# TDMESSAGE

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"Everything we do focuses on improving our customers. Because at the end of the day, only one thing counts: your productivity"

Just over a year ago, in the last edition of TDMessage, many of you read about me for the first time in the interview – and about the plans that I had for TDM Systems. Since then, I have got to know and value many TDM customers and partners personally. The employees have welcomed me with a great deal of openness. We have grown together into a good, highly motivated team, in which everyone is inspired by the others. Together, we have already addressed and implemented many ideas.

This edition of TDMessage gives you some insight into what we have been working on over the past 12 months, as well as a look at what we are still planning. Our main focus remains on you and your requirements for a shopfloor optimized for the future. This reflects the spirit of the digital transformation, to which we already have many specific answers and will certainly continue to find others. If we were previously strongly shaped by project solutions, we are now developing more and more into a software company – with the objective of strong growth, both in our domestic market of Europe and in the USA and Asia. It is great to see how much the employees are getting behind this objective, all pulling together with energy and actively supporting these changes. We are working with more agile methods and in more interdepartmental teams. We have improved our processes, invested a lot and created some new positions. In all areas, we have put the solutions to the test and examined them from different perspectives.

We are working intensively on further developing TDM Global Line, investing plenty of know how in solutions for data management, for which there is great demand from our customers, and reorganizing our service worldwide. Of course, we are also working on a cloud solution, which is primarily intended for smaller companies, but we are still in the pre-development stage with this. Data solutions currently have priority. And last but not least, our core solution, TDM, is not scheduled for replacement. It is and will remain the benchmark for sophisticated Tool Data Management. And we are proud that we have a tried-and-tested, valuable mechanism with which our 900 existing TDM customers can also use innovations from TDM Global Line in combined operation with their existing TDM.

I look forward to the next 12 months with you and the team. Please feel free to speak to me directly at any time, because together we can get the best solutions off the ground.

All the best,

Dietmar Bohn

# »Digital manufacturing offers unique possibilities — if you make use of them.«

The manufacturing industry is offered numerous possibilities and advantages when introducing and implementing Industry 4.0 and IoT solutions. What is decisive is that the companies must be courageous and open. Prof. Dr.-Ing. Werner Bick has been very much involved in supporting companies in the digital transformation process.

**Prof. Bick, how would you define Industry 4.0 and what possibilities do you see there for companies?**

At its core, Industry 4.0 consists of four steps. The first step concerns the systematic recording of data, which is then used in a tangible way, e.g. to compare machine run times. This data is the decisive basis for the second step, to drive pattern recognition and optimize processes. The third step is concrete action on the basis of the recorded data: What has to be improved on the machines or tools so that certain errors no longer occur, or to increase productivity? The current final step of Industry 4.0 is the autonomy and far-reaching digitalization of value-added chains and processes. One thing is, therefore, clear — everything revolves around data and its possibilities.

**What is the most important factor for companies when starting or continuing their digital transformation processes?**

The key point is to work on a target vision at the start: Where should digital manufacturing take us? What milestones do we envision? Companies must, therefore, consider very precisely where they are and where they want to go — alongside the question of what possibilities are offered for this. The use of state-of-the-art technologies must clearly pursue the question of how you can generate added value. And added value mainly derives from becoming more cost-effective, faster or more productive, or improving the quality.

**Where are German companies when it comes to Industry 4.0?**

For a few years now, there has been a real move towards Industry 4.0. It took quite a bit of time to get to that point — a good five years. But by now, I don't know of any larger companies that are not involved with this issue in some way. Nevertheless,

the issue often still isn't seen as particularly important unfortunately. People try to deal with it as part of standard day-to-day business, with employees who are already overworked in any case, and then it often ends up on the back burner. In addition, due to their complex structures, large companies and groups tend to have decision-making processes that are too long. We could easily be talking about years here, but we no longer have years to spare.

### To whom does digitalization offer better opportunities? Large groups, or is it more likely to be small and medium-sized enterprises?

No matter how large a company is, digitalization is always possible and important. Each company has to overcome its own, totally unique challenges here. Large companies and groups often have long decision-making processes, but generally possess the necessary financial means. Small and medium-sized enterprises often lack these financial resources, in addition to a lack of human resources. On the other hand, they possess the necessary agility in their decision-making and implementation processes. We have to move towards a more agile decision-making logic like this, as decision-making and implementation speed are very important factors in transformative success.

### Can you see any solutions for addressing the personnel and financial issues, including for medium-sized enterprises?

What is especially important is that everyone pulls together. From employees in each area right up to management level. The management must be open to new ideas, give space for the development of such ideas and encourage them. And with good ideas, it must also act quickly. The employees involved, on the other hand, need enough freedom to really get stuck in to the challenges creatively and freely and develop solutions. If you as a

# Prof. Dr.-Ing. Werner Bick

teaches at OTH Regensburg and has been chief representative of ROI Management Consulting AG, Munich, since 1999. Prof. Werner Bick's specializes in the improvement of company-internal and cross-company logistics and production optimization. Werner Bick has been very much involved in supporting companies in the digital transformation process, from strategic planning to the implementation of Industry 4.0/IoT solutions.

Prof. Werner Bick previously worked as a Logistics Manager and Production Segment Manager for Knorr-Bremse AG.

company manage to create such a climate, orchestrate the right people into the right positions and allow them the freedom to move – then digital solutions can be implemented well. Especially with our level of qualification, in the manufacturing industry anyway, these are good conditions. To achieve them, however, we have to learn quickly from each other and companies also have to bring on board partners who can support them in the areas of data management and networked Industry 4.0 solutions.

### Where do you see the manufacturing industry when it comes to Industry 4.0 and digital manufacturing?

That really varies a lot. Manufacturing companies generally have an extremely high level of engineering expertise, which clearly makes German companies global market leaders in this area. There are companies that already have very good, functioning solutions. However, there are still companies that are dithering and still considering what they could address and how. Companies that perhaps have no

idea at all of how they can improve their data management and consequently initiate their transformation.

### For Industry 4.0 solutions, you also need more and more digital data from tools – the "digital twins for manufacturing automation". What is particularly important here?

The topic of digital twins is closely related to the development of a virtual system that corresponds to reality as precisely as possible in all relevant characteristics. In addition, collecting and feeding important data from the real world into its virtual twin is another central aspect. Both points become more or less time-consuming depending on the basic conditions and must, of course, be considered individually for each company.

### What else would you like to share with the TDMessage readers?

My core message here is clear. It would be a mistake to think that digitalization will simply pass you by. You have to face the whole topic actively and creatively, and with a certain sporting spirit. We have a new objective that we are addressing together – with a plan that you have to clearly set out in advance. Digitalization always begins with data that you have to get to grips with. If you succeed in this, many opportunities will be open to you. Infinite potential lies dormant here. Particularly from the employees, too – they often have fantastic ideas, no matter their age.

# TDM Systems
# Facts and Figures

For more than

# 25

**YEARS,** market leader for software solutions for Tool Data Management

# 110
EMPLOYEES

# 900
CUSTOMERS

## Manufacturer-independent solutions for many industries

# 10.000

USERS

In

# 11
LANGUAGES

In

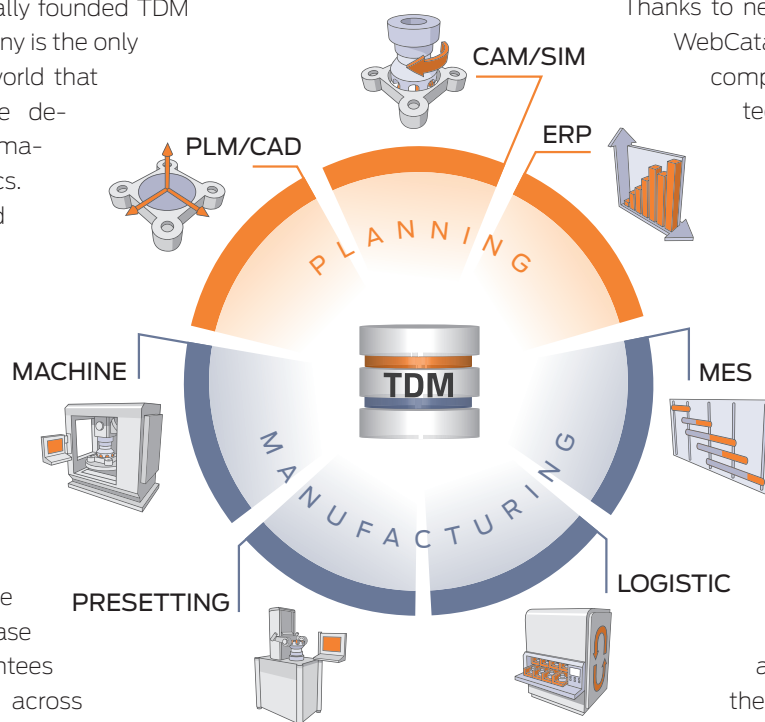# 50
COUNTRIES

REPRESENTED WORLDWIDE

## Large network of sales, service and development partners

Tool management

# A must on the shopfloor

In the era of Industry 4.0, it is important to remain competitive. Optimized processes in planning and on the shopfloor are an essential factor for this. The perfect way to achieve this is consistent tool management with a central database at its heart.

As early as the late 1980s, clever engineers at Walter AG recognized the immense advantages that a Tool Data Management system brings with it – and eventually founded TDM Systems GmbH. The company is the only software company in the world that focuses exclusively on the development of solutions for managing tool data and graphics. The core solutions TDM and TDM Global Line, the next generation of software for networking across multiple sites, help machining companies to optimize their processes, both in planning and in real production. The result is a digitalized shopfloor with demonstrably higher productivity. TDM solutions are based on a central database for tools and items. It guarantees a transparent flow of data across all departments. Only through all employees – in planning and on the shopfloor – working with the same data can synergies emerge and additional expenses due to entering things twice or amending incorrect data be avoided. The database ensures an overview

of what tools a company actually uses, where they are currently located – in the crib or on the machine – and what condition they are in. Thanks to new solutions such as the TDM WebCatalog (more on page 20), the company's own database is populated quickly and without complication with verified tool data, and TDM applications can go live directly. Small companies that are only just starting to implement tool management stand to profit just as much as large companies that are already working with TDM.

