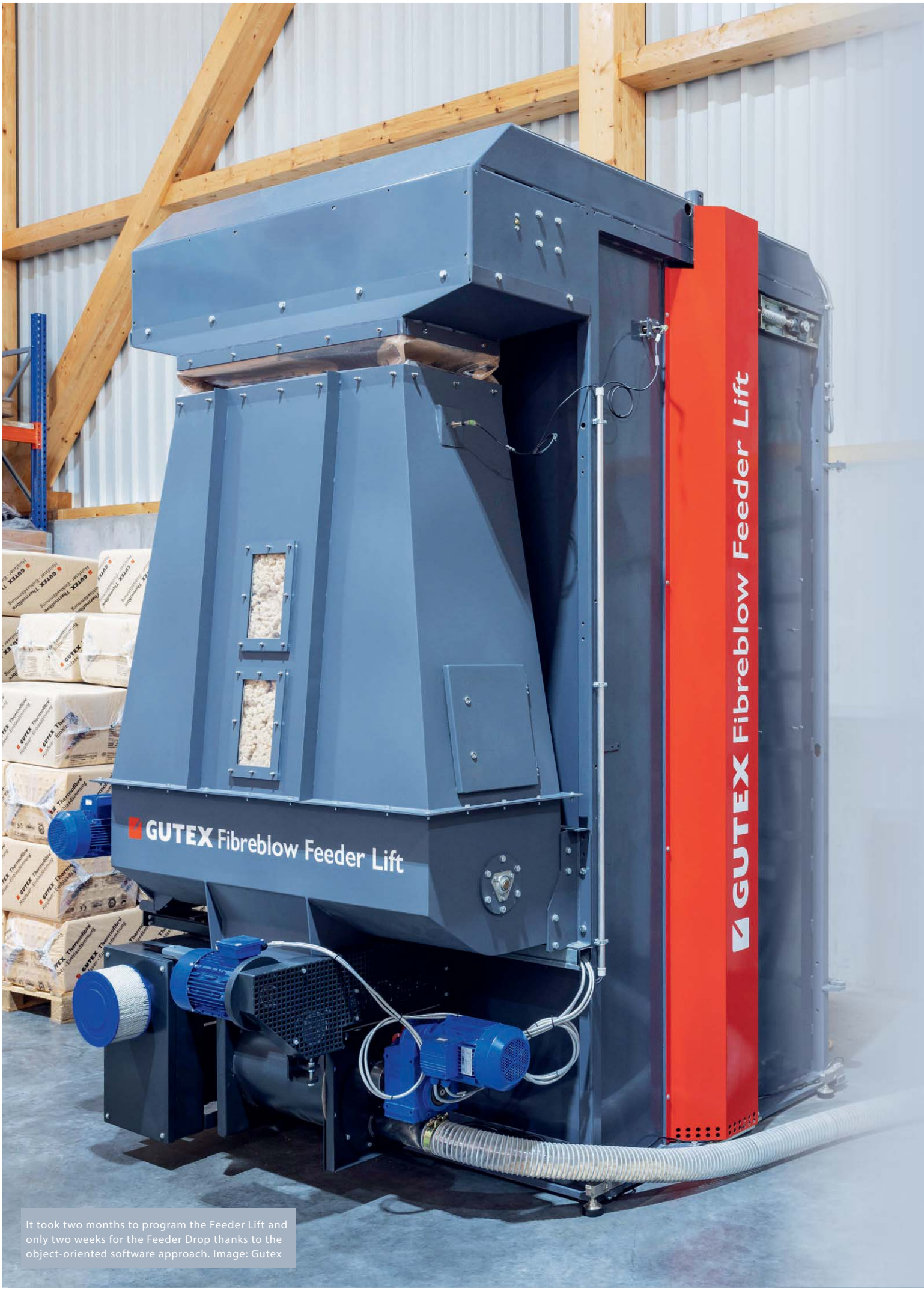


It took two months to program the Feeder Lift and only two weeks for the Feeder Drop thanks to the object-oriented software approach. Image: Gutex

COMPETITIVE ADVANTAGE THROUGH OBJECT-ORIENTED PROGRAMMING

In a price-sensitive sector, machine manufacturers need two things to be successful: cost-effective, high-performance hardware and a development tool that supports a fast market launch. Gutex GmbH & Co. KG, which specializes in mechanical insulation technology and is based in Waldshut-Tiengen in Southern Germany, therefore relies on solutions from automation expert SIGMATEK.

