NUMinformation #66 // PR LIGNA // Success Story Krüsi 2025

## Title

From Timber Joints to Science Awards: Swiss Projects That Bring CNC to Life

## Intro

## Precision. Flexibility. Quality. These aren’t just the core values of Krüsi Maschinenbau AG—they also define a groundbreaking partnership with NUM AG. Together, these two Swiss companies have developed a CNC woodworking center that’s setting new global benchmarks: the MC-15. It's a perfect blend of cutting-edge control technology and decades of timber construction expertise—fueling projects that inspire.

## Text

**Two Companies, One Goal: Maximum Performance in Timber Construction**  
The collaboration between Krüsi Maschinenbau AG and NUM AG goes far beyond a typical customer-supplier relationship. It’s a true partnership—two equals united by a shared goal: developing innovative solutions for modern timber construction.

Founded in 1961, Krüsi Maschinenbau AG has spent over 60 years growing from a mechanical workshop into a globally respected manufacturer of woodworking machinery. Today, more than 3,200 Krüsi systems are in operation across 38 countries—from standard framing systems to highly specialized custom machines for free-form timber structures.

NUM’s Flexium+ CNC system delivers the ideal control solution: modular, powerful, and fully adaptable to meet the MC-15’s specific demands. Joint development began in 2015, and the result—a revolutionary machine for timber construction—will celebrate its 10th anniversary in 2025.

“All these years, it’s been a strong collaboration. NUM’s close proximity allowed them to support us quickly and continually improve and optimize the machine,” says Pascal Stehli, Project Manager at Krüsi Maschinenbau AG.

**The MC-15: Built for Precision and Versatility**  
What sets the MC-15 apart is its speed and adaptability. Designed for automated processing of timber beams and components in a range of sizes, the machine features a modular design focused on maximum flexibility. Key highlights include:

* Up to 35 controlled axes/spindles, enabling even 5-axis free-form machining
* One or two cross beams with up to six freely selectable processing units
* Rigid, precise machining units for long-term accuracy
* Mechanical and electrical axis layouts designed for high speeds, agility, and component longevity
* Material feed capacity from 55 x 20 mm to 1300 x 300 mm—ideal for everything from standard framing and roof trusses to complex free-form structures
* A 4-channel control system for fast, seamless switching between all six processing units

The MC-15 can mill, drill, saw, groove, rebate, and profile—all sides, with extreme precision. Its modular architecture allows full customization, from processing unit configurations to lead-in/out section lengths and specialized software features.

**NUM Flexium+ 68: Intelligent, Seamless Control**  
Control technology is key to the MC-15’s performance. The NUM Flexium+ 68 CNC system not only delivers outstanding power and precision—it also includes custom-developed user interfaces and visualizations tailored to Krüsi and its customers.

Thanks to its open architecture, the system integrates seamlessly and offers:

* Intuitive touchscreen operation
* Visualization of all machining steps
* Fully customizable user interface
* Easy integration with existing software environments
* Custom CNC functions for specialized tasks

NUM supplied all core components—from the CNC controller to NUMDrive X drives, single-cable motors, and safety systems—ensuring 24/7 reliability and a fully coordinated platform.

“The Flexium+ 68 convinced us with its openness and adaptability. Together with NUM, we created a control system perfectly tailored to our needs—and our customers’,” adds Stehli.

**Appenzell Joinery in Action – Two Outstanding Student Projects**  
The MC-15’s capabilities are showcased through two standout projects in traditional Appenzell joinery—where technology, sustainability, and education intersect.

**The Beehouse – A Living Biology Classroom**  
How about a beehouse as a biology education center? At the Cantonal School of Trogen in Appenzell Ausserrhoden, that idea became a reality. The existing beehive station was outdated, and the solution—a new structure built in the Appenzell timber style—was designed by students, supported by the alumni association, and constructed with help from the Vocational Training Center Herisau, Nägeli Carpentry, and Krüsi Maschinenbau AG.

Krüsi went the extra mile. The student concept of producing Appenzell-style joints on a CNC machine—without specialized tools—was refined and optimized by Krüsi to allow production without manual rework. Machining sequences and strategies for the corner joint were clearly defined for efficient manufacturing.

The joints were produced on the MC-15 at Nägeli Carpentry, located just a few miles from Trogen. Now in use with its third Krüsi system, the company helped bring the project to life—an inspiring blend of craftsmanship, education, and technology. Today, three beehives reside in the structure, which now serves as both a classroom and a symbol of ecological stewardship.



Appenzell-Style Joinery Featured Throughout the Apiary – Inside and Out

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NUMinfo66\_Krüsi\_iPhone\_Beehive (25).JPEG*



Dr. Elisabeth Steger Vogt, Rector of Trogen Cantonal School with Urs Iseli, CEO of Krüsi Maschinenbau AG

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**The Self-Sufficient Bus Stop – A Biodiversity Champion**  
The “Biodive” project—conceived by students at the Cantonal School of Trogen—won the 2021 *Science on the Move* competition and received a special prize for best performance. Their concept: a self-sufficient bus stop powered by solar panels, collecting rainwater, providing wildlife habitats, and sharing educational content via QR codes. A prototype is complete, with the official launch set for May 2025.

As with the beehouse, the timber joinery templates were provided by Krüsi. The connection is no coincidence—the two structures sit at opposite ends of the school campus, forming an architectural and thematic link.



Self-sufficient bus stop in Trogen

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NUMinfo66\_Krüsi\_iPhone\_Bus\_stop-(13).png*

**Sustainability at Every Level—Made in Appenzell**  
Few people realize just how deeply Krüsi commits to sustainability. It doesn’t end with the product—it’s built into the entire business model. Many Krüsi machines have been running for over 40 years. Spare parts, both mechanical and electronic, remain available. Even older control systems are updated through retrofit projects.

“We’re not a corporation pushing a new model every five years. We think long-term—and we think with our customers,” says Urs Iseli, CEO of Krüsi Maschinenbau AG. That philosophy runs throughout the company—from inventory management to lifelong customer support.

**Technology Meets Purpose**  
Whether it’s the beehouse or the self-sufficient bus stop, these projects demonstrate what’s possible when expertise, innovation, and collaboration come together. The results are more than products—they’re meaningful contributions to education, sustainability, and craftsmanship.

One thing is clear: as demands in timber construction rise, leaders will need partners they can trust.

## Images/captions



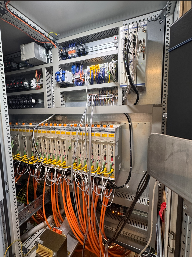
From left to right: Urs Iseli, CEO Krüsi Maschinenbau AG, Daniel Ursic, Area Sales Manager NUM AG and Pascal Stehli, Project Manager Krüsi Maschinenbau AG

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Machined workpiece for the construction of Appenzell-Style Joinery

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MC-15 control cabinet with 35 axes/spindles

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MC-15

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Logo