After all, that is a key feature of TDM – there is no just the one solution. No matter how big companies are when they start digitalizing their tool data, whether they have one or several plants, and independently of what production requirements they have at this time – TDM solutions are scalable, grow with you and can be adapted to current conditions again and again. TDM Systems' experts and advisors support machining



**TDM connects planning and production**

companies in introducing their tailor-made TDM and training their employees. On-site training, webinars and individual remote coaching, as well as the Virtual Academy, convey TDM-know how in a practical and modern way. An up-to-date service offer rounds off TDM Systems' portfolio (see page 28).

# i Future-proof your shopfloor: Selected TDM modules

### TDM Base Module

For TDM and TDM Global Line, this lays the foundation, as the name suggests, for consistent digital tool management. The module impresses with its simple operation and practical functions. It manages tool data, items and graphics in a clear way. A number of interfaces ensure reliable data exchange between all planning and production systems – with TDM Global Line, you can also be networked across several sites.
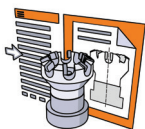
### TDM Data and Graphic Generator

Offers a large number of ready-to-use tools and items. This way, you can create the appropriate tools in just a few clicks, in both 2D and 3D – ideal for simulation and collision monitoring. Enrich your tool database with graphics. They are issued in various formats and are consequently useful for common NC and simulation systems.
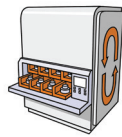
### TDM Tool Crib Module

Controls the entire crib. The paperless office, propagated for decades, becomes reality on the shopfloor with this. Your employees select the order and receive all data digitally via any output devices. Vending systems and presetting devices are integrated, so only the "to do lists" still need to be processed in TDM. RFID tags can transfer the data directly from presetting to the machine.

### TDM Shopfloor Manager

Supports you in planning, managing, and visualizing your production resources. Both the data from your tool planning operations and the inventory data from your production operations are incorporated into this. The module not only determines the tool requirements on the machine, but also removes and stores surplus tools. Defined tools can be booked to the machine and the tools inventoried.

In addition to this, the Shopfloor Manager supports tool calibration and presetting by defining and writing the tool offsets.
Do you prefer to store your tools near your machines rather than centrally? The Shopfloor Manager can also handle this without any issues. It ensures orderly removal of the tools from the machine, as well as their disassembly and return to storage.
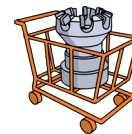
### TDM Ordering Module

Makes finding and ordering the necessary tools simple. The TDM Ordering Module always submits tool orders at the right time, is transparent, and records the articles with order reference when they are received. Independently of the system environment, the Ordering Module can be incorporated into existing processes, either as a stand-alone procurement system or integrated into an existing ERP system. Ideally, it would be linked to the TDM Tool Crib Module.

## + The advantages of tool management with TDM

**Cost reduction**
Companies that manage their tools consistently and transparently save up to 20% on tooling costs. The costs per workpiece are also reduced by up to 10% or even 20% if you increase the cutting data.

**Less machine downtime**
Machines work up to 30% more when TDM applications ensure a seamless flow of data from planning right up to the shopfloor and back again. Even 20% greater machine utilization can deliver 10% greater gross profit.

**Faster preparation**
Having the right tool at the right machine at all times saves shopfloor employees a lot of time when they are preparing new production orders.

**Agility**
Independence from manufacturers is a key feature of TDM solutions. In addition, they link the different systems that are involved in the production process. Numerous interfaces, many developed in cooperation with machine manufacturers or CAD specialists, guarantee smooth interaction and facilitate automated processes.

**Higher quality & greater transparency**
If processes are transparent, ideally matched to one another and guarantee stable production, this eventually pays off in high-quality workpieces.

## ! TDM 2019: Update now!

The Tübingen-based tool data specialists are investing a great deal of know how and resources in the further development of the TDM core solution. The TDM 2019 update is worth it. Because only this way can users benefit from the many expanded and new features that the new release contains, such as the new hybrid mode. Users can use Global Line modules such as the Shopfloor Manager in combination with TDM 2019. It is also possible to access the TDM WebCatalog (see page 20) with the current version. It provides everything that is needed for greater flexibility and efficiency on the shopfloor. Everyday work can also be made easier via the expanded Multiple Plant Management system, which allows production equipment to be assigned with even greater precision, as well as via the interface to the CoroPlus® ToolGuide. With just a few clicks, TDM users can use this to generate cutting data for items from Sandvik Coromant.

**The TDM Systems portfolio – five product lines for digitalized production:**

**1** TDM 20XX

**2** TDM Global Line

**3** TDM Cloud*

**4** TDM Special Solutions

**5** TDM Data Solutions

*Product line still in development

# The new freedom

## for Tool Data Management
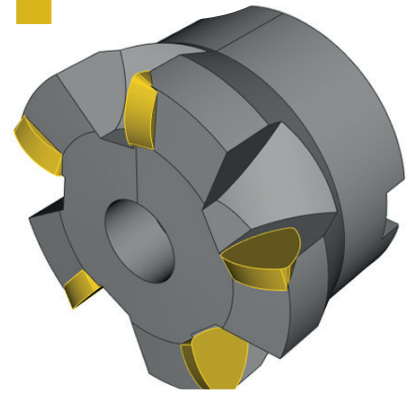
The 2019 releases of TDM and TDM Global Line are here. Particularly Global Line, the next generation of the proven TDM tool management system based on 25 years of experience, has undergone significant further developments. It now offers almost all TDM functions and more. That applies above all to configurability, which offers extensive possibilities for TDM Global Line. Furthermore, both versions access one and the same database – and they can be operated in parallel.

If it is necessary to adapt a standard tool to your own requirements, this is supported by the extensive graphics functions offered by the 2019 release.
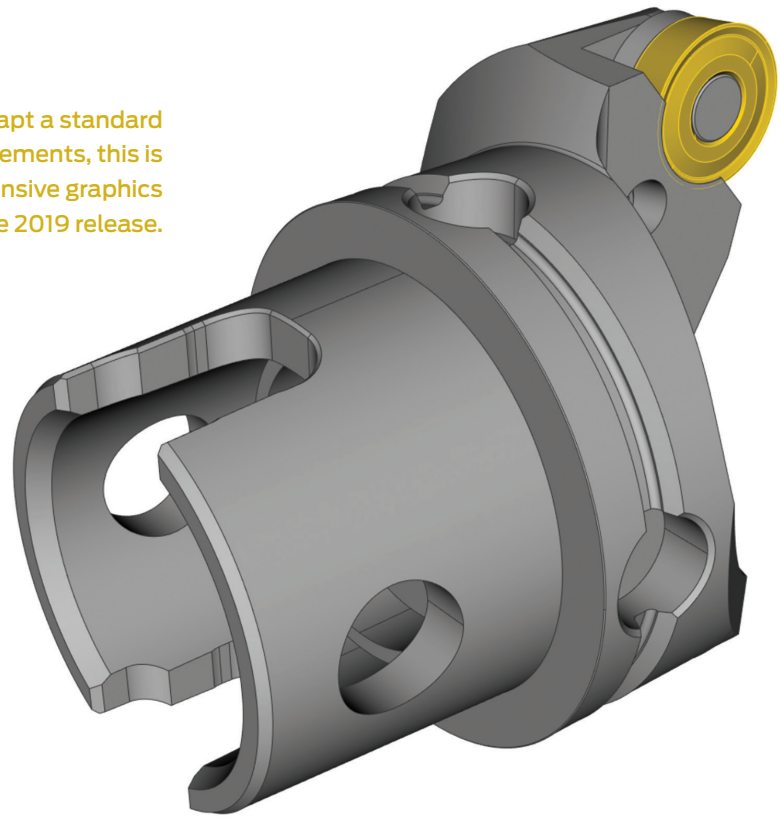
# „The TDM tool management is an integral part of our customers' digitization strategy and indispensible in their innovation plan."

**DIETMAR BOHN, MANAGING DIRECTOR OF TDM SYSTEMS**

"For me, the highlight of TDM Global Line 2019 is quite clearly the central database with global connectivity," says Patrik Nellinger, TDM Global Line Solution Owner. It is directed equally at new and existing customers, who are accessing the central tool database from various production sites. The global use of a central database results in massive savings in IT costs, productivity increases and synergies that span multiple locations. Large customers will benefit from this in particular. But TDM Global Line also offers small and medium-sized enterprises (SMEs) considerable advantages, thanks to central installation and far simpler configurability.

### What matters is what happens on the shopfloor
The crucial factor for success is ultimately what happens on the shopfloor. With the TDM Shopfloor Manager for Global Line (SFMGL), TDM provides a powerful tool that offers even more advantages with the 2019 version. It offers comprehensive workflow management with booking functions and a large number of interfaces for a huge variety of crib systems, presetting devices and machines. Interfaces for MES (Manufacturing Execution Systems), FMS (Flexible Manufacturing Systems) and ERP (Enterprise Resource Planning systems) ensure smooth integration into higher-level systems and networks. Moreover, an API (Application Programming Interface) compatible with the web helps to integrate customer projects into the systems.

In addition, multiple shopfloor configurations can now be created in order to work through workflows in various production areas, for example. Cost center assignment is also no longer a problem. According to Nellinger, "shopfloor navigation lets you select the cost center and link it with operations and the associated changes of status." What's more, the Shopfloor Manager has individual status management, which allows users to define the tool status themselves within the workflow. A further step in adapting the software to the workflow of the customer, rather than the other way round.

## Great scalability

All edit dialog boxes in TDM Global Line have configurable data fields. Our Global Line expert can explain how simply that works. "Next to each header, there is a small button that sets the dialog box to configuration mode. By clicking on the checkboxes, individual fields or groups in the dialog box can be shown, hidden or moved to other areas." It also works quite similarly with tables. Users can likewise hide, show or move columns as desired – just as they are used to with Excel. In addition, the 2019 version of TDM Global Line offers the opportunity to "register customer-specific scripts that are run in the case of certain events, so that the customer's wishes can be responded to directly".

## Up to date with TDM WebCatalog

The new TDM WebCatalog saves a huge amount of time and work. Gone are the days of huge quantities of data, downloaded with great effort, of which only a fraction was needed and which was often already out-of-date upon download, taking up storage space. "With our new catalog in the cloud, which is available to customers with a current software service and software update contract and after a simple registration, users can find and download their tools in minutes – and always in a way that is cutting-edge," enthuses Nellinger (read also the article on page 20 for more on this).