By Markus Back

Wood is an efficient material for insulating houses. The reason for this is its ability to store heat and release it again with a time delay. This phase shift is almost exactly twelve hours, so that the solar energy that falls on a façade during the day is only released again at night, when the greatest heat has long gone.

As houses made of solid wood are expensive, alternatives are needed to be able to use these valuable properties on a broad scale. One of these alternatives is the processing of wood chips into flame-retardant wood fibers, which are blown into the outer shell of the house using special machines and, if necessary, into interior walls and floors for sound insulation. One manufacturer of such fibreblow machines is Gutex GmbH & Co. KG from Waldshut-Tiengen. These machines are manufactured in various designs, which differ, for example, in the way they receive and process the wood fibers. What they all have in common is the software, which can be expanded as required and integrated into a higher-level system. And there is a reason for this. "Together with our competitors, we operate in a price-sensitive environment," explains Alexander Jaenke from Gutex GmbH & Co. KG and adds: "That's why we only wanted one software version from the outset, but one that runs on all the different machines."

Accelerated Software Development

„With the object-oriented engineering tool LASAL, the application software can be designed to be as universal as possible, yet expandable and easy to maintain, so that machine variants can be easily implemented. This is essential for the development of future-proof machine concepts. The software is also clearly structured and easy to use," says Arno Schmied, Head of Technology at SIGMATEK Switzerland. However, this approach requires a software concept to be developed to create a basis on which everything else can be built.

"For example, every machine needs a blower to transport the material. I take this blower as a basis and build everything else flexibly on top of it. In this way, I can reuse code that has already been tested without the code being available more than once. This provides consistent modularity and clarity," says Arno Schmied, describing his approach, adding: "This prevents spaghetti code."

