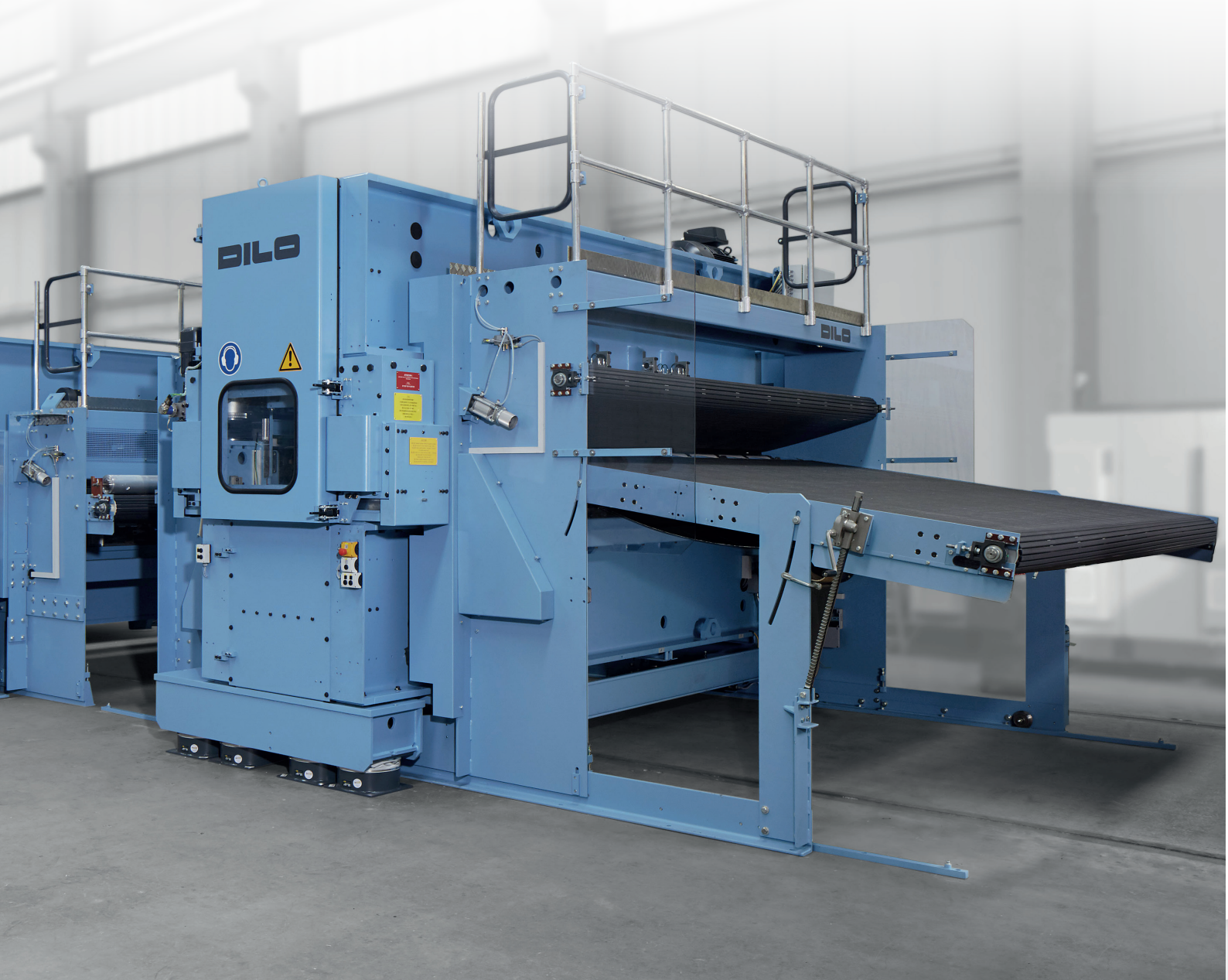


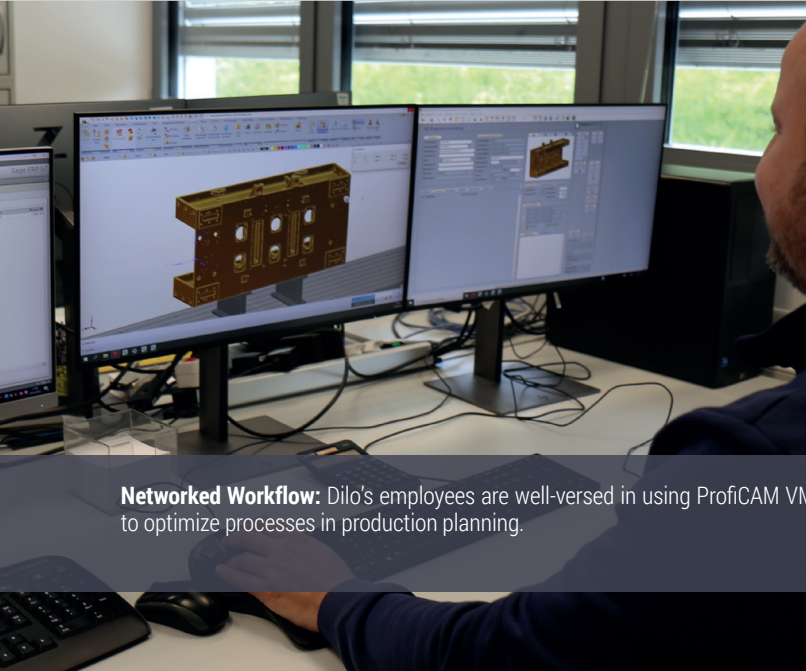
User Study

OSKAR DILO MASCHINENFABRIK KG

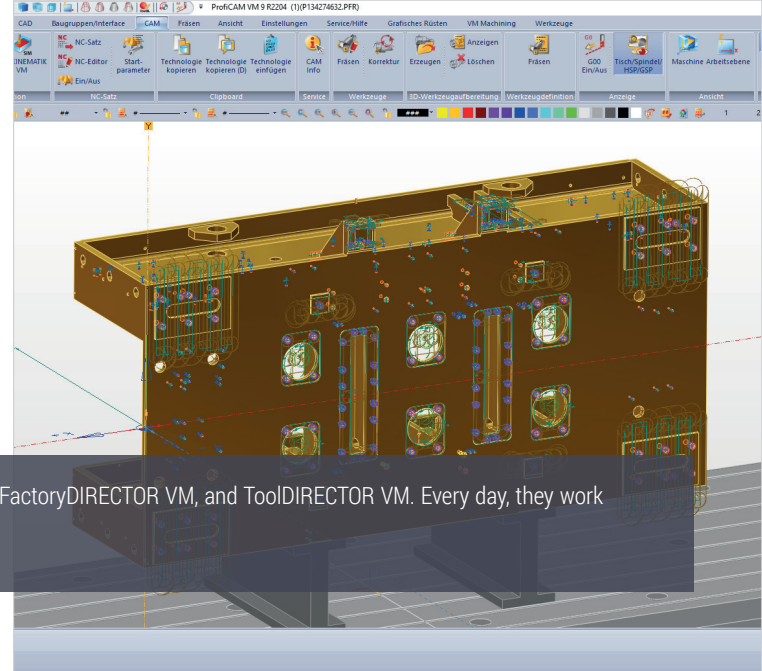


- End-to-end order processing from the ERP system to the CNC machines
- Fully process-ready CAM and tool data
- Increased transparency in tool inventory – including special-purpose tools

- Significant process acceleration thanks to the consistent implementation of virtual manufacturing
- Generation of the setup sheet with one click
- Verification of CAM programming results via machine simulation



Networked Workflow: Dilo's employees are well-versed in using ProfiCAM VM, FactoryDIRECTOR VM, and ToolDIRECTOR VM. Every day, they work to optimize processes in production planning.



Shortening of Rest and Overtime Periods through End-to-end Digitalization

For young employees, paperless manufacturing is simply part of what makes a workplace attractive. But does the COSCOM ECO-System data platform also convince older experts when it comes to providing and sharing information? The renowned textile machinery and plant manufacturer has secured even more productivity benefits through the tight integration between the ERP and FactoryDIRECTOR VM (Virtual Machining).

Nonwoven (fleece) is much more than just a fabric today. Industrially produced and processed in numerous markets such as the automotive or construction or medical industries, such products are used for a wide range of purposes. Nonwovens are suitable for producing hygiene products such as baby diapers or wound dressings, as well as for applications in the automotive industry (e.g. sound absorption, padding, and floor mats) or in the construction industry (e.g. sealants or carrier materials). Special attention should be given to the production of Vileda's well-known cleaning cloths, textiles for bulletproof vests, and brake shoes on Dilo equipment.