If it is necessary to adapt a standard tool to your own requirements, this is supported by the extensive graphics functions that the 2019 release offers. Tool-specific CAD functionalities integrated into TDM Global Line help to improve 2D and 3D data. Moreover, 3D rotational geometries can be generated from 2D drawings in seconds with just a click of the mouse. From now on, that also works the other way – you can convert 3D models to 2D graphics with just a click of the mouse. The 3D model simply has to be available in OF1 or STP format. This function generates a DXF file by cutting the 3D model through the XY level.

## Numerous interfaces

What use is having the best software if it exists separately from all other systems? In the age of Industry 4.0 and the IIoT, quality proves itself through the ability to communicate with other digital solutions in the company. As Patrik Nellinger says, "we are currently offering 18 quality-tested and maintained CAM interfaces for basically all common CAM and simulation programs. That is already quite unique even now and it is constantly being expanded further." The examination of complete tool data ensures that data is not only passed on but also understood by the target program. The TDM compliance checker instantly recog-

# "The highlight of TDM Global Line 2019 is quite clearly the central database with global connectivity."

PATRIK NELLINGER, SOLUTION OWNER
TDM GLOBAL LINE

nizes missing parameters and asks the user specifically for this data. In doing so, it also differentiates the various requirements of individual CAM systems and lists the missing parameters specific to the system. Only when the checker can attest that the data is complete is it passed on to the CAM systems.

## Document management made easy

With the new TDM Production Document Management Global Line (PDMGL), document management becomes a piece of cake. "You can now add any number of documents to the production equipment master data and even decide whether the files should only be linked to their actual saved location or be uploaded onto the TDM Global Line server."

With PDMGL, all necessary documents for documenting an article can be simply and securely managed together with the tool data. Here, too, there are specialized widgets that clearly show the documents available. Additional documents can be added at any time via drag & drop. PDMGL is available in the master data areas of items, tool assemblies, tool lists, machines and workpieces, as well as addresses.

TDM's planning and crib dashboard provides the necessary overview of all current tool data. Thanks to the state-of-the-art, widget-capable user interface based on current web service software architecture, the system can easily be expanded at any time by mobile and web clients.

With TDM Global Line 2019, TDM Systems offers innovative and state-of-the-art tool management, built on a web-service-based IIoT tool data platform. Nellinger's conclusion is that, "with

TDM Global Line 2019 provides an overview of the complete tool: 2D, 3D and parameter graphics with master data.
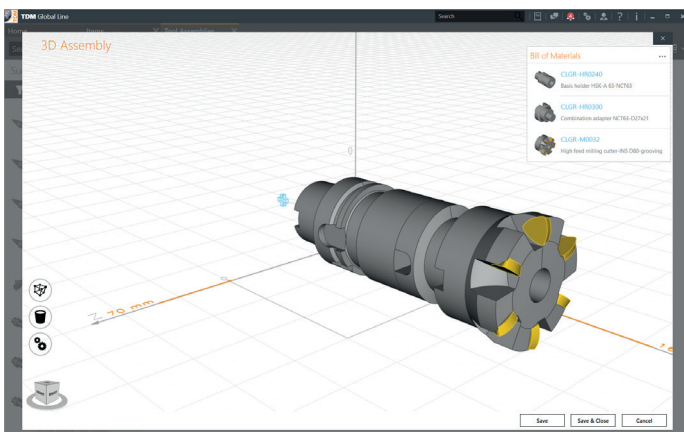


## TDM Global Line
## The Highlights

– **Modern user interface**
– **Integrated CAD functionalities, specialized for 2D and 3D graphics processing of tools**
– **Intuitive 3D tool assembly**
– **Shopfloor workflow configurable by the user**
– **The latest three-tier software architecture**
– **Quality-tested standard CAM interfaces**
– **Platform able to work with IIOT / I4.0**
– **Use of a central database by sites across the world**
– **Direct access to TDM WebCatalog**

TDM software, our customers are making huge savings on tooling costs and tool-related machine downtimes can be decreased drastically. As a result, the software has often already recouped its costs before the end of the first year."

# Sandvik Coromant in Mebane manufactures to a world-class standard and increases production using TDM

At Sandvik Coromant, the persons responsible count on digital solutions and lean production. With increasing order volumes, the number of tools used on the shopfloor is constantly growing, and consequently so is the quantity of tool data. The team in Mebane has succeeded in recording data with TDM Global Line, harmonizing it and converting it into pure productivity.

There is great demand for standard and special tools. About 3000 tools leave the production halls of Sandvik Coromant in Mebane, North Carolina, each month alone, while over 2000 tool assemblies are in use there for tool production. What machine are they currently being used on? What is their condition and for which aaplication are they best suited? Always having an up-to-date and reliable answer to all these questions is a huge task, for which a lot of data has to be collected, documented and managed.

**Better processes for data management and demand planning**

"At some point, it became clear to us that we needed a better process for coping with the growing mountain of data and optimizing demand planning," reports Julio Vasconcelos, Engineering Manager at Sandvik Coromant, Mebane. "Previously, all engineers had their own methods for scheduling tools, documenting data and passing it on to the machine operators." This individualized approach led to huge losses of time and information at many points along the process chain.

**Missing data leads to downtimes and increases costs**

The employees stored data in different documents and systems or simply remembered it. Exchange and comparison did not take place. Vasconcelos now knows that "the downtimes due to data that was missing or could not be traced cost us a lot of money". Leandro Pereira, Automation Engineer at the Mebane plant, adds that "we had no database in which the original data was stored. So it was often altered, duplicated and even falsified." The result was many uncertainties with important tasks such as simulations, because engineers did not know whether the data they were working with was correct.

**Tool data in the right place at the right time increases productivity**

It was clear to the persons responsible in Mebane that the management of tools and their data had to be completely changed. "The right solution was luckily close at hand," Vasconcelos is happy to say. "It was within the family." Because, just like TDM Systems, Sandvik Coromant is part of the Sandvik Group. The global mechanical engineering group has been developing solutions for automation technology and forward-looking production methods for some time. Six years ago, a study concluded that TDM Systems' tool management solutions are the most capable of fulfilling the requirements of monitoring and optimizing tool data. So TDM became an important component of Sandvik's future scenarios. "As Sandvik has already carried out



**2**



**3**

**2** Thoroughly consistent data: The tool stock is completely digitalized in a database.
**3** Today, tools on the machine are replaced only if necessary. This saves time and money.

**1** With TDM, Sandvik Coromant in Mebane is taking a big step towards lean manufacturing.

**4** "To me, the only thing that counts is productivity, which is why we decided on TDM Global Line," says Julio Vasconcelos, Engineering Manager at Sandvik Coromant, Mebane.
**5** TDM ensures that the tool data is available in the right place at the right time.



comprehensive tests and evaluations of the TDM software, we had no doubt that it was the right solution for us," says Vasconcelos. "TDM is in the position of being able to integrate all systems that are used by us." And efficient tool management depends on precisely this. It ensures that the tool data is available at the right time in the right place, from tool selection through use in production planning to seamless transfer and use on the shopfloor.

### Consistent tool data in each process step ensures comprehensive savings

When introducing TDM in Mebane, the TDM Systems experts determined that the plant was run very well. However, there were still opportunities for improvement, especially with regard to tool data. And the persons responsible at Sandvik Coromant were determined to exhaust its potential. The first step was defining all tools. No easy task, considering the thousands of items and tool assemblies. Previously, the programmers very often

## "To me, the only thing that counts is productivity, which is why we decided on TDM Global Line."

JULIO VASCONCELOS, ENGINEERING MANAGER AT SANDVIK COROMANT, MEBANE

had to leave their desks and go to the shopfloor to find the right tool, or search for it in the crib. A huge amount of time was expended, leading to unnecessary costs. Implementing TDM significantly improved the situation. "Thanks to the TDM tool graphics and TDM modules for resource management, guesswork and uncertainty on the shopfloor is finally at an end," explains Vasconcelos. "With TDM, we manage the tool data from the CAM software through simulation right up to the machine and operator. Both the programmer and the operator can now rely on the fact that they are working with the correct data and the right tool."

### Available tool know how considerably reduces application errors

TDM also records the features and potential applications of tools and helps to determine the right tool combinations for different production methods. In addition, the system stores geometric and cutting data for every tool assembly for each NC operation. It creates 3D tool gra-

**6** Reducing application errors ensures a continually high quality of Coromant tools produced.

# "For us in Mebane, mediocrity is not an option — we want to be the best."

JULIO VASCONCELOS, ENGINEERING MANAGER
AT SANDVIK COROMANT, MEBANE

phics for NC and simulation analysis, and saves tool lists from the NC programs for later use. This can substantially reduce application errors. The machine operator knows what the tool should look like based on a graphic. Both the machine operator and the engineer always have access to the latest data. "We can use the comprehensive data everywhere. This eliminates unnecessary tool changes when we are producing a new workpiece," says Vasconcelos. "That saves us time and money."

Transparency regarding the stock of thousands of tools and items also has a positive effect on storage. This, in turn, optimizes purchasing, decreases procurement costs and reduces storage costs.

**Conclusion**
Sandvik Coromant Mebane is currently using 14 TDM licenses. In the future, the software is also intended to integrate MES functions such as procurement and stock monitoring. The team in Mebane is

also working on a plan for how the TDM system developed here in the plant can be migrated to Sandvik Coromant plants at sites in Germany, Sweden and India.

Vasconcelos is very positive when taking stock. "TDM has become an essential part of our successful approach – and an important part of our vision for the future." And what does this vision look like? "We are not satisfied with being a very good tool factory. We want to be the best!"

## Sandvik Coromant, NC plant, Mebane:

Swedish tool manufacturer Sandvik Coromant has 130 employees in the areas of design, management, programming, development and production at its Mebane site in North Carolina, USA. Twenty 5-axis machines, ten lathes and several multi-axis grinding machines are in use in a production area of about 8000 m². They produce about 3000 tools per month.
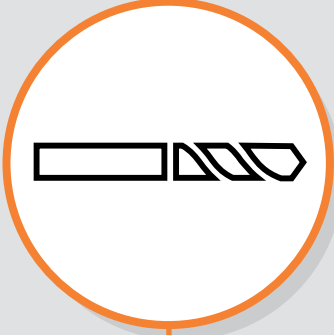
# The new TDM WebCatalog is revolutionizing data input

## Manufacturing companies know:

There is no way getting around digitalization. The new TDM WebCatalog is a networked tool for populating your tool database and keeping it up-to-date. Thanks to up-to-date tool data from the cloud, the company-internal database can be populated quickly, automatically and without complications – and the conditions can be created for putting TDM applications into operation directly.

