross-functional collaboration**
  with direct input from distributed stakeholders
- **Reduced IT overhead and hardware costs**
  with browser-based, device-independent CAD

"Without Onshape, the way we work would actually not be possible."

– **Markus Lindstedt**, *Engineer, Horage*

How Horage is Engineering High-Precision Mechanical Watches Faster with Cloud-Native Onshape

Horage accelerates precision watch design with Onshape CAD+PDM, enabling real-time collaboration, continuous iteration, and a single source of design truth.

Horage uses Onshape cloud-native CAD+PDM to design highly detailed and precise mechanical wristwatches.

Eliminating CAD Bottlenecks to Accelerate Engineering

Legacy CAD systems introduce friction by forcing teams to manage files instead of focusing on what matters most: designs.

"Traditional CAD creates a lot of obstacles in the creative and the operational process," says Felsl. "Onshape removed these obstacles."

Horage estimates that switching to Onshape saves them about 10% of engineering time previously lost to file management, coordination, and waiting for access.

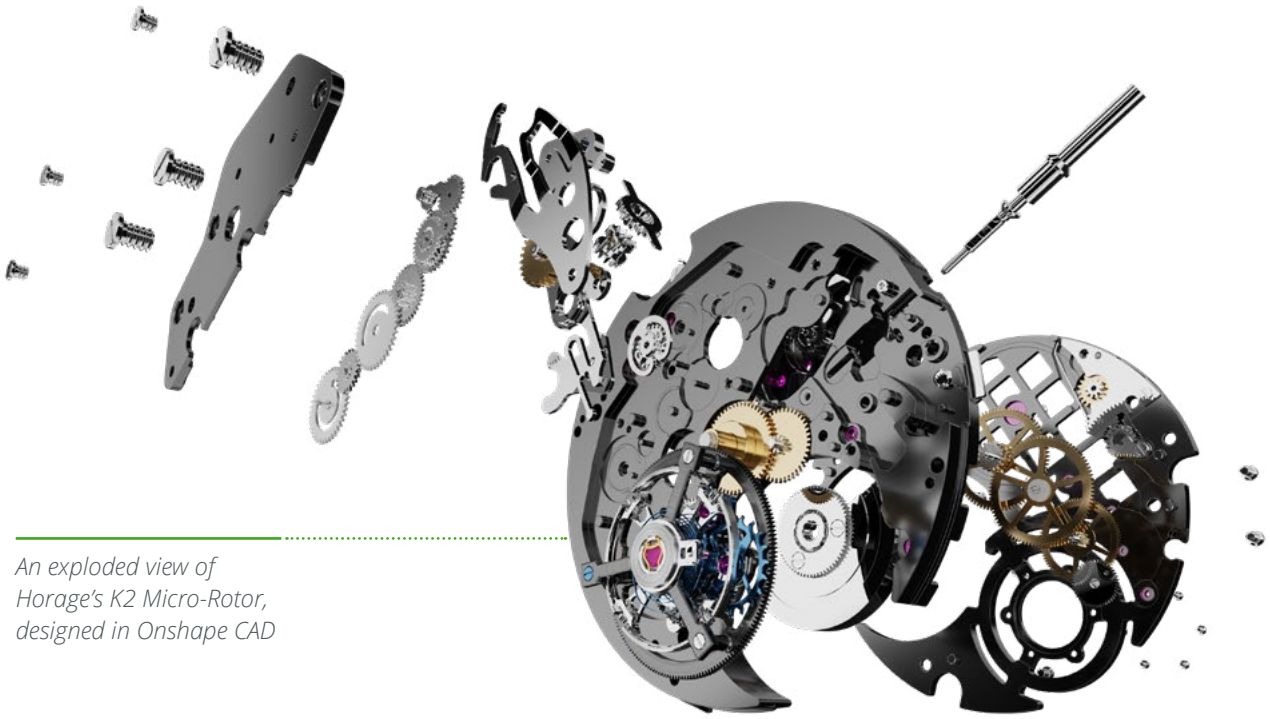
"The amount of capacity we had to use just to make sure the development process was done correctly — reserving files, changing them, giving plans to someone who had the overview — was crazy," explains engineer Jonas Nydegger.