The DiloGroup's core competence lies in the production of complete solutions for needle-punch nonwoven systems with the highest production speeds and nonwoven qualities ranging from fluffy and soft to highly durable – as documented in a multitude of patents.

COSCOM supports various communication protocols such as Ethernet or RS232 to interface with the machines. We also use our expertise to provide older machines with important production information."

The group consists of DiloSystems, the specialist in plant engineering, and the machine

and plant manufacturers DiloTemafa for opening and mixing components, DiloSpinnbau for mechanical and aerodynamic nonwoven formation, and DiloMachines for nonwoven laying systems and needling machines.

Every Square Meter Counts

Nonwoven production is a complex process in which a wide variety of parameters can influence fiber processing and product quality. The systems, some of which operate 24/7, must be reliable – a challenge Dilo succeeds brilliantly. The digital COSCOM ECO-System makes a significant contribution to this success by ensuring seamless coordination of parts production on the shop floor.

Speaking of manufacturing: Dilo is a true machine and plant manufacturer. Most of the parts are produced in-house. This is because a high degree of vertical integration offers great flexibility, for example when it comes to implementing further improvements to components as quickly as possible.

At Dilo, the COSCOM ECO-System, integrated with the SAGE ERP system, guarantees 100% reliability in production orders. The COSCOM ECO-System consists of the COSCOM modules ProfiCAM VM (Virtual Machining) for CAM programming, ToolDIRECTOR VM for tool management, and FactoryDIRECTOR VM for technology data management.

ERP Integration with FactoryDIRECTOR VM Puts an End to Duplicate Data Management

The COSCOM ECO-System is directly connected to Dilo's leading ERP system, for good reason: "This integration eliminates the need for duplicate data management," explains Ralf Fürst, Head of Mechanical Manufacturing, with satisfaction, adding: "Data consistency all the way to the machine tool is a particular advantage of our COSCOM installation. This significantly increases efficiency and prevents sources of error."

The design department creates the parts master with the part name directly in the ERP system, and each department adds further metadata. Finally, the data record for production is finalized in production planning. The part designation often makes it possible to identify which area of production planning is involved. "A marker in the ERP system initiates the data transfer to the FactoryDIRECTOR VM. In the FactoryDIRECTOR VM, the user can intuitively add further order characteristics to the item master, such as the number of operations," explains Ralf Fürst.

Everything Revolves around CO-SCOM – in Manufacturing

“We’re open to using new tools and new manufacturing strategies. For example, solid drilling with internal cooling or solid carbide drills. These tools are purchased, assembled upon delivery, and simultaneously entered into the ToolDIRECTOR VM,” says Ralf Fürst. This ensures that the entire process chain is digitally mapped in a closed-loop system.

The ToolDIRECTOR VM is connected to a tool measuring device of Zoller. Digital twins of the tools are synchronized. The goal is to map

perienced expert for the new tool management system. “This colleague knows exactly where every drill is located and which indexable insert needs to be installed. I’m very happy to have been able to get him excited about the new world of digitalization with COSCOM. By now, he can’t imagine working without the ToolDIRECTOR VM. This is proof of how intuitive the management tool is to use,” emphasizes the production manager. At first, there were concerns, but the employees quickly realized, Ralf Fürst continues, the enormous potential of the COSCOM ECO-System and what this means in terms of making work easier: “We no longer have any tools in circulation that ha-

some time. His close collaboration with Dirk Boothe, Area Manager at COSCOM, based in Ebersberg near Munich, and the deep integration of COSCOM solutions have sharpened his understanding of the efficiency potential inherent in consistent digitalization. His first contacts with COSCOM date back as far as 1990. A good four years later, ProfiCAM VM was installed for the first time. Starting in the early 2000s, the first machines were connected, and beginning in 2014, intensive discussions with Dirk Boothe focused on the fully integrated COSCOM ECO-System. In 2015, the company began working with 3D-



The DiloGroup's core competence lies in the production of complete solutions for needle-punch nonwoven systems with the highest production speeds and nonwoven qualities

the entire tool lifecycle – from purchasing, through use on the machines, to regrinding by a service provider, and back into inventory – so that, for example, tool discrepancy lists can be generated.

Digital Natives and Digital Immigrants Working Together

Ralf Fürst is very proud to have recruited an ex-

ven’t been saved in the ToolDIRECTOR VM beforehand.”

