SUCCESS WITH SOFTWARE AND MACHINES

The controlling software is at least as important for automated production as the proper interlinking of individual production machines. Below we present an example of a family-run craft business with a modular, fully integrated software solution and the machinery it controls.

Thanks to investment in machines and software, slab-shaped materials, especially kitchen countertops—can now be produced automatically with the same workforce while achieving significantly higher margins. Such a production planning and control system (PPS) is aimed at medium-sized and large companies that want to efficiently plan, control, and monitor their production processes in order to optimize resources, material flow, and scheduling.

By Michael Spohr

CNC bridge saw and CNC machining centre from CMS digitally linked within the Kneidinger operation

Photo: Kneidinger GmbH, Hauzenberg

Company owners Rainer (left) and Harald Kneidinger in the modern tile showroom featuring XXL ceramic formats

A general industry upswing did not materialize last year and is not currently in sight. However, individual companies are enjoying full order books and high production utilization. What is the reason? A real “secret weapon,” which also helps address the shortage of skilled workers, is the software-based networking of production machines. Brothers Harald and Rainer Kneidinger from the Passau district have taken this step (We reported on this in STEIN 2/2023) and have not regretted it.

Harald Kneidinger attributes his unconventional thinking to his background as a trained draftsman and technician in an architectural office, where he learned to think outside the box and approach problems differently than a typical stonemason. -

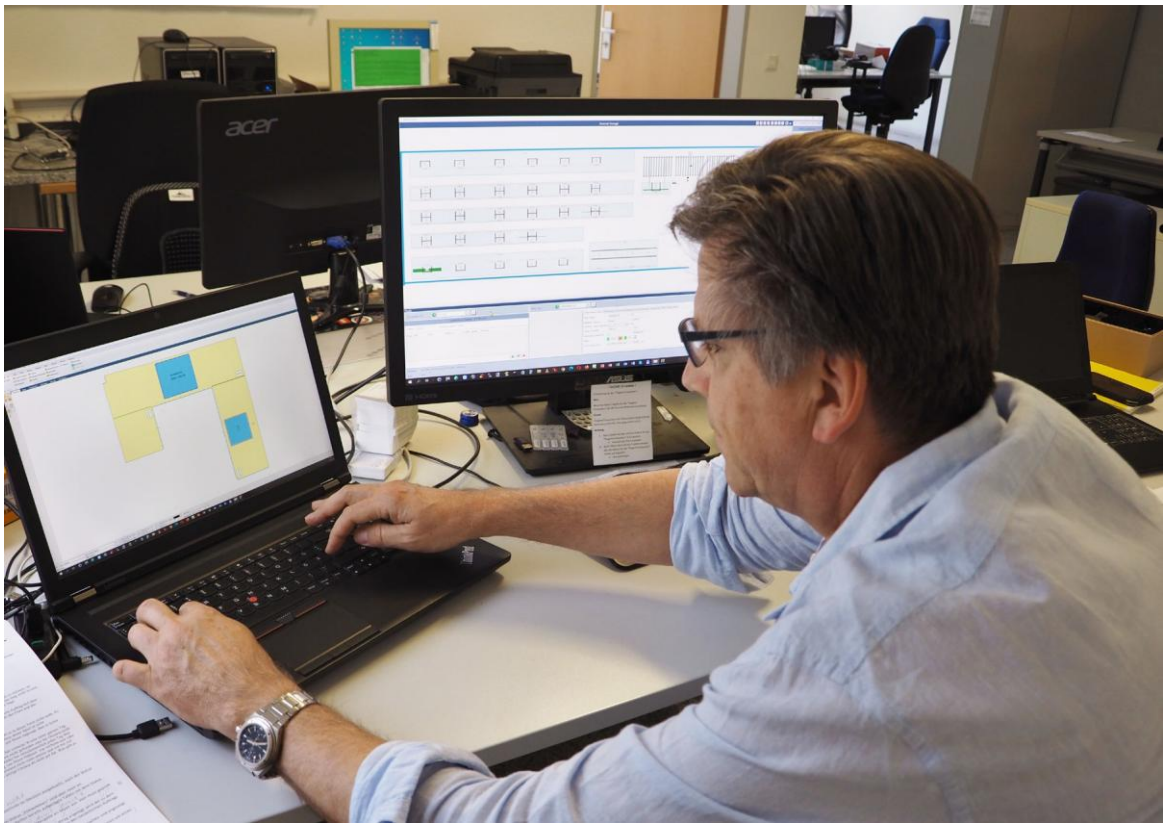
gen ist als dies ein typischer Steinmetz getan hätte. He recalls, for example, that as early as 2002, during an in-house exhibition at Fickert & Winterling, he worked closely with a representative of the machinery manufacturer to develop a CNC control system for a bridge saw—something that would only become industry standard years later. In retrospect, the now 49-year-old describes the acquisition of his first large CNC-controlled bridge saw as “a license to print money.”.