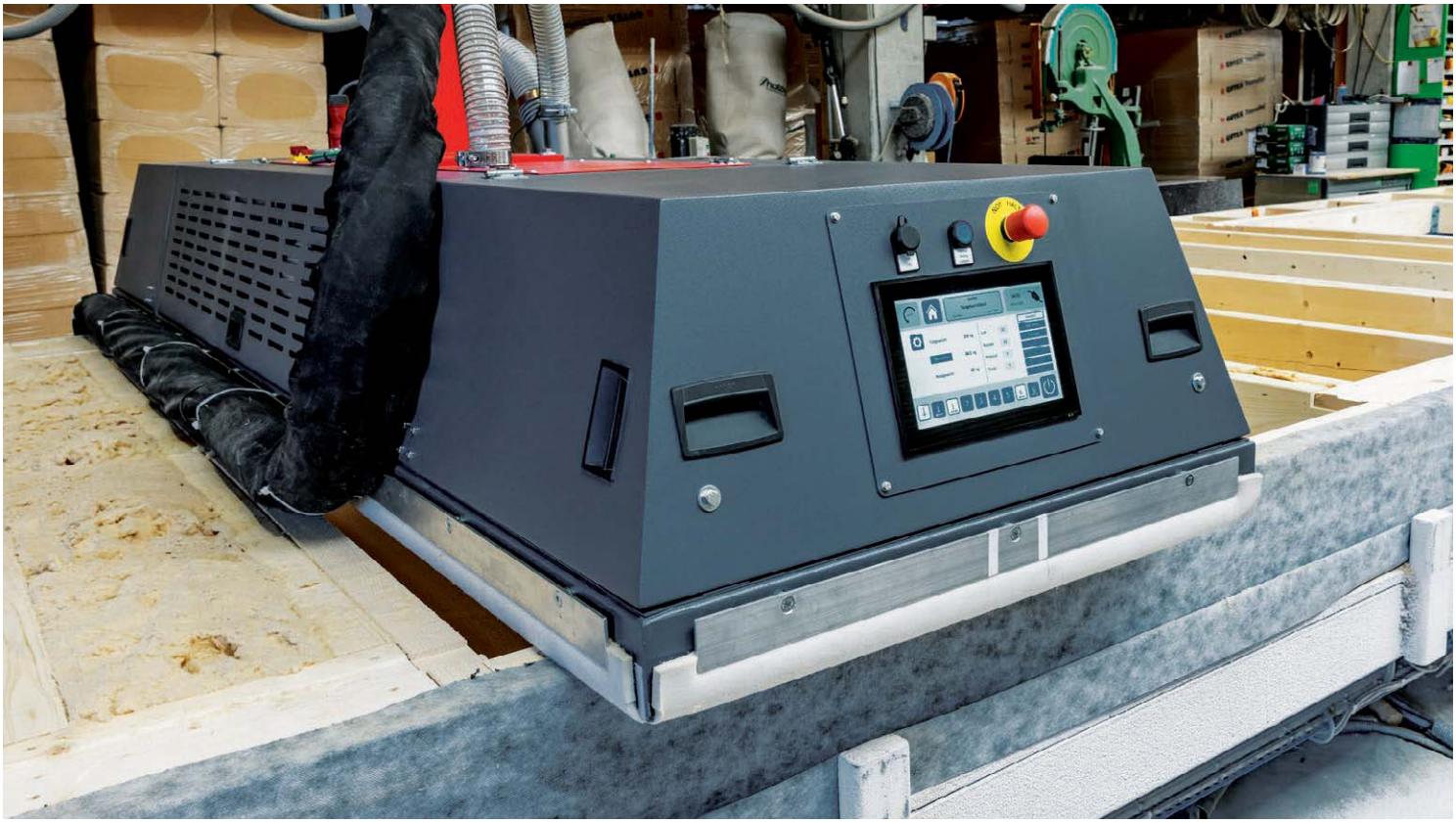
Mechanical insulation with wood fibers

The machines from Gutex GmbH & Co. KG process one or more big bales, each weighing 270 kilograms, depending on the model. These bales consist of compressed wood fibers, which are broken up using a device with a comb or toothed rollers, depending on the model. From the pulping device, they enter a module that breaks up the remaining lumps and clumps. The fibers then fall into a rotary valve, which divides the material by speed and with the help of a slider that regulates the size of the inlet. From there, the fibers, which are processed according to the first-in-first-out principle, pass through a hose to the insulation boards, where they are blown in at a density of 38 kilograms per cubic meter.

This would not only be time-consuming but would also make it more difficult to maintain and service the installed base. An update would require the software to be reinstalled and tested on every machine. “In addition”, says Samuel Lieberherr from Gutex GmbH & Co. KG, “object-oriented programming speeds up the work involved in further developments by a factor. For example, the software development for the Feeder Lift machine type took two months, that of the Feeder Drop only two weeks.”

Remote systems reduce travel requirements

Another advantage of the object-oriented software approach is a faster time to market. The machine can be extensively tested long before it physically exists. However, it is not simulated with a digital twin. For cost reasons, Arno Schmied uses the Lars simulation tool integrated into the LASAL engineering tool. Here he has created function classes that can be used to set data points and switch elements. The software can be simulated without electrical connections to the machine.



« By the time the mechanics are working, the software is already ready for use. »

Alexander Jaenke, Gutex GmbH & Co. KG

However, this approach requires close cooperation with the customer, in which the software developers are already heavily involved during the concept phase. Alexander Jaenke emphasizes that this works perfectly at SIGMATEK: "This and the fast response times are crucial for us. For us, working with Arno Schmied is as if he were an in-house programmer."
This bond is also significant because Alexander Jaenke and Samuel Lieberherr work for a German company but are supported by SIGMATEK Switzerland. Before moving to the Hochrhein, the two worked in Toggenburg, where they already had a close partnership with SIGMATEK Switzerland and, in particular, with Arno Schmied as their engineering partner.
The trips to Germany are no problem for him. It's not much further from his workplace in Effretikon to the Hochrhein than to Toggenburg. SIGMATEK also gradually expanded his remote access platform during the coronavirus pandemic, which significantly reduced his need to travel. "Today, I can do a lot of things from the office and only have to be on site for commissioning," says Arno Schmied. Thanks to the HTML5 connection of the LASAL VisuDesigner, he can access the user interface at any time using a standard web browser.

Excellent price-performance ratio
However, it is not just the LASAL development tool that Gutex appreciates. Alexander Jaenke is equally impressed by the hardware, which is used in the machines in the form of compact S-DIAS controllers with integrated safety functionality and ETT web panels with HTML5 visualization. The advantages of the SIGMATEK system solution are particularly evident in the area of drive technology, where the motors are implemented as required using FDD 3000 frequency inverters or the compact 48 V DC101 servo drives from the S-DIAS control world.
In this context, Alexander Jaenke points out the availability of materials during the supply chain crisis as well as the optimal price-performance ratio: "We cannot afford to use other system solutions, as we are in cut-throat competition and manufacturing costs are therefore crucial for us. SIGMATEK's uncomplicated software licensing policy also helps us in our day-to-day work."
He also appreciates the efficient, cross-border cooperation in their particular case. In Arno Schmied, they have an experienced software developer at their side who is very familiar with industrial fibreblow technology: "This is crucial for our business field!"

Sigmatek Schweiz AG | www.sigmatek-automation.ch

Gutex GmbH & Co. KG | www.gutex.de