The shift to cloud-native Onshape allowed Horage to focus on actual design work instead of file coordination. By eliminating these constraints, they removed a major source of inefficiency. Instead of coordinating work through files and outdated check in/check out workflows, design progress happens continuously in real time.

A Single Source of Truth Connects the Entire Organization

At the core of Horage's development process is the ability to manage all design data within a single, unified environment thanks to Onshape's built-in product data management (PDM).

"Quality control has full access, suppliers have full access, [and] production has full access," says Nydegger. "Even the watchmakers who assemble a watch, if they find a problem, they have direct access to the source and can give direct feedback."



An exploded view of Horage's K2 Micro-Rotor, designed in Onshape CAD

This centralized approach replaces fragmented file-based workflows with a single source of truth that connects every stakeholder involved in the product lifecycle.

"We are managing information," says Felsl. "Having a single source of truth allows us to control that over time."

Because all teams work from the same data, feedback loops are streamlined significantly. Even those closest to production can contribute directly to design improvements.

For example: "As soon as we gave access to the mechanic, he directly started to take influence on how we construct. He opened the sketches, checked how we develop, and gave direct feedback," Nydegger explains.

This level of accessibility transforms collaboration into a continuous, organization-wide process.

An Horage watchmaker assembling watch components.

A close-up render of Horage's K2 Micro-Rotor's gear build.

Designing Complex Parts Faster with a Unified Model

Mechanical watch design requires balancing hundreds of interdependent components within extremely tight spatial constraints. In the past, maintaining these relationships across multiple files introduced risk and complexity.

With Onshape, Horage designs entire watch movements within a single document, ensuring all components remain connected. This unified modeling approach allows engineers to define relationships once and maintain them throughout the design. As a result, changes propagate automatically across all dependent components.

"You can have one sketch with all the important dimensions, and everything else references this," says engineer Markus Lindstedt. "If you change one dimension, everything that depends on it will change with it."

This significantly reduces the effort required to make updates while eliminating any inconsistencies. That flexibility allows Horage to continue refining designs late into development without introducing risk.

Real-Time Collaboration Improves Design Accessibility Across Distributed Teams

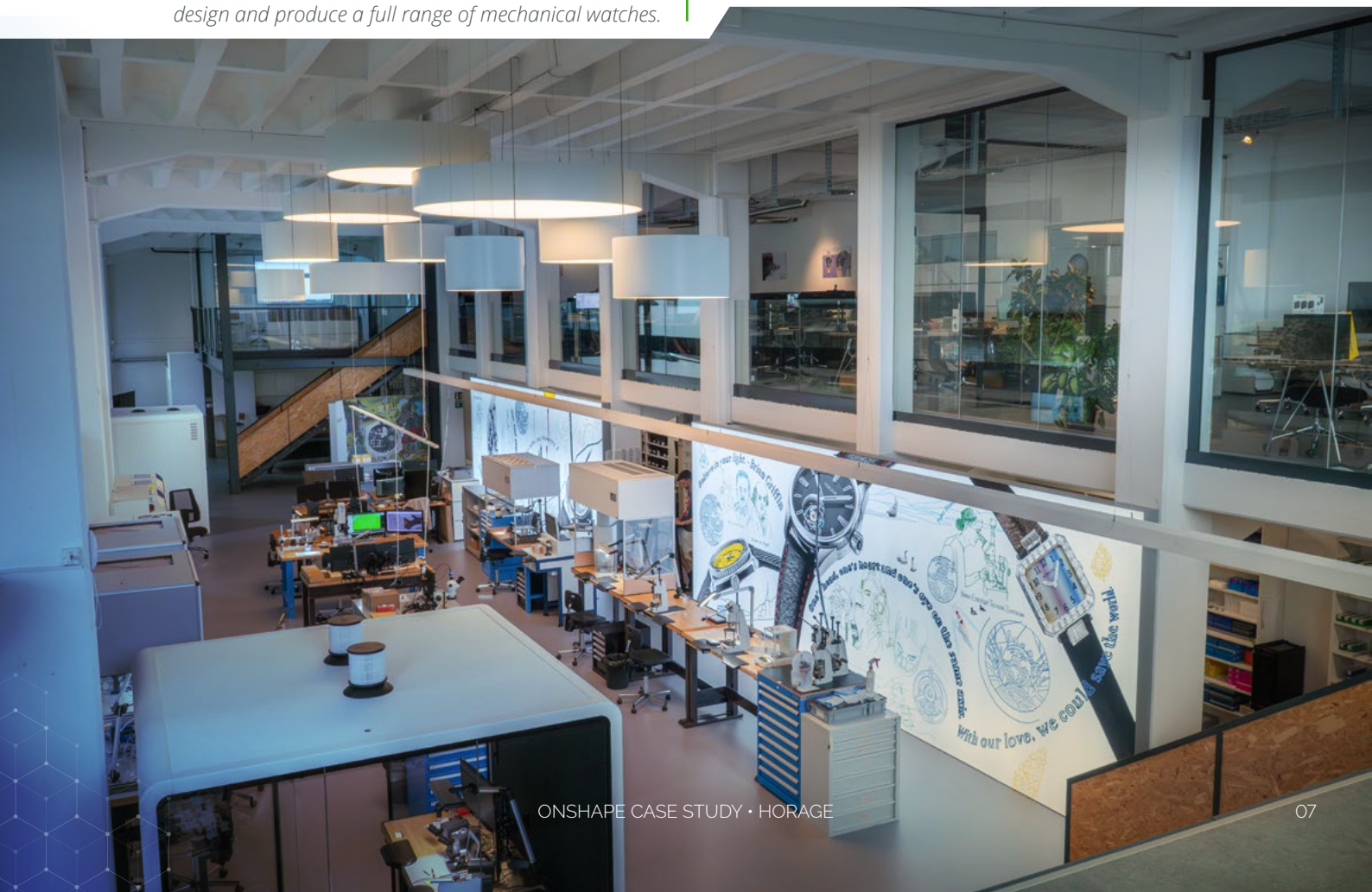
Horage operates across multiple locations, requiring close coordination between engineering, suppliers, and production teams. Onshape's real-time collaboration eliminated constraints caused by distance or infrastructure and enabled a more seamless design workflow.