"Installing tool catalogs on your own server is a thing of the past with TDM WebCatalog," Uwe Sauer, SMS Projects & Strategic Projects Manager at TDM Systems, is happy to say. "It not only conserves the company's IT resources, but also avoids additional expenses from using outdated catalog data." This is because the TDM data from the cloud is always up-to-date and can be downloaded and further processed directly in TDM and TDM Global Line – both as of the 2019 release.

### Networked TDM-Know how

TDM Systems has already been offering its users solutions for creating and managing tool data for more than 25 years. "The cloud catalog is the logical further development and a modern service that is indispensable nowadays and makes the everyday work of our users even easier," says Sauer. The TDM WebCatalog is, therefore, not simply a tool catalog in the cloud. It is an intelligent, networked tool with the full TDM know how.

– **The intuitive tool search** gets results quickly. If users do not know specific information, such as geometric or tool parameters, TDM classification, the order number or supplier, they can simply search by inputting text.

– **TDM Systems** is the only provider to supply application-specific data for metal-cutting tools, including 2D graphics and 3D models

" The TDM WebCatalog is a tool that makes machining companies' entry into the world of digitalization much easier."

UWE SAUER,
SMS PROJECTS & STRATEGIC
PROJECTS MANAGER

– and also does this via the WebCatalog. If users establish in the account settings which CAM system they need the data for, the solution indicates whether or not the necessary parameters for the selected CAM system exist.

– The TDM application transfers the data records called up **in the TDM WebCatalog** to the central database without any steps in between, in compliance with the TDM class and group structure.

– **Is the downloaded data complete?** The tool knows the answer to that. It checks the parameters transferred and highlights any missing parameters. The user can enter these manually and consequently improve data quality.

**Even more in the future**

Sauer is convinced that, even in the starting phase, the TDM WebCatalog is a tool "that makes machining companies' entry into the world of digitalization much easier, because the database is correct." "Our users, no matter whether they are new to TDM or have been using it for many years, can use the tool to quickly and easily populate their company-internal tool database and keep it up-to-date." So far, the TDM WebCatalog contains tool data of leading manufacturers and retailers ARNO, the Hoffman Group, Sandvik Coromant and Walter. TDM Systems intends to integrate the data of further manufacturers and is also planning to cooperate with online databases to expand the cloud catalog into an abundantly populated treasure chest of data.

The TDM WebCatalog is the first solution to come from the still very new Data Services team at TDM Systems – and will not be the last. "We are working hard on further data tools for automating processes," promises Adir Zonta, Business Development Manager for Data Services at TDM Systems.



# "We are working hard on further data tools."

**ADIR ZONTA, BUSINESS DEVELOPMENT MANAGER – DATA SERVICES**

Two further solutions are currently in the pipeline. One of them is focused on reducing the time it takes for the mass import of data that new TDM customers need. Adir Zonta makes it clear that "we want to be unbeatable here in initial data population for new customers."

## Using the TDM WebCatalog

– Simple registration: All those interested can register at www.tdmcloudline.com to view the content there. Users of TDM 2019 and TDM Global Line 2019 with a current software service and software update contract can also make use of WebCatalog content. With the assigned access code, they can log directly into TDM WebCatalog to use it.

– Simple administration: Companies can specify several WebCatalog users in their accounts and determine comprehensive settings, e.g. for which CAM system the data is needed.

– Simple data streaming: Once registered, users have unlimited access to all data in WebCatalog. The service is free for TDM customers with a current software-service and software-update contract.

# „No data, no digitalization"

Adir Zonta, Business Development Manager for Data Services at TDM Systems, is an expert in the data and machining world, thanks to his many years of experience at TDM Systems and, occasionally, also at Sandvik Coromant.

**Why is data important on the shopfloor, Mr. Zonta?**

Data fuels digitalization. At present, manufacturing companies can only achieve added value with reliable data. To prepare as good as possible for planning and managing cutting tools, companies need real data, such as data for CAM programming and simulation, which is known today on the market as a 'digital twin', as well as data for production control systems.

**How does TDM Systems support companies in implementing their digitalization strategy?**

We are the only tool data specialists who can process and supply data in the way needed by the systems involved in production. At TDM Systems, we have the specialist knowledge to provide our customers with precisely the data that they need for their shopfloor tasks. From tool article management for crib inventory to the most demanding data, such as CAM programming and machining simulation.

**What role does the new TDM WebCatalog play here?**

At TDM Systems, we passionately advocate reducing waste and helping our customers to focus on the expertise they possess that creates added value for them. Searching for tool data and dealing with individual files as well as catalog files are time-consuming tasks. With the TDM WebCatalog, we have completely eliminated the task of processing files. I like to compare it with listening to music. Now when you want to listen to music, you can search for and enjoy the music that you love in a targeted manner. So why not apply the same principle to tool data management?

# Two strong partners

## TDM Systems & DMG MORI

Knowing exactly what is happening with the tools in the machine — this is the task that TDM Systems and DMG MORI have set themselves. The results of the joint project — first presented to the public live at EMO 2019 in Hanover — could cause quite a sensation. But it shows what Industry 4.0 means for day-to-day operations.

"The global, sustainable innovator, DMG MORI, with whom we have been a partner for many years, wanted to link a DMC 160 FD duoBLOCK to TDM for its Swiss customer Bruderer — a technological trendsetter in stamping technology," explains Volker Schwegler, Engineering Consultancy team leader at TDM Systems, describing the start of an exciting project with interesting prospects. The milling and turning all-in-one machining center with the app-based control and operating system CELOS is a step towards intelligently networked production. ToolFilter maintains an overview of tools.

DMG MORI had taken a step forward with the "ToolFilter" software application that it had developed itself for its Siemens controller. Thomas Lochbihler, Head of Technology Excellence at the DMG MORI plant in Pfronten, comments on this function. "The application, which also carries out direct data exchange with the machine control system, gets going as soon as one of the machine's ten machine pallets has been filled. It checks whether the tools needed for the relevant NC program are available in the magazine and their condition. Having done this balancing, it shows missing tools and information about available tools on the screen."

This data now uses TDM software. Schwegler: "We have developed an interface for this that can receive and understand the data." TDM already had experience with such interfaces from an interface with a similar function — an interface to a specialist software for connecting machines and systems whose services use TDM if there is no corresponding software from the machine manufacturer. TDM can, however, also take a two-pronged approach if a single shopfloor contains machines from different manufacturers. What makes that possible is the very flexible TDM Shopfloor Manager, which can either do the planning itself or leave this procedure to the machine.

### Fully digitalized cycle

The interface developed by TDM Systems for DMG MORI, based on a web service, currently offers three main functions. Firstly, it receives a tool requirement notification from the tool machine controller. TDM creates a pick list from these requirements and derives a presetting order from this.

Through presetting, the tool becomes a unique inventory tool and receives a unique holder ID, which is, in this case, imprinted on the toolholder in the form of a data matrix code. In principle,

**CAD CAM**

NC Program Files

**DNC Server**

Tool List
· NC program tools

Tool Assembly Data
· Tool Basic Data
· Tool Geometry Data
· Tool 2D/3D Graphics

# TDM

Tool offset
+ actual data

Tool net
requirement

NC Tool List

Pick-List
Net-Requirement

Nominal Data
Actual Data

**DMG MORI**

Tool Demand Calculation
· Difference List

· NC Program
· Tool Data
· Magazine Data
· Tool Offset Data

Tool Data
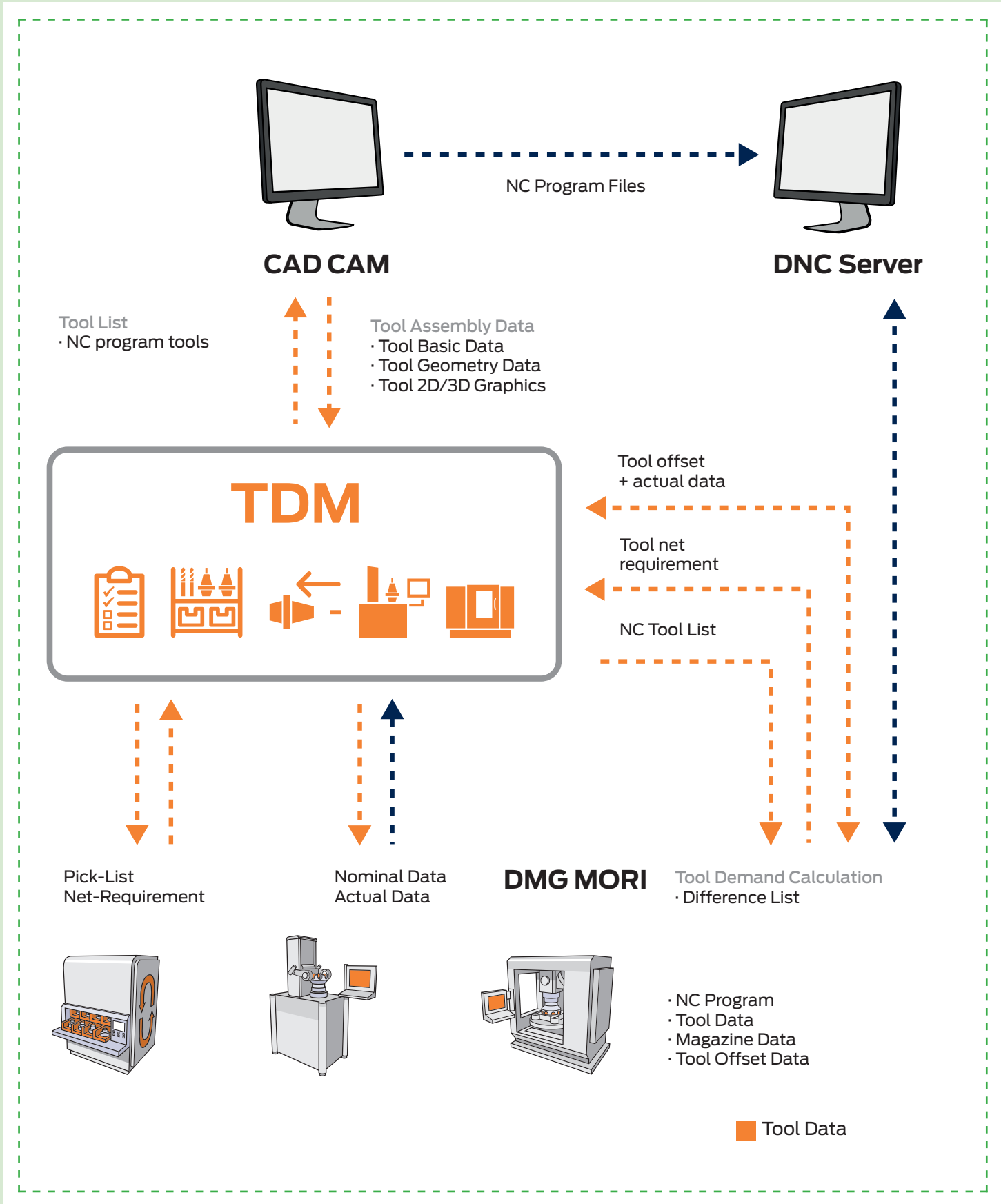
according to Schwegler, any other form of identification could also be used for this, for example an RFID chip or a simple tool number entered manually – it just has to be unique. With it, TDM can manage several similar tool assemblies, which of course differ in their actual data, in parallel. It also takes care of potentially necessary sister tools for one or several machines.

