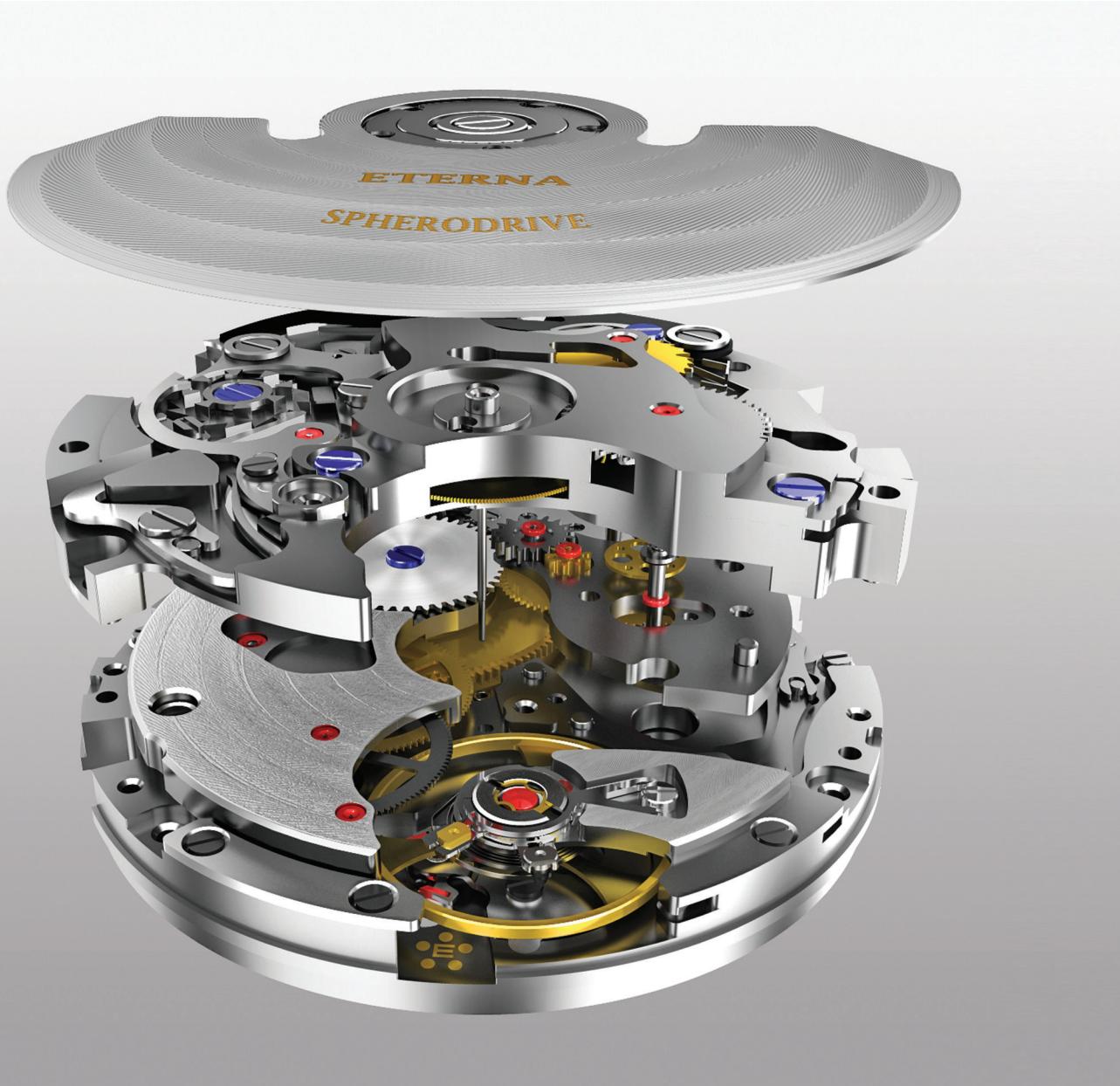


# CONSUMER GOODS AND RETAIL CASE STUDY **ETERNA**



## **Challenge:**

Eterna needed a powerful software solution to fully benefit from the capabilities on their new 3-axis CNC milling machines for watch manufacturing.

## **Solution:**

The company selected Dassault Systèmes' **3DEXPERIENCE**® platform including DELMIA Machining Pack for 3D simulation and NC programming.

## **Benefits:**

With the **3DEXPERIENCE** platform, Eterna manufacturing engineers benefit from production simulation features and automatic NC programming capabilities, thereby reducing production cycle times and machine fatigue and improving sustainability by reducing material waste.

## **Watchmaking craftsmanship with 3DEXPERIENCE**

Will the market for traditional watches fall victim to the arrival of high tech "smartwatches"? According to Citigroup, the answer is no. In a 2013 research paper entitled "Smart or Good Looking: Watches", Citigroup concluded that the two types will likely coexist because consumers buy watches for different uses. So while wearable technology attracts tech-savvy consumers, the success of traditional timepieces will likely continue.

This is good news for Swiss watchmaking companies like Eterna. The Swiss have long dominated the watch and clock industry with a reputation for high quality. Innovations such as the self-winding wristwatch and the first electrical watches have contributed to their international renown.

## **150 years of innovation**

Since its creation in the Swiss Jura Mountains in 1856, Eterna has emerged as one of the few watch manufacturers that produces entire movements at their own manufacturing facility. "As early as 1915, we invented the first table clocks featuring a proprietary movement with an unprecedented eight-day power reserve," said Paride Della Corte, head of CNC production and security coordinator, Eterna.

For more than 150 years, the company has delivered watchmaking innovations such as the revolutionary self-winding movement that reduces friction with a ball-bearing mounted rotor system and that since became a standard for automatic movements. "The five small low-friction ball

bearings are synonymous with Eterna; they have become our logo, which appears on the dial of each timepiece," Della Corte said.