Prior to that, he had been persuaded by his brother Rainer, who is six years his senior, to take over an existing stonemasonry business that had no successor, thereby stepping into self-employment. Rainer Kneidinger, himself not a stonemason but a businessman, had been working in the office there and was the one who originally proposed the idea of acquiring the company together.

STEIN presents the following companies:

1. Kneidinger GmbH, Hauzenberg
   www.naturstein-kneidinger.de
2. Sekon Software GmbH, Bonn
   www.sekon.de
3. CMS Steintechnik GmbH, Neutraubling
   www.cms-steintechnik.de

Photo: Kneidinger GmbH, Hauzenberg



Gert Senel and his Bonn-based Sekon team gradually developed a comprehensive software solution for the Kneidinger.

COMBINATION OF SEKON SOFTWARE AND CMS MACHINERY

In the years that followed, the brothers expanded and modernised their operation in Hauzenberg, Lower Bavaria, increasingly investing in CMS machinery. Today, Natursteinwerk Kneidinger operates a five-axis CNC bridge saw with rotating head (Formax), equipped with vacuum slab separation and an underfloor saw, as well as a four-axis CNC machining centre (Speed), both installed in 2020. In the near future, a five-axis CNC waterjet cutting system (Easyline) with a 4 × 2 metre cutting table will be added and fully integrated into the software environment. The existing PTV waterjet system already features the user-friendly CAM solution TOP WaterJet from Sekon. WaterJet aus dem Hause Sekon , but could not previously be fully integrated into the digital production control system.

In addition to SePPS (Sekon's production planning and control software) and BDE terminals at each processing station (with input masks for data capture), the Kneidinger software landscape includes SeCAD for design, DigiStat for slab digitisation, TOP for nesting slabs across all saws and the waterjet system, SeCAM for the machining centre, PCC for determining the optimal processing sequence of each workpiece within an order, and UpStairs for staircase design.