The tool is transported from the presetting area to the machine, ready for use. There, the application scans the holder ID and retrieves the tool's actual data from TDM. "TDM sends all tool data about precisely this tool directly to the machine control system," explains Schwegler. "Directly" can be understood literally, because the data is passed on to the machine control system on a one-to-one basis. Everything must be correct here, to avoid any machine down time.

> ## "DMG MORI's powerful and precise machines have very strict requirements when it comes to the quality of tool data – and we adapt this down to the smallest detail from machine type to machine type."

**VOLKER SCHWEGLER, ENGINEERING CONSULTANCY TEAM LEADER AT TDM SYSTEMS**

### Mapping performs allocation work

"To ensure that this goes smoothly, we develop a mapping for each machine control system, to allocate the values correctly. This works in a similar way to the CAM and simulation systems interfaces," says Schwegler. This is a lot of work for the TDM Systems experts, because the formats differ depending on the controller, the machines and the requirements of the machine manufacturer's magazine management.

It is especially challenging if it concerns a DMC 125 FD duo-BLOCK, as in this specific case. The milling and turning all-in-one machining center is available with a spindle of up to 1800 Nm and is extremely precise thanks to its robust design and intelligent cooling system. "Such powerful and precise machines have very strict requirements when it comes to the quality of tool data – and we adapt this down to the smallest detail from machine type to machine type." However, not all controllers are the same here. Schwegler considers the proportion of identical functions to be about 80%. The remaining 20%, the OEM parameters, come from the machine manufacturer. These even differ between different series and machine types from the same manufacturer.

### What it really looks like

What is especially exciting when it comes to digitalization and Industry 4.0 is an interface function that Schwegler describes as follows: "We receive up-to-date information on the condition of the tools in the machine from the controller and now know precisely how the tool looks after the spindle has been used, what the remaining tool lifetime is or whether it is broken. This gives us the opportunity to respond in good time and inform the machine operator in preparation."

The "Tool Report" consequently provides a real-life status notification about every tool in use, in a way that was not previously possible. This way, not only planning but also actual demand for tools can now be determined in good time, bearing in mind the service life of the tools. This also means that it is no longer a problem to provide sister tools in good time, Thomas Lochbihler from DMG MORI is happy to say: "This lets our customers make significant savings when it comes to setup times and provides them continuous, uninterrupted production."

## NOVEMBER 20–21, 2019

### The highlight of the TDM calendar

The TDM User Group is meeting in Schweinfurt this year. On **November 20th, 2019**, in cooperation with BOSCH Rexroth, TDM Systems is inviting its users to its annual exchange and networking event, including a plant tour at BOSCH Rexroth. As a relaxed introduction, the traditional common dinner with all participants, is taking place the evening before.

TDM Info Day will follow on **November 21** – for what is already the third time. Here, companies interested in tool data management with TDM receive both profound insights into the solutions and the opportunity to exchange practical tips with users and partners.

**Interested? Further information can be found here:**

**Our videos provide a good insight into last year's events.**
**Take a look here:**

**TDM INFO DAY 2019**
WITH PARTNERS

**TDM USER DAY 2019**

**rexroth**
A Bosch Company

## Cooperation brings decisive advantages

Do you want to create tools out of Sandvik Coromant items for plants around the globe in just a few clicks? The Swedish tool manufacturer and TDM Systems are making this possible. The jointly developed interface between the CoroPlus® ToolGuide and

TDM/TDM Global Line accelerates production processes. Tools are quickly available and can be used worldwide, due to an intuitive user navigation system and access to a central tool database.

The new interface is one of many. Together with partners and customers, TDM Systems is developing this in a targeted manner, for the optimum interaction of all systems involved in the production process. The result is cost-effective production.

TDM Global Line
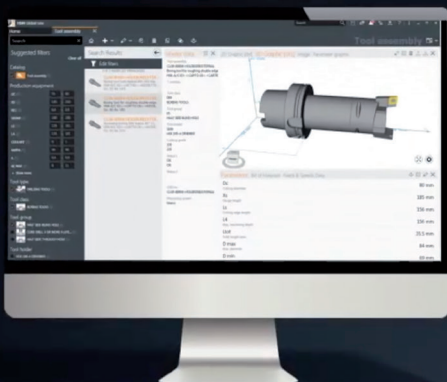
CoroPlus® ToolGuide
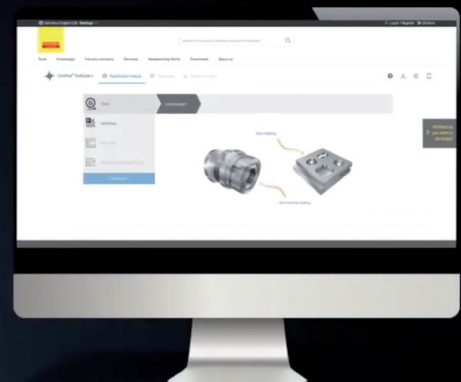
# Quick service – rapid achievement of objectives



**Service Center Europe / Africa**
Tübingen, Germany

**Service Center North America**
Chicago, USA

**Service Center Asia/Pacific**
Kuala Lumpur, Malaysia

**Service Center South & Central America**
Florianopolis, Brazil

**Customers submit their requests via a global ticket system. These are automatically directed to the responsible service and support centers. There are currently four centers for Asia, Europe, North America and South and Central America.**

Photo: Vdant /istockphoto

If questions about the application come up, users expect quick and customized support. Digitalization and omnichannel communication help companies to offer faster and more customized services. If service was once an obligation, today it is freestyle — and a key factor in success.

Uwe Damberg, Service & Projects Manager at TDM Systems, knows that "users have less and less time." "That means, on the one hand, that they cannot wait for a member of the service team to visit them on-site if problems need to be addressed or software implemented. On the other hand, they have less and less time to participate in training." With "Service Concept 2020", TDM Systems is taking requirements and wishes of its customers into account. Both sides benefit from this. As more and more can be handled online and thus in real time, service staff and TDM specialists have more time for individual customers. In particular, the few, sought-after specialists, have increased capacity for direct contact, as they no longer have to spend time traveling or planning travel. There is also a third party that benefits — nature. Less travel means less $CO_2$ emissions. "Between January and May 2019, we reduced travel activity by 20% compared with the same period in the previous year. That is our contribution to a greener industry," Damberg is happy to say.

### Faster, more and less expensive

Thanks to the opportunities for communication and remote maintenance that have emerged from digitalization, customers now receive the help that they need much faster than before. Ten service desk technicians and around 40 service technicians deal with customer requests worldwide. Often, it is the little things that interfere with production operations. Using remote access, the TDM experts can then navigate easily and flexibly through the software together with the user and point out solutions. This not only reduces the response time for service requests, but also makes service calls cheaper. "Previously, we always had to spend several days on-site at the customer for implementation, support, training and service. This was the only way the time spent on travelling was worth it," explains Damberg. "That means that we also billed these services by the day." Today, pricing is more flexible. Customers can purchase service units on an hourly basis and software implementation packages at a fixed price. You can order a service easily via the website in the TDM Systems customer portal.

### Transparent and well-structured

The advantage of on-site operations is that the customers see what the TDM experts are doing for them. If everything is done online, a great deal of what goes on in the background is concealed. State-of-the-art services must, therefore, be well-structured and, above all, be described precisely. According to Uwe Damberg, "At the moment, we are making really great progress in further optimizing our entire range relating to implementation, support and service. As the name of our service concept suggests, we will be implementing all planned measures by 2020, so that our users continue to get precisely the services that they need." Transparency is generally required for all TDM solutions. However, customers are increasingly demanding ready-to-use applications, as they have fewer and fewer specialists in-house. The easier the user interface software is to operate, the more time it takes to develop it, but that pays

**Uwe Damberg leads the Service & Projects department at TDM Systems.**

off in conjunction with tailored service packages. Comprehensive documentation supplements the full package.

At TDM Systems, everyone has ultimately agreed that they have a common objective — supporting customers in advancing faster with TDM solutions and achieving their goals in a better and more efficient manner.

**At the annual TDM User Days, held at DMG MORI in Pfronten last year, TDM users and experts meet to talk face-to-face.**

# Knowledge on-demand

As is the case with service and support, there is a clear trend when it comes to training: Users lack time. Very few users can take time out of their everyday work for seminars lasting several days. What is in demand is information that users can access exactly when they need it. TDM Systems has tailored its training program to this requirement and split it into two areas.

## 1 Standardized online training:

Through the competence center on the website, TDM Systems offers clearly defined training on the common functionalities of TDM software. Lasting one to two days, the training is comprised of separate small modules. There is one exception – the initial training for new users takes three days.

## 2 Transfer of knowledge and consulting on demand:

Users can also contact a TDM consultant directly online, who will answer your questions personally and promptly in a video conference in one to two hours and discuss any company-specific requirements.