Eterna is dedicated to perfecting the art of mechanical watchmaking combining expert craftsmanship with modern production techniques. "Every component of an Eterna mechanical watch is designed and manufactured here in our Grenchen facility," Della Corte said.

"We recently invested in new numerical control machines to increase our production output and our manufacturing efficiency. However, we rapidly realized that our previous NC software did not have the ability to sufficiently exploit these machines. So we set out in search of a more powerful solution that could take advantage of our new machines' advanced possibilities."



**"In the watchmaking profession, components are very complex and anything short of perfection is unacceptable. With the **3DEXPERIENCE** platform and DELMIA V6, production cycle time is shorter because the part is right the first time."**

— Paride Della Corte  
Head of CNC production and security coordinator.

## **3D and simulation: a powerful combination**

Eterna chose Dassault Systèmes' **3DEXPERIENCE** platform including DELMIA V6 Machining Pack for its manufacturing activities. "With this platform, we have a complete solution that includes DELMIA for our prismatic machining programming, CATIA for 3D design visualization and rework, and ENOVIA to manage our tooling library."

Eterna visualizes designs virtually in 3D and simulates the tool path complete with material removal and automatic generation of the machine code. "With CATIA, I can visualize the 3D model

created by our designers, model our NC machine and accessories with DELMIA Machine Builder and the NC program for our 3-axis machine is automatically generated," Della Corte explained. "With 3D, we can see potential problems and at the manufacturing level this can save us considerable time and avoid production re-dos that can increase waste and drive up costs," Della Corte said.

"In the watchmaking profession, components are very complex and anything short of perfection is unacceptable," Della Corte said. "DELMIA Machining Pack can simulate the machining of a watch mechanism to verify that it can be done and if something is not possible, I make the necessary adjustments to the design myself using CATIA. I then create the associated tooling and virtually verify that there are no collisions between the part, tool and clamp before proceeding with physical manufacture. The result we obtain during virtual simulation is the one we obtain in the real world. Production cycle time is shorter because the part is right the first time."

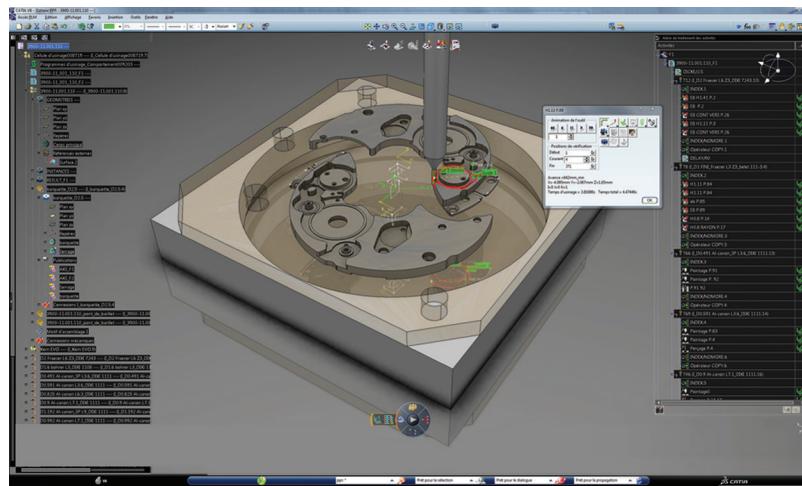
### Less waste, longer machine tool life

"For the six families of mechanical movements that we produce, there are many parts, which translates into a lot of time spent programming and setting up the machines," Della Corte said. "A significant amount of preparation is required upstream, which is why it is important to work with a programming application that is flexible and provides fast results. With DELMIA's V6 Machining application, we can efficiently program for every type of shape or contour while keeping material waste to an absolute minimum. Moreover, a more efficient machining program means less wear and tear on the tool because there is less friction and no collisions."

Della Corte manages an elaborate tooling database with ENOVIA that he relies on for the manufacture of the watch mechanisms Eterna designers create. "My first job is to check if the tool needed to manufacture a part already exists and if not, I create it with CATIA V6. It is then capitalized in ENOVIA for future use."

Dassault Systèmes partner CENIT implemented the DELMIA Machining Pack and provided training at Eterna. "With CENIT's help, we were up and running with the application in a little over a week," Della Corte said. "Their expertise brought value to our installation."

Does Della Corte worry about the arrival of high tech smartwatches? "There will always be a market for a timepiece that represents



Upper: ETERNA Adventic, Automatic caliber Spherodrive 3843

Lower: CNC machining of the Barrel Bridge Caliber 39

## **Focus on Eterna**

Switzerland's Eterna is a mechanical and self-winding watch manufacturer.

**Products:** Mechanical and quartz timepieces

**Employees:** 80

**Headquarters:** Grenchen, Switzerland

**For more information**

[www.eterna.com](http://www.eterna.com)

over a century of great watchmaking tradition with meticulous attention to detail and beauty. While technology enhances the user experience in many ways, wearing a timeless piece of engineering craftsmanship is also a wonderful experience for many."

## **Focus on CENIT**

For 25 years, CENIT has been a successful, leading consulting and software specialist in the optimization of business processes in Product Lifecycle Management (PLM), Enterprise Information Management (EIM), Business Optimization & Analytics (BOA) and Application Management Services (AMS). The company is focused on its own software developments as well as standard solutions from market leaders such as Dassault Systèmes. Roughly 700 employees work for the company at locations around the world, serving customers from the automotive, aerospace, mechanical engineering, tool and die manufacturing, financial services, commerce and consumer goods industries.

**For more information**

[www.cenit-ag.ch/en](http://www.cenit-ag.ch/en)

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