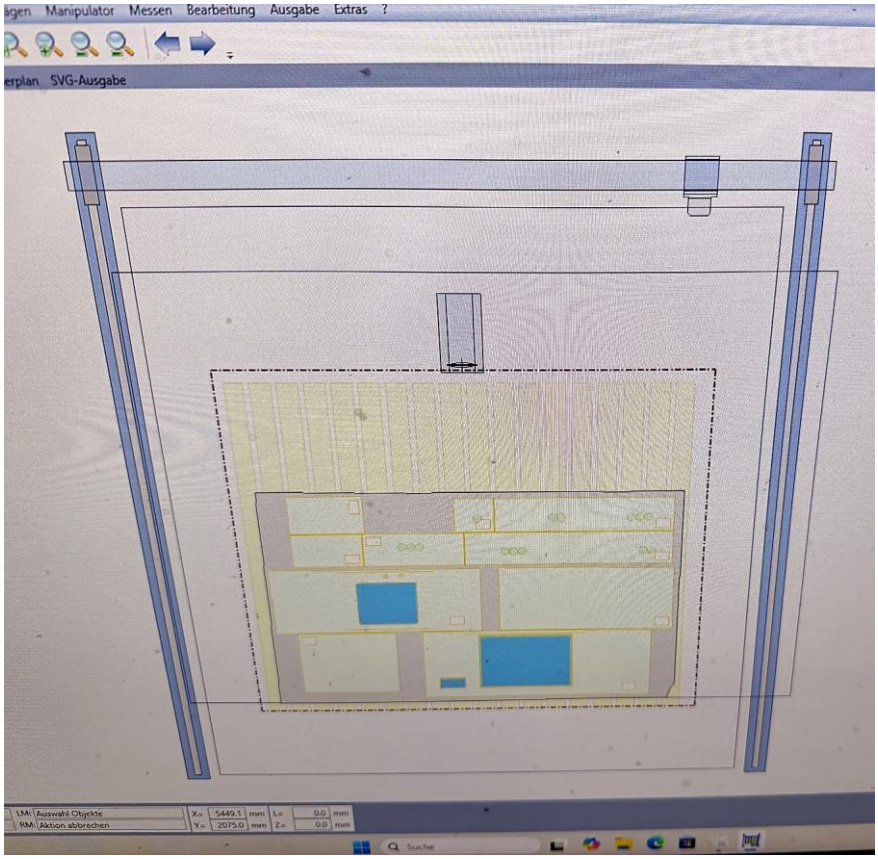
Although the Kneidingers consider themselves pioneers among comparatively small companies —with around 50 employees, fewer than **ten** of whom work in the natural stone plant—in terms of their comprehensive Sekon software deployment, they had already decided early on to digitally link their CAD/CAM solutions from the Bonn-based Sekon Software GmbH, even before fully interconnecting their large-scale production machinery. According to Harald Kneidinger, it is obvious that large, industrialised operations can no longer function without PPS and ERP systems. However, for companies like theirs, which primarily handle bespoke, made-to-measure work, the initial investment required for digitalisation and automation did not at first appear to deliver sufficient added value.

Photos: Michael Spohr

General test run: Prior to commissioning in Hauzenberg, Gert Senel successfully simulated the entire production process at his facility in Bonn

Control centre at Kneidinger: Since then, a single operator has been able to manage and coordinate the entire production process efficiently from the office.

Photos: Michael Spohr / Kneidinger GmbH / Hauzenberg



Transparent production: All jobs can be monitored and tracked live on screen at any time.

DIGITALISATION TRIGGERED BY STAFF SHORTAGES

A shortage of skilled labour, combined with an unusually high level of employee absences, ultimately prompted the two owners to take decisive action. Instead of merely upgrading the bridge saw as originally planned, they opted to replace all existing CAM machine programs with SeCAM—a unified software solution specifically optimised for the production of natural stone slabs. Subsequently, Gert Senel and his team of software specialists implemented a centralised production control system across the entire operation, linking all software modules to a single PPS database.

The increase in production speed achieved with this complete solution both surprised and convinced the Kneidingers alike. “With the same workforce, we have become faster and even grown,” Harald Kneidinger says happily in retrospect about the decision made. Initially, employees were sceptical and concerned about the transparency of a “glass factory” environment, fearing increased monitoring. However, as they began to explore the new workflows, acceptance quickly grew. Today, the advantages are widely recognised. Kneidinger compares the transition to introducing new cuisine:

“Someone who has eaten schnitzel and chips for 20 years won’t easily be convinced that roast pork with pasta can be just as good.”

In addition to their natural stone processing plant, the Kneidingers operate a large tile installation business, including fitting and installation services, as well as a 2,000 m² showroom. They are highly satisfied with the return on their investment. One key advantage is that employees no longer need to determine production workflows themselves.

"In the old days, the saw operators would first search for the required slab for an order, load it onto the machine, and then think: “What do we do with this?” Harald Kneidinger recalls of the old days. Today, the next cutting job is already ready and queued while the saw is still busy processing the previous one. At least 95 percent of production is controlled from the office; adjustments directly at the machine are only made in exceptional cases. While the initial digitization of the slab inventory and the recording of remnants required significant effort, but then massively increased efficiency. Each slab and remnant is labelled with a barcode, enabling full traceability. "We are now selling material we didn’t even know we still had in stock" says Harald Kneidinger enthusiastically.