Understanding of Digitalization Needs to Mature

Ralf Fürst worked in production planning for 25 years and has held a management position in mechanical manufacturing for quite

axis milling incl. CAM, and in 2016, machine simulation was added. And in 2021, the time had come: the company made the transition to the COSCOM ECO-System with FactoryDIRECTOR VM, ToolDIRECTOR VM, and the terminal solution InfoPOINT VM. Most recently, the SAGE ERP system was connected to FactoryDIRECTOR VM.

“I am very satisfied with the project management by COSCOM, led by Dirk Boothe. With a great deal of tact and sensitivity on COSCOM’s part, we have fully digitized our manufacturing.”

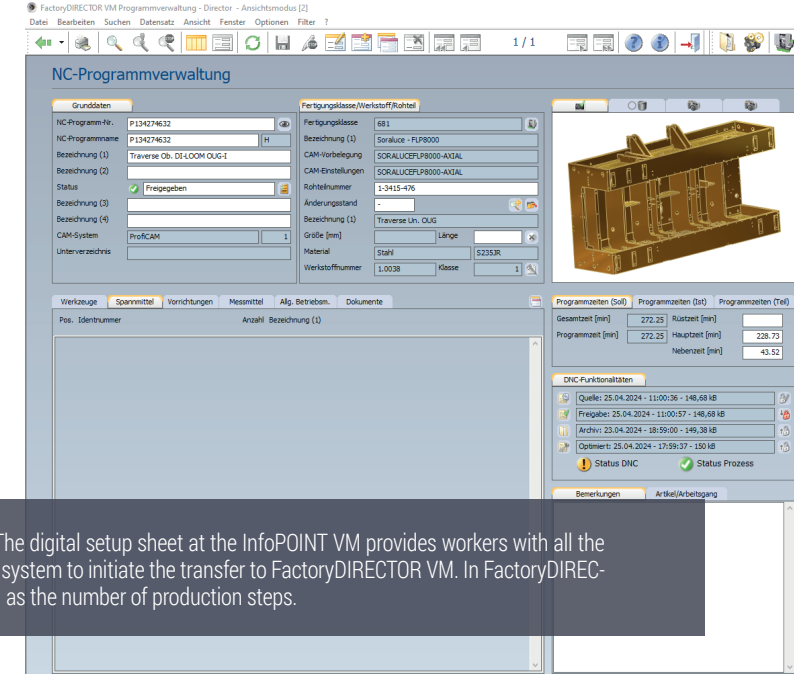


“No tool is allowed to reach the machine at our facility unless it has first been created in ToolDIRECTOR VM.”
Senior Expert on the Shop Floor, DIL0

A total of 17 machining centers are in operation on the shop floor, with the controls of two machines connected to the COSCOM ECO-System for bidirectional data exchange. All Mazak, Siemens, and Heidenhain controls can be programmed with ProfiCAM VM. “COSCOM supports various protocols, such as Ethernet and RS232, to communicate with the machines. In fact, we can provide the necessary information not only for newer models but also for older machines,” says Dirk Boothe.

Dilo’s manufacturing division employs 47 people, including two full-time programmers and another employee who is well-versed in using the COSCOM ECO-System.

The increased efficiency of working with the COSCOM ECO-System is clearly demonstrated by a crossbeam, a large steel structure (weighing between 3.5 t and 20 t!). Experience has shown that two to three machining operations with different CNC programs



Confidence that comes from knowing that no information has been overlooked: The digital setup sheet at the InfoFILTER VM provides workers with all the information they need to re-clamp the workpieces. A marker is used in the SAGE ERP system to initiate the transfer to FactoryDIRECTOR VM. In FactoryDIRECTOR VM, users can intuitively add additional order details to the product master, such as the number of production steps.

— sometimes requiring different clamping techniques — are necessary for a single machine. Such details are immediately stored in the COSCOM ECO-System and are thus fully accessible.

“We record machining times down to the minute, but billing isn’t done at that level of detail.” Ralf Fürst does not wish to comment specifically on the potential savings of the COSCOM ECO-System, as it has not been in operation at Dilo long enough; however, one point is already clear: “We are now able to analyze very precisely which measures will allow us to maximize internal value creation.” The decision to choose ToolDIRECTOR VM and FactoryDIRECTOR VM was based on the positive experience gained from the long-standing partnership with COSCOM. FactoryDIRECTOR VM was introduced in early 2022.