Twenty-five TDM trainers share their knowledge with users worldwide. The newly created Education Services department ensures that the quality of training is at the same high level around the globe and that all trainers are always kept up to date. "In Tübingen, we set the quality standards that apply worldwide," explains head of department Stefan Schmid. "The trainers must regularly participate in online training. In addition, they all come to Tübingen once a year, and having their own video portal helps them always stay up to date."

Another important service is the "self-service tools". TDM Systems' Virtual Academy for customers with a current software service and software update contract has a large number of video tutorials available for this. They guide the user through scenarios and modules – anytime, anywhere. An FAQ database also offers valuable support.

**"A key tip for finding out what the customer wants – listen!"**

GÖTZ SCHRADE, AREA SALES MANAGER
FOR EXPORTS AT TDM SYSTEMS

# International success through listening and experience

Sales at TDM Systems is being expanded. This is necessary to achieve the growth targets that the company has set itself and to be diverse and in a stable position in a globalized world.

The sales employees at TDM Systems know their markets and their customers. Every customer has different requirements and demands and therefore needs tailored advice. TDM Systems offers this. To maintain close and targeted support in the growth phase, the sales team must also grow.

Until now, the sales team has mainly focused on Europe and the USA. Now, the aim is to develop other attractive markets, such as India and China. This is a task that the partner team created at the start of the year will be primarily responsible for (see page 46). "Team work is important for us in direct sales as a multiplier. We work in close consultation, which leads to many synergy effects," says Jürgen Bauckholt, Area Sales Manager for Northern/Western Germany. The closely interlinked collaboration of back office and field sales with all areas at TDM Systems – from partner ma-

nagement and marketing right up to service, development and project planning – showcases one of the strengths of the company. Everyone pulls together and always focuses on the customer when doing so.

Götz Schrade, Area Sales Manager Export at TDM Systems knows that "our solutions offer massive added value. In sales, we focus on developing solutions together with our customers, so that this added value is also fulfilled." To grow successfully and expand sales, you need a combination of product and service expertise, knowledge of the respective customer and knowledge of human nature. "A key tip for finding out what the customer wants – listen! That results in satisfied customers and therefore more stable markets. And it is precisely this that enables us to grow successfully and internationally."

Photo: rolandtopor/istock

# Saving millions

With TDM, you can massively reduce costs

Promises have been made and expectations are high. With the decision to introduce TDM, the persons responsible are hoping to achieve improvements, transparency and cost savings. After having made an investment and taken the effort to introduce something new, you want to break even as quickly as possible. Our case studies, which you can find regularly in the TDMessage and on our website, tell you that TDM software can live up to these expectations.

Concrete figures regarding cost savings, however, are rare. Because these successes when it comes to cost savings give companies an incredible competitive advantage. Two long-term TDM customers from completely different industries and completely different-sized companies documented internally what the initial situation was when they started their TDM projects and what unimaginable cost savings and improvements they have already achieved in the medium term – namely, more than 1 million Euro each!

**CASE 1**

## New tool circulation saves time and eliminated the tool crib at the CNC machines

How many tools do we have, where are they currently being used and when will they be available again? An international aerospace supply company did not know the answers to these questions. The supplier's product range is broad, meaning that the machine cycles are very different, including when it comes to their run times. Intensive CNC machining requires complex and expensive tools, which results in high capital commitment for procurement and storage. The persons responsible wanted to reduce the high tool stock levels, as well as the variety of tools.

**The persons responsible wanted to achieve the following:**
– Development of a digital tool database with parameter-based search options
– Transparent crib and stock management
– Clear tool circulation with order-specific provision directly to the machine; complete elimination of the individual crib at the machine

**The following processes were improved:**
– Fast creation of a tool database with the TDM Data and Graphic Generator
– Reliable tool data at the click of a mouse: Parameterized tool items and tool assemblies available
– Transparent tool logistics: Automated removal from crib

and booking of all tool actions
– Minimal tool preparation: Through calculated tool requirements and transparent tool circulation
– Quick and safe tool assembly: Tools are assembled and preset in the presetting room with the support of TDM – no longer at the machine by the machine operator.

**The following savings were achieved: Cost savings of more than 1 million Euro over the whole year thanks to:**
– Long-term planning in the area of CAM and at a shopfloor level (reduced downtimes and process interruptions)
– 3000 optimized tool assemblies, available and ready for use

**Time savings:**
– Time no longer has to be spent searching for tools
– Thanks to optimized tool preparation, the machine run time has increased by more than 2500 hours per year and machine.

**CASE 2**

## Successful SME reduces tooling costs while increasing production by around 80%

A medium-sized automotive supplier – specialized in motor vehicle gearboxes – mass-produces manual gearboxes for the market's leading automotive manufacturers. Production is clocked. Unreliable tool availability was causing problems in production and was therefore the most frequent cause of downtimes. The company managed its tools using outdated, maintenance-intensive software. A central database was not in place – instead, employees from several different departments recorded data manually and independently of each other. Data was not exchanged. This meant that there was no overview of the number and condition of tools, and therefore no planning security either. In addition, it was not possible to calculate tooling costs for a workpiece or a gearbox series with the information available.

**The persons responsible wanted to achieve the following:**
– Planning security through predictive tool calculation and procurement
– Transparent crib and stock management, recording of all tool flows and cost assignment
– Calculation of tooling costs according to series and free time interval

**The following processes were improved:**
– Organization of tool circulation: Better use of stocks and their tool lives and reduced downtimes
– Consistent standardization of tools according to workpieces enables predictive order management, improved ordering conditions and reliable production planning
– Monitored ordering of new tools prevents high tool variety
– Controlling tooling costs and requirements for each workpiece/group improves cost transparency

„With the implementation of TDM, a lot of our customers have learned that there is a lot of value added potential in tool data and have saved costs in serveral areas."

DIETMAR BOHN, MANAGING DIRECTOR
TDM SYSTEMS

**The following savings were achieved: Even in the start-up phase – the first three years – an ROI of more than 150% was achieved.**

**Result over several years, taking production development into account:**
– Considerably lower tooling costs thanks to improved utilization of the tool stock and remaining tool life
– Consistent standardization improves process reliability
– General time savings allow improved utilization of available personnel resources

# "Where is that tool?"

Long searches for tools and items? For the Austrian company Testfuchs, this has been a thing of the past for a long time now. Intelligent Tool Data Management reduces costs and increases productivity.



"Where is that tool?" used to be the most frequently used sentence at test equipment manufacturer Testfuchs.

Testfuchs is a global player in the field of test equipment and complete aerospace test systems. Around 4000 tool items are in use at Testfuchs for the production of devices which are used for testing hydraulic, electronic, pneumatic and fuel components. What was missing for a long time was transparent crib control and Tool Data Management. The result was that the machines were standing still too often because tools were not at the machine at the right time or urgently needed items could not be found. Moreover, no one was systematically recording what condition the tools were in and when new ones were needed.

Constructing a new production hall provided the impetus for also modernizing tool data management and making it fit for the future. According to Mario Samm, Tool Manager at Testfuchs, "we wanted to know at all times which tools were in circulation and where they were, and we wanted to make the tools available when they were needed at the machine."

**Testfuchs clearly stated the resulting requirements of a solution:**
– Transparency of items and tool assemblies
– Automated removal from crib and booking of all tool movements
– Order-specific and demand based tool provision
– Development of the tool database, including 3D graphics
– Tool database serves as a knowledge database thanks to reproducible cutting values

After thorough research and visits to reference companies, the persons responsible at Testfuchs were sure that TDM Systems offered the most advanced solution that fulfilled all requirements.

Robert Schlosser, Head of Mechanical Production at Testfuchs, summarizes the added value offered by TDM 2018 as follows: "We save a lot of time as well as money, because we are no longer searching for tools but finding them immediately and buying new tools in line with use and demand. Using stored cutting values, we can also select tools in a targeted way, and therefore use them much more efficiently. And we were able to considerably reduce tool-related machine downtimes thanks to optimized setup and presetting processes."

## Testfuchs' solution

TDM Base Module, DM Presetting Module,
TDM Tool Crib Module, DMshopcontrol,
TDM Data and Graphic Generators
Interfaces to: Presetting devices and crib systems,
ERP system and CAD/CAM/simulation systems

# HELP WITH DATA GENERATION IN TOOL DATA MANAGEMENT

The TDM Tool Data Management system helps you considerably increase production efficiency with its extensive range of functions. As with all IT systems, the first step into data management with TDM, too, is the creation of master data – after all, nothing can be gained from an empty database.

# The standard tools for master data creation and maintenance

How demanding this task is essentially depends on three factors:

**1.** On the quality requirements that the production process places on your data. In principle, TDM does not require much to manage your tool data. Tool assembly, the most important process when it comes to planning, generally works smoothly with the data supplied by the tool manufacturers. However, other systems usually still exist in the production environment that are operated using data from the TDM database. CAM systems, in particular, place further specific requirements on data.

**2.** On the complexity of the tools to be managed. TDM also supports turning and grooving tools, in addition to drilling and milling tools. Machining processes are extremely varied in these production areas in particular. The geometry of the tools is generally more complex than with rotationally symmetric tools.

**3.** On the quantity of data that has to be input. For most of our customers, handling tool data has already begun long before the acquisition of TDM – after all, new tool data is accrued automatically with each new tool item. As a result, it is not uncommon for a machining company to face the task of having to create hundreds or thousands of master data records upon introducing TDM.

Just as important here as knowledge of the latest tool technologies is awareness of TDM functions, to help you make the right decisions – for instance, in terms of tool classification.

Luckily, TDM offers a number of useful functions that will help you to create your tool master data. In addition, you can utilize our employees' many years of experience in training and service events to acquire the necessary know how.

TDM offers a number of useful functions that will help you to create your tool master data:

## 1. Data acquisition: Catalogs and data generators

**Data import from catalogs:** With the TDM manufacturer catalogs, you have access to plenty of up-to-date tool data of well-known manufacturers. From 2019 onward, a TDM WebCatalog is also available. Here, you can access manufacturer data that TDM Systems maintains for you in the cloud. This means no more time and effort spent on installation and updates. The procurement of tool data has never been so simple!

**Data generation with the 3D Data and Graphic Generators:** The 3D Data and Graphic Generators also provide you with thousands of templates for tool items, which you can use to generate data records for standard tools or which you can simply adapt to your own tools by changing the parameters.

**Mass import of data with the Import Assistant:** The Import Assistant makes it possible to perform mass imports from catalogs, generators and our own Excel tables.