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Photos: Kneidinger GmbH, Hauzenberg

Unattended machine terminals: The machines – here the Formax bridge saw – automatically process one job after another.

Foto: Kneidinger GmbH, Hauzenberg

Not yet fully automated: Merely loading and unloading, here at the Speed machining centre, is still performed manually.

BUSINESS GROWTH AGAINST THE TREND

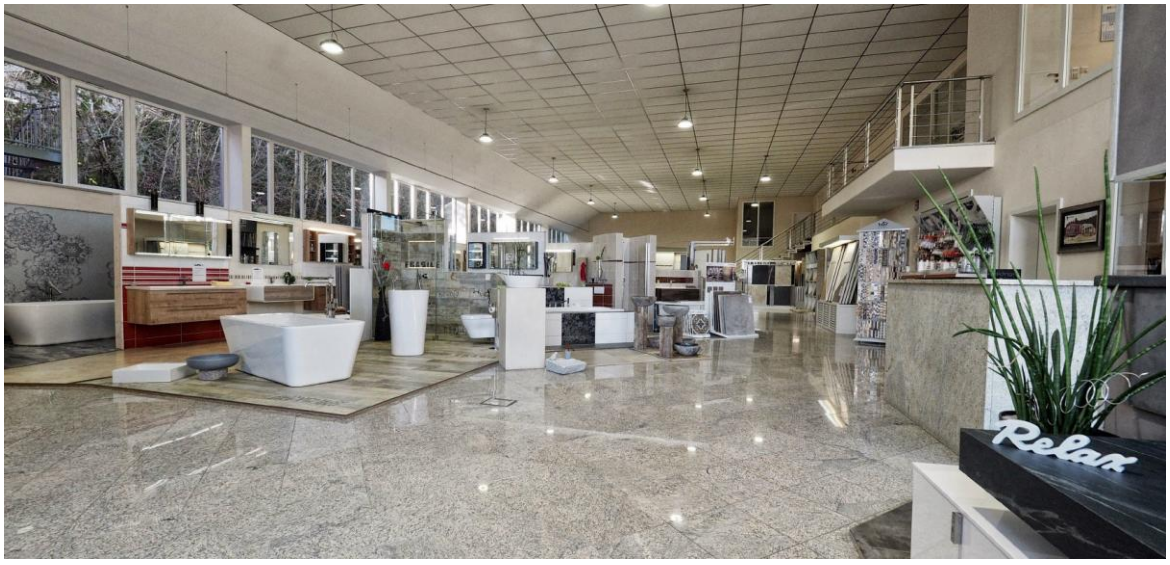
Material utilisation has improved significantly, as the status of each workpiece and the exact completion time of every order can now be tracked in real time at any workstation. In addition, all jobs remain fully traceable for post-process analysis and evaluation.
Problematic materials can now be identified much more easily and, if necessary, removed from the range or repriced—for example, resin-filled or repaired onyx slabs—or alternative suppliers can be sourced for ceramic materials. According to Kneidinger, the key factor is not the raw material price, but understanding how efficiently each material moves through production.

Contrary to the general market trend, the company is experiencing steady growth and continues to attract skilled employees. Recently, they hired a natural stone technician specialising in machine technology, who had previously worked for 16 years at a competitor with lower production volumes. The year before, they had already recruited a similar specialist for measurement and pre-planning, who had applied on his own initiative. Despite ongoing caution due to the slowdown in the construction sector, continued growth for Kneidinger's natural stone and tile business appears highly likely.

Photos: Kneidinger GmbH, Hauzenberg

All machine and manual stations are equipped with their own **PDA** terminal (**Production Data Acquisition Screen**), featuring interfaces for data input and recording – including the Montresor edge polishing machine.

Partially integrated into digital production via TOP / SeCAM V10: the PTV waterjet cutting system



View of the tile showroom: In addition to the stone processing plant, Kneidinger also operates a specialist tile retail business

Photos: Kneidinger GmbH; Hauzenberg