"We have the possibility to work on the same parts from wherever we are," says Lindstedt. "Without Onshape, the way we work would actually not be possible."

Because everyone works within the same environment, communication becomes immediate and contextual. Instead of relying on static files or delayed updates, teams can interact directly with the live model. This real-time collaboration not only accelerates development but also improves alignment and reduces errors across the product lifecycle.

"The speed is gained through the accessibility of the data," Nydegger explains. "You have no limitations between departments. You have no limitations between different places. That is all stuff that makes you slow in a project."

The Horage headquarters in Biel, Switzerland, where they design and produce a full range of mechanical watches.



Reducing Hardware & IT Spend With Browser-Based CAD

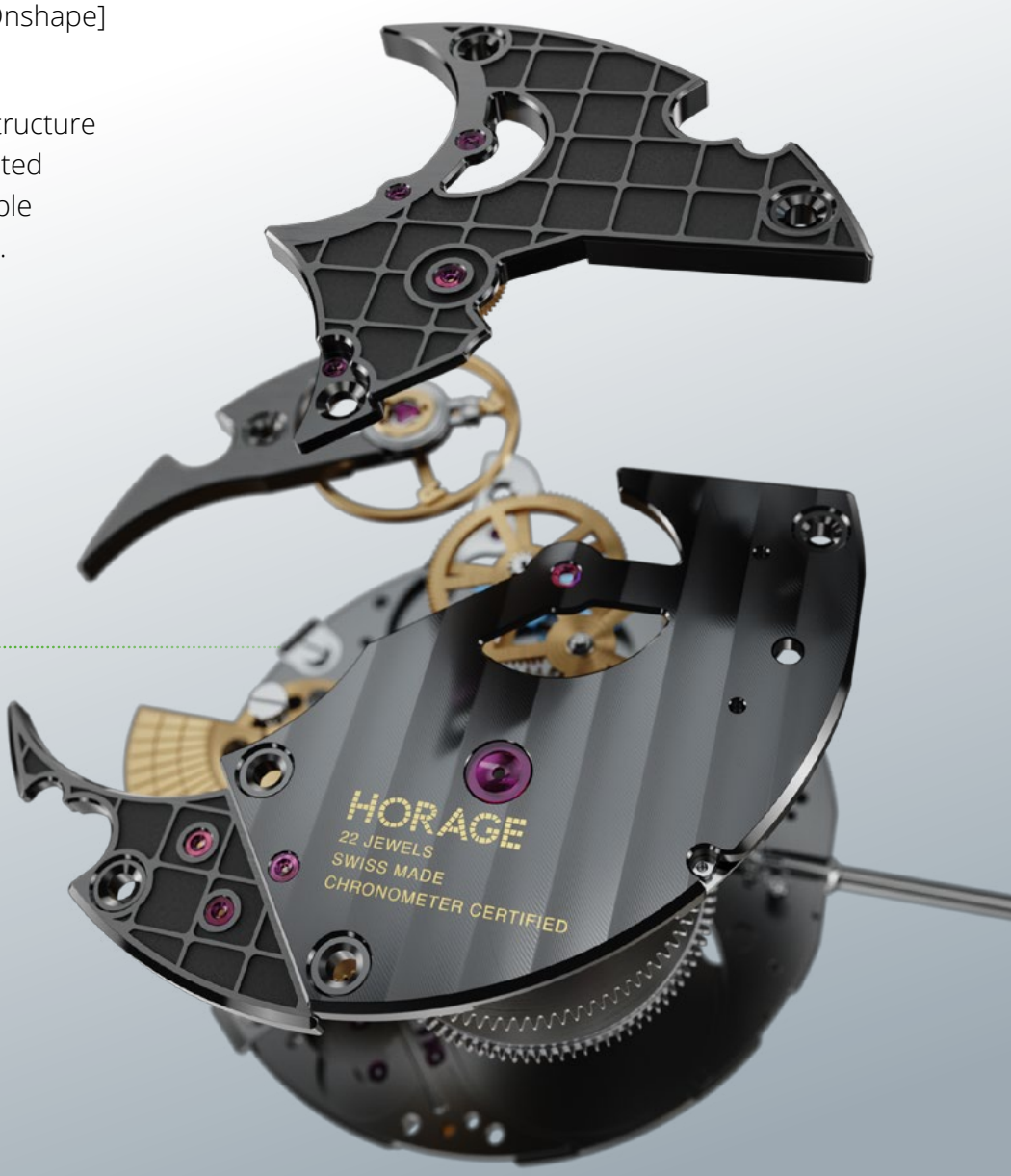
Being able to access and work on designs 24/7 in any place with internet access has transformed Horage's infrastructure and lowered IT overhead.

"At the beginning, I was skeptical that software that runs in the browser would work to a professional standard," Lindstedt admits. "But it turns out, any computer with a browser can work just the same."

Onshape eliminates the need for dedicated high-performance CAD workstations and complex installations, making Horage's designs more accessible across the organization while reducing total cost of ownership.

"The amount of hardware spend we do not have to do [with Onshape] is crazy," says Felsl.

By removing these infrastructure barriers, Horage has created a more flexible and scalable engineering environment.



A vertical exploded view of an Horage watch.