## 2. Compliance test of existing data

Once the data has been added to the database, TDM supports you further with a compliance test. It takes into account not only the data requirements at the TDM planning level, but also the data requirements of your CAM systems. The compliance test finds and displays missing data fields, so that you can quickly correct such errors. In the TDM WebCatalog, the compliance test is already available online – tailored to your system configuration and before you even download the data.

## 3. Generators and editors for maintaining existing data

A number of other tools, such as Contour Generators and Rotation Generators, 2D and 3D Editors or tools for data cleansing such as TDMcontrol make up the equipment with which you can quickly and efficiently intervene in the event of an error.

# SELF-HELP ASSISTANCE: OVERVIEW OF TRAINING AND SERVICES AT TDM SYSTEMS

Our training opportunities provide the knowledge you need to create more complex data systematically and correctly.

## 01 ▶ Basic training

The training courses for the TDM Base Module and TDM Base Module Global Line communicate the basics of data maintenance, at an item, a tool assembly and a tool list level.

After this training, the participants can assess the scope of data required for their use case, classify most tools independently and create, import and edit data.

In addition, we offer specific training on Generators and Data and Graphic Editors:
– TDM Tool Contour Generator and TDM 3D-Revolve Generator
– TDM Data and Graphic Generator
– TDMcontrol
– TDM 3D-Solid Editor
– TDM 2D-Graphic Editor

Basic training is also available for other areas of production equipment:
– TDM Fixture Management Module

– TDM Gauge and Calibration Control Module

And for tool crib and system administration:
– TDM Tool Crib Module
– TDM System Module
– Form Generator

Basic training takes place regularly at TDM Systems in Tübingen. Upon request, it can also be provided at your own site.

| 01 | Basic training |
| 02 | Advanced training |
| 03 | Special training |
| 04 | Consulting On Demand |

## 02 ▶ Advanced training

Advanced training teaches in-depth knowledge needed for handling data from more complex tool families resulting from special production methods.
Currently, our training opportunities encompass the following areas:
– Drilling and milling with solid carbide tools or indexable insert tools
– Boring tools
– ISO tool holders or VDI tool holders for turning tools
– Grooving tools
– Multi-functional tools

In this training, you will be shown how to classify these tools and which special features of tool data guarantee that tool management will work as effectively as possible – including in conjunction with your CAM systems.

Advanced training also takes place regularly at TDM Systems in Tübingen. Upon request, it can also be provided at your own site.

## 03 ▶ Special training

You can arrange special training with our experts if you also require assistance on further topics. You can, then, also specify the topic yourself, e.g.:
– Training on dealing with classes and groups not covered by the advanced training
– Extensions of and adaptations to the TDM class/group structure
– Extensions of and adaptations to mapping in CAM systems
– Strategies for how to proceed in the event of extensive changes to existing data records
– Refreshing specific topics, if your training took place a very long time ago, but you no longer need basic training.

Special training is provided by appointment, either in Tübingen, via a web session or at your own site.

## 04 ▶ Consulting On Demand

With our additional consulting on-demand service, we are offering to support you even in solving extremely complex issues relating to your tool data. Consulting on-demand is a service tailored individually to your requirements, whereby our experts will take care of processing your data as a service and in consultation with you.

These services are generally provided by our experts by phone or via a web session – immediately, if possible, or by scheduled appointment.

**Flexible demand, flexible payment:** You can access consulting on-demand whenever you need to. TDM Systems is introducing a Flex Care Credit System for billing. You first acquire a quota of Flex Care Credit points that covers a certain number of services. These points are redeemed if you use consulting on-demand.
In this way, you can individually adapt the scope and time of the consultation session to your requirements.
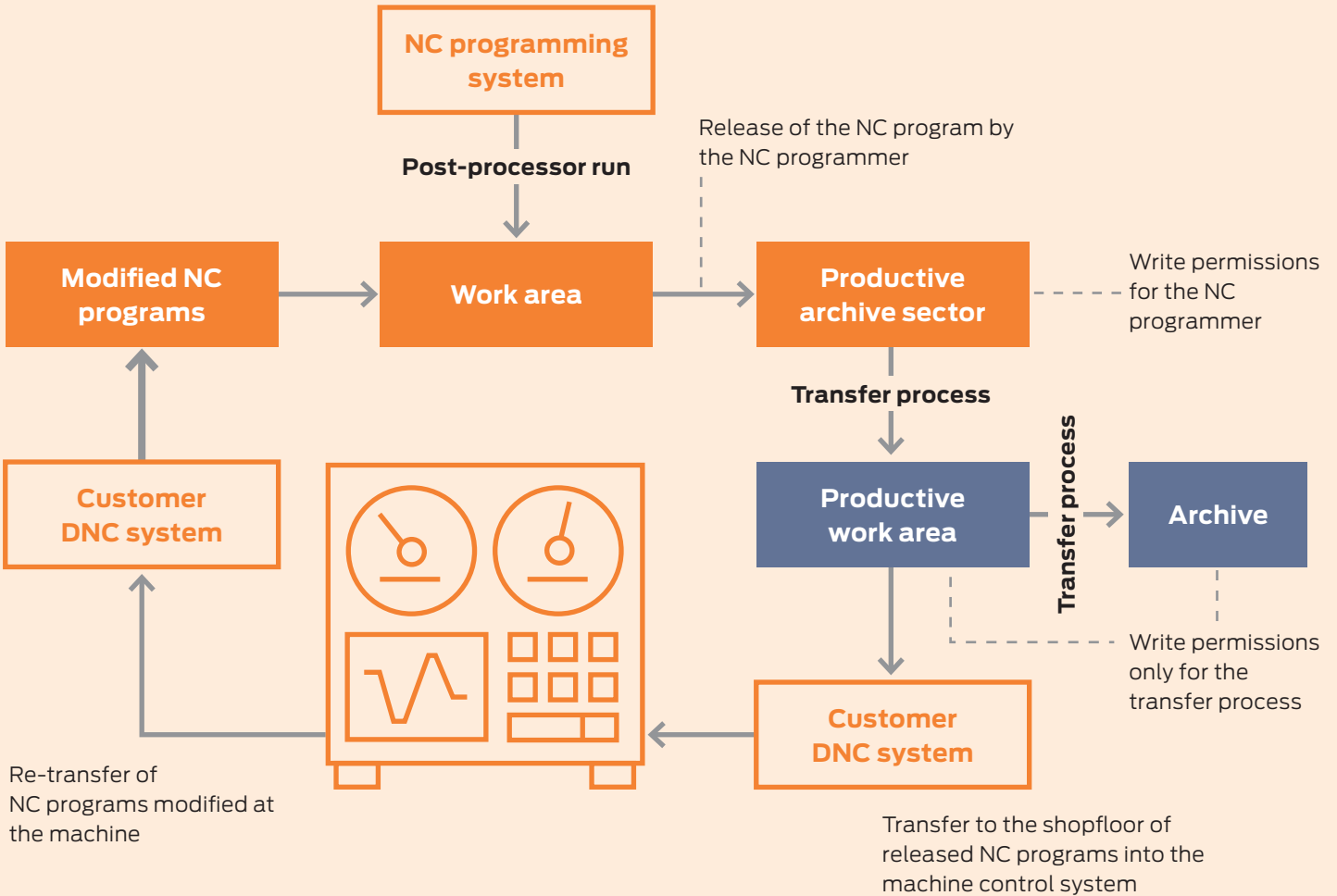
**Languages:** All mentioned services can be provided in English or German unless otherwise specified. Please contact our service team if other languages are required.

In addition to the mentioned opportunities, the following – free – services, which all customers with software service and software update agreements can access, are highlighted here too.

– The TDM Virtual Academy in the TDM customer portal (https://www.tdmsystems.com/en/login/)
– The TDM FAQ portal (https://tdmsystems.topdesk.net/tas/public/login/form)
– The user manuals and online help that are a component of every TDM installation.

You can also join the TDM User Group as a TDM user and stay up to date on current topics through newsletters and forums. The annual TDM User Day is an interesting series of events that we arrange either at our site in Tübingen or at one of our customers' premises. Here, you can expect workshops, presentations and other events that focus on you as a user.

**Liebherr Aerospace and TDM Systems have developed the "TDM Integrated NC-Program Manager" together**

NC programming system

Post-processor run

Release of the NC program by the NC programmer

Modified NC programs

Work area

Productive archive sector

Write permissions for the NC programmer

Transfer process

Customer DNC system

Productive work area

Transfer process

Archive

Write permissions only for the transfer process

Re-transfer of NC programs modified at the machine

Customer DNC system

Transfer to the shopfloor of released NC programs into the machine control system

# New NC archiving solution guarantees reproducible data

Legislation requires complete documentation of all production steps for each workpiece in the aerospace sector. That is why the requirement of working only with up-to-date and released NC programs applies. For security reasons, all modifications to the NC program must also be documented. The TDM NC-Program Manager archives complete NC programs and offers secure access management for NC programs.

For a long time, recovering NC programs on server drives was time-consuming for Liebherr Aerospace. To further complicate matters, the storage on the server did not satisfy the strict security specifications. For this reason, Liebherr wanted a transparent solution that fully displays the processes involved in creating, releasing, modifying and archiving programs. The objective was to be able to understand the complete workpiece production process.

### From a customer-specific solution to a standard module

Together with Liebherr Aerospace, TDM Systems has developed a structure for NC program management. The solution has since become a fixed component of TDM's standard module program. The TDM Integrated NC-Program Manager works together with the TDM Base Module and TDM tool database as part of the overall TDM module concept.

### Separating work and productive areas considerably increases security

The TDM Integrated NC-Program Manager makes various directories available. The programs currently being processed can be found in the work area. If an NC program has been released here, the NC Program Manager automatically moves it to the productive area. This is divided into a protected and an unprotected area.

The accessible part contains the released NC program versions. From there, the NC Program Manager transfers the NC program files to the machine via the DNC program. Immediately after that, a transfer process moves the program to the protected area with limited access. This is how to ensure that NC programs that were live at the machine can be reproduced.