Safety and Confidence

It’s always the numbers that count. The digitization of the setup sheet using FactoryDIRECTOR VM has been a tremendous success. This has reduced the workload from 100% (paper-based workflow) to 10%. Whereas creating this overview used to take two to three hours, today it’s done virtually at the push of a button. “But the biggest advantage is that the machine operators have access to all the information they need for their work: simulation data, tool data, and information for retooling. This creates safety and trust. This is all the more important because we sometimes machine very capital-intensive parts,” says Ralf Fürst.

Conclusion: Professionals Driving Digitalization at the Plant

For younger employees, end-to-end digitalization is a matter of course — even on the shop floor. This is essential for remaining an attrac-

tive employer. But it is the older employees, in particular, who are the key holders of expertise. They, too, must benefit from the advantages of end-to-end digitalization. This is easy to explain in a conversation, but a comprehensive platform like COSCOM’s requires a somewhat different way of working that must be internalized. “I am very satisfied with the project management, which was led by Dirk Boothe. With a great deal of tact and sensitivity on COSCOM’s part, we have fully digitized our manufacturing,” says Ralf Fürst in conclusion. This has sustainably strengthened the DiloGroup’s competitiveness.

The integration between ERP and the COSCOM ecosystem completely eliminates the need for duplicate data storage. This significantly improves data quality.”



ToolDIRECTOR VM ensures seamless data management from CAM through tool presetting all the way to the machine. Tool lists, assembly instructions, and measured actual tool data are 100% digitally accessible.

At a glance – The COSCOM ECO-System at DILO

➤ the task:

- An easy-to-use approach to win over even older employees
- Paperless setup sheets and on-site visualization at the machines
- Central database for production and tool information, as well as toolpresetting
- 100% collision-free CNC programming, even for long-run parts
- Error-free NC program management and audit-proof change management
- Standardization of drawing and NC program archiving
- Data reuse in the production of repeat parts
- Verification of NC program results
- Meaningful value-added analysis on the shop floor

➤ the solution:

The COSCOM ECO-System with a central database and ERP integration, consisting of FactoryDIRECTOR VM for technology data management, ToolDIRECTOR VM for tool data management, the universal CAM system ProfiCAM VM, and on-site data visualization at the machine tools with InfoPOINT VM:



- ProfiCAM VM with open system architecture
- ToolDIRECTOR VM for comprehensive tool data management and integration with measuring equipment management and tool presetting devices
- FactoryDIRECTOR VM as central technology data management for implementing a single-source-of-truth approach on the shop floor
- Gateway to ERP system SAGE
- On-site data visualization with InfoPOINT VM directly at the NC machines
- Universal CAM system ProfiCAM VM for turning and 3-axis milling

➤ the result:

- 100% reliability in the flow of information to the machining centers
- Seamless data provision impresses even more experienced colleagues
- Preservation of know-how
- Setup sheets available with one click save 90% of the time required to create production documentation
- Via InfoPOINT VM, 100% up-to-date tool lists, clamping plans, NC programs, and simulations are available at the machines (paperless manufacturing!)
- Deep integration with the leading ERP system SAGE minimizes the risk of duplicate data to 0%
- 100% collision-free milling
- Significant reduction in setup and non-productive times
- End-to-end change tracking for error-free NC programs
- 100% digitization of all tool data

About

Oskar Dilo
Maschinenfabrik KG

DILO GROUP
ENGINEERING FOR NONWOVENS



In line with the “Made in Germany” quality standard, the DiloGroup works closely with its customers on innovations, inventions, and the further development of machinery and systems. Numerous inventions have enabled technological breakthroughs in the field of needle-punched nonwoven technology.

Dilo Maschinenbau in Eberbach was founded by Oskar Dilo in 1902. The company's rise to become a globally successful, highly innovative enterprise was achieved by his son, Richard Dilo. Today, the third-generation family-owned business holds the global market leadership for complete systems for nonwoven fabric production.

The DiloGroup employs approximately 450 people worldwide, with production sites in Eberbach, Bremen, and Bergisch Gladbach. It also maintains subsidiaries and representative offices in the U.S., India, China, and Turkey.

more information at
www.dilo.de



A strong team with the ability to inspire other employees on the shop floor:

Ralf Fürst, Head of Mechanical Manufacturing at DILO (left), and Dirk Boothe, COSCOM Sales Manager (right).

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