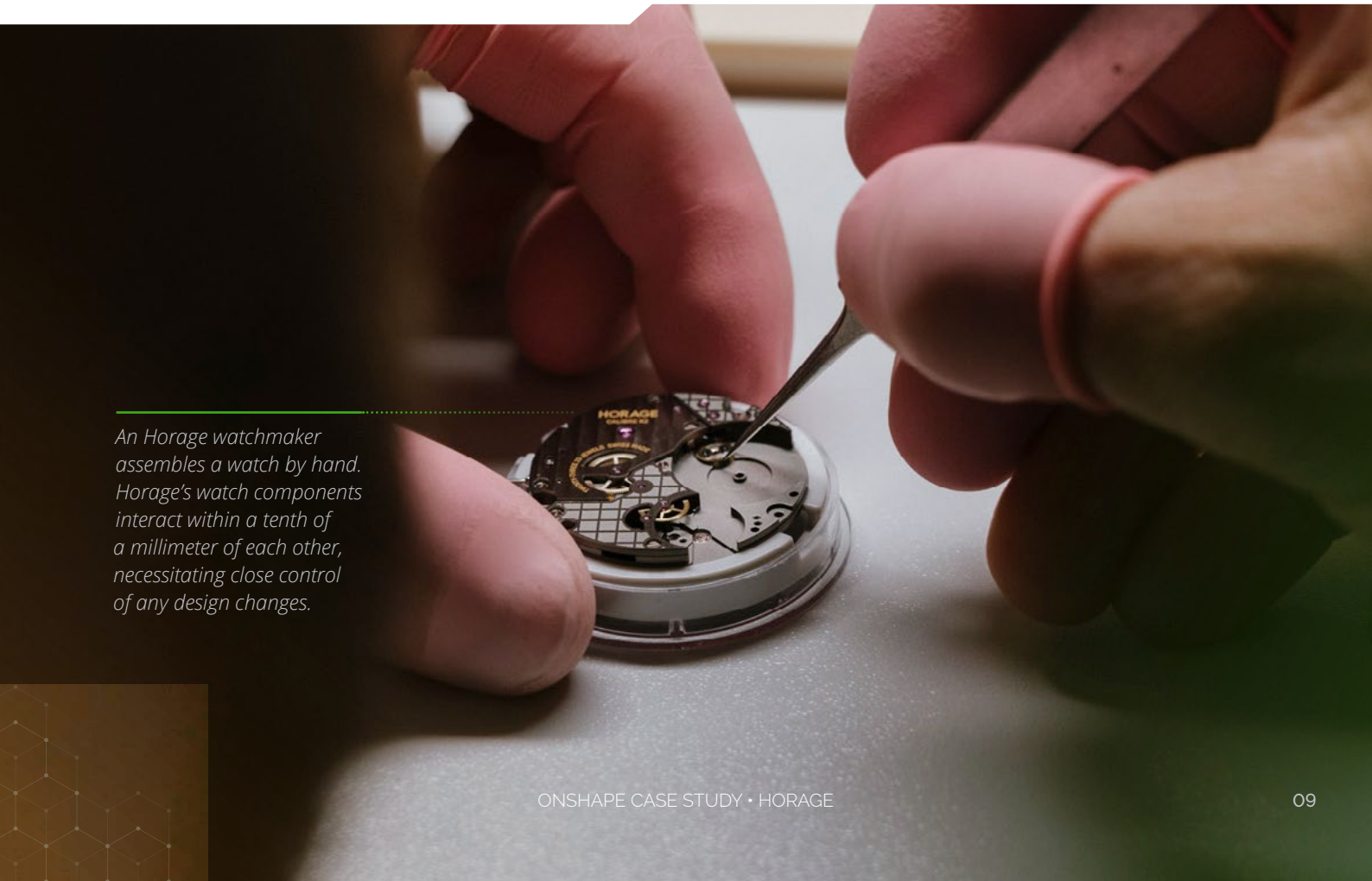
Continuous Innovation Without Legacy Constraints

Unlike traditional CAD systems that rely on full-system upgrades with significant downtime, Onshape delivers continuous improvements through automatic updates every three weeks. This ensures Horage always has access to the latest capabilities without disruption.

"Onshape is constantly evolving," says engineer Lorenz Wurzhuber. "They release new features every three weeks. You won't have any problem with updating stuff with old Onshape versions, because there is no old Onshape version."

Because updates are delivered seamlessly in the cloud, engineers can immediately take advantage of new functionality without managing installations, compatibility issues, or version control. Over time, these incremental improvements enhance everyday workflows, making the platform more efficient and easier to use.

For Horage, this steady pace of innovation supports a more agile engineering environment where tools continuously improve alongside the products they design.



An Horage watchmaker assembles a watch by hand. Horage's watch components interact within a tenth of a millimeter of each other, necessitating close control of any design changes.

A back view of Horage's Autark Tourbillion watch.

Building the Future of Watchmaking

For Horage, adopting Onshape was not just about improving design workflows. It was about enabling a fundamentally different way of operating.

"Understanding the power of Onshape was on a totally different level," says Felsl. "Single source of truth, collaboration, continuous feature rollout — no other CAD system will be able to compete."

By integrating cloud-native CAD at the core of its operations, Horage has built a modern engineering environment that supports speed, precision, and continuous innovation. As they continue to push the boundaries of mechanical watchmaking, Onshape provides the foundation that allows Horage to move faster, collaborate more effectively, and deliver increasingly sophisticated products.