## Liebherr Aerospace is optimizing its NC processes thanks to TDM:

– Transparent management of all NC programs and reliable traceability
– Secure access control, as NC programs can only be modified and released by authorized users
– Backup of program modifications through the back transfer of optimization parameters to the TDM NC Program Manager during the machining process
– NC know how centrally backed up thanks to the management of information for various processes/machines

## Advantages achieved at Liebherr Aerospace:

– Increased productivity and quality: All data related to workpieces has been released and is now available
– Money and effort saved in the creation, management, selection and archiving of NC programs
– Legally compliant, transparent documentation of the manufacturing process ensures reproducibility

### Only released versions for the machine control system

Only released NC versions are transferred from the TDM NC-Program Manager to the machine control system via a DNC system. Older program versions are automatically moved to the NC archive. This key element of NC program management allows you to trace NC program versions back to their workpieces. NC documents are archived according to various criteria, e.g. relating to machine, personnel or area.

### Documenting information being fed back from the machine

If the NC program is modified at the machine, the NC programmer sees the changes, accepts these if necessary and then re-releases the program. This is how to ensure that you receive planning information from the machine. The TDM NC-Program Manager documents all operations carried out on an NC program in a transparent way with a log file. A workpiece index verifies the program version that was used to process the individual workpieces. The fact that NC programs can be found using workpiece data also ensures the necessary transparency.

### Ability to manage additional production documents

Additional production documents can also be stored according to workpiece. Liebherr also manages the programs for the additive manufacturing of some titanium workpieces using the NC Program Manager.

And, once again, we are offering a little insight into Robert's travel schedule

# Back in the USA 😊
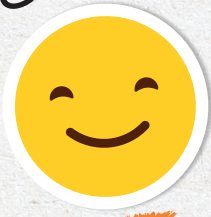
Dear TDMessage readers, hello and a warm welcome to a new edition of Robert's travel journal. Some of you might still remember last year's entry. It was about China, spicy and really spicy food, crazy traffic and, of course, a whole load of Tool Data Management. Since then, my focus has shifted somewhat west. Twelve time zones west, to be precise – on the other side of the globe. Since January, my main task has been business development in North America, an important growth market for TDM Systems, in which we are dramatically strengthening our sales team at present. It is a country that is very close to my heart, a country in which I have lived and worked for more than four years, a country about which I would love to write a few kind words (there is certainly enough bad news at the moment 😊). And so now, I give you my USA travel journal with my impressions of the past six months – aka Happy Auer on Tour. And to make the whole thing interactive, there's also a little trivia quiz.

Simply answer the questions at the end of each journal entry, transfer the letters that you have found to the relevant area at the end of the article and voilà, find out what is hidden behind the mysterious QR code on this page. And now buckle up, sit back and enjoy reading and puzzling it out!



01/19 - so cold

## January:
### Cold, colder, Chicago

My first questionable decision of the year was holding the US sales meeting in Chicago in January. The temperature sank to a possibly record-breaking -20 ºC – the coldest January in Chicago for 34 years! And yes, it was cold – bitterly cold. But luckily we were able to focus on what was important in the cozy warmth of the Coromant Productivity Center – the kick-off for the "TDM Smart Manufacturing Initiative North America". The perfect start to 2019!

### Trivia question 1:

What is the title of the "Windy City" song that is featured in the film "The Blues Brothers"?
Write down the fifth letter of the first word.
**Clue: So sweet!**

# February:
## TDM in the USA

I hopped off the plane at LAX
With a dream and my TDM
Welcome to the land of fame excess,
to be an engineer is not a shame

Jumped in Dave's car – here I am again
Look to my right and I see the whataburger sign
This is all so crazy – everybody seems so crazy
My tummy's turnin' and I'm feelin' kinda homesick

Too much pressure and I'm nervous,
That's when Dave turned on the radio
And the TDM song was on
And the TDM song was on
So we put our hands up
They were playing our song
And the butterflies fly away
You know I'm gonna be okay
Yeah, it's TDM in the USA
Yeah it's TDM in the USA

### PS: Follow me on LinkedIn!


02/19 – California Dreaming

### Trivia question 2:

I'm sure you will have noticed that the above lines are my version of Miley Cyrus' classic, "Party in the USA". But do you also know the name of Miley's godmother?
Write down the first letter of her first name.
**Clue: Jolene**

# March:
## Auer on the march

Firstly, a note for all readers who are not familiar with America. College basketball is a real crowd-puller in the USA, and the finals in March are a huge event. In March, in homage to this event, I visited partners of TDM Systems in three states contending for the title. These were Walter AG in Wisconsin (#Badgers), Seco Tools in Michigan (#UMICH) and Sandvik Coromant in North Carolina (#Duke). At presentations and open houses, I showcased the results of a few Sandvik Group cooperation projects in addition to our TDM software. These included the digital Walter tool catalog, our cooperation with SECO Consultancy Services and the integration of TDM into the Coromant Coroplus online tool guide. See more at: www.tdmsystems.com


03/19 – March Madness

### Trivia question 3:

What is the name of the tournament in which 64 college teams nationwide compete every spring for the sought-after college basketball title? Write down the first letter of the first word.
**Clue: Really not necessary** 😊

# April:
## Planes, TDM and cars

Back in California: TDM@AeroDef production exhibition and technical conference. TDM highlights at the leading trade show and conference for the civilian and military aerospace industry in the USA were the smart manufacturing panel discussion with TDM and the "Night at the Porsche Experience Center" sponsored by us, with long queues in front of the TDM Porsche driving simulator. And yes, "we will be back" in 2020 for TDM@Aerodef in Fort Worth, Texas.
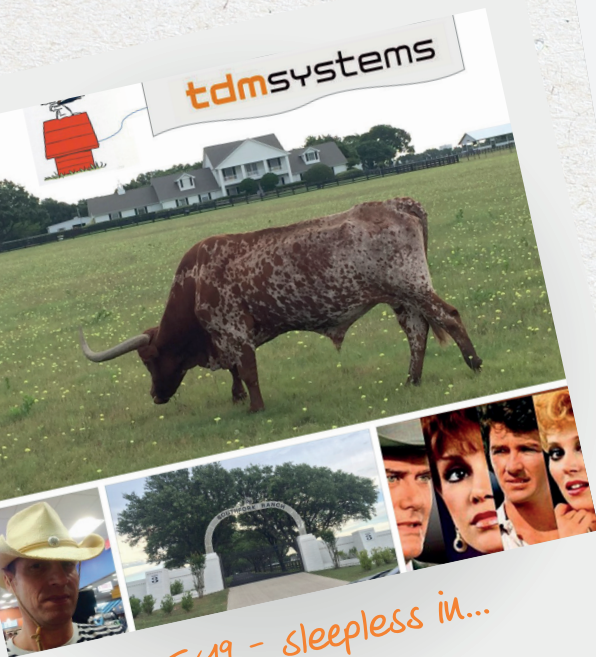
*PS: Follow TDM on LinkedIn for updates!*

*04/19 – Porsche Night*

### Trivia question 4:

Who represented TDM at the Aerodef panel discussion?
Write down the first letter of the first name.
**Clue: Our CEO**

*05/19 – sleepless in...*

### Trivia question 5:

You can probably all still hum the title song of the 1980s TV series "Dallas". But who still remembers the answer to the ultimate series cliffhanger: "Who shot J.R.?" Write down the third letter of her surname.
**Clue: J.R.'s scheming sister-in-law and lover.**

# May:
## Robert in "Sleepless in..."

No, not in Seattle. And no, it was (unfortunately) not a TDM romantic comedy. On the third day of my perfectly planned trip with visits to customers, meetings with partners and interviews with applicants in five cities over five days, I arrived, tired, at my hotel in Dallas at 1 o'clock in the morning. The friendly receptionist greeted me with a smile, saying, in her charming Texan drawl: "Honey, although we have your reservation here, unfortunately there are no more rooms available – we're overbooked. And, as there are several conferences in the area, it will be hard to get a room within a 50-mile radius." And she was right. Two hours and numerous phone calls later, I went to sleep 50 miles north. The silver lining was that the new hotel was cheaper and near Southfork Ranch, so I had time to take a picture on my way to my meeting in the morning. Yeehaw – the TDM glass is always half-full!

# June:
## "When, will I, will I be famous?"

Well, probably never. But the video shoot at our customer Sandvik Coromant in Mebane, North Carolina, was nevertheless a highlight and the perfect finale to the first six months. A professional film crew, state-of-the-art production and motivated TDM users created the perfect mix for interesting insights and exciting interviews. In a nutshell, an entertaining documentary about how our customers are reducing costs and increasing productivity with TDM. Take a look – it's worth it. How and where? I'm about to explain. 😊

**PS: Follow TDM on LinkedIn for updates!**

*06/19 – video shoot*

# And now,
## scan the QR code to see the

\_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ **V I** \_\_\_\_ \_\_\_\_ \_\_\_\_ .

**You can find the solutions on page 53.**

# The partner team is strengthening global networking

"Our objective is to grow to five times our current value by 2028, and, in fact, to do so worldwide."

CHRISTIAN KÜBEL, DIRECTOR OF SALES ASIA PACIFIC AND GLOBAL PARTNER SALES

> ## "The feedback from countries with local partners is really positive."
>
> **CHRISTIAN KÜBEL, DIRECTOR OF SALES ASIA PACIFIC AND GLOBAL PARTNER SALES**

The partner team ensures that existing and new partners are supplied with all the information they need so that they can work actively and in a targeted way in their markets. That is part of TDM Systems' ten-year plan, which was launched in the 2018 business year. "Our objective is to grow to five times our current value by 2028, and, in fact, to do so worldwide. In particular, the proportion of indirect sales is currently still lower than we'd like it to be," says Christian Kübel, Director of Sales Asia Pacific and Global Partner Sales. At the moment, TDM Systems is already very well-networked when it comes to global marketing and supply. But TDM Systems is growing internationally, which brings new challenges along with it.

TDM Systems has recognized that and will be actively implementing the necessary solutions for this even more systematically in future with its partner team. They are analyzing the various markets and tailoring product and sales packages precisely to the requirements of various different markets. However, this won't work without further in-house support. TDM Systems' marketing team is actively helping with documents, local marketing measures and participation in worldwide trade shows. Product materials currently in six languages are also helpful for direct communication with international partners and customers.

### Global markets with different requirements

Europe is still the clear core market today, especially Germany, Austria and Switzerland. The Benelux countries, Italy and France also play an important role for TDM Systems. The markets here are stable and well-developed, also thanks to good and close contact between the sales representatives and the local partners and customers.

This means that the partner team can shift its focus to other areas for developing and expanding the range of partners. The North American, Russian and Asia Pacific markets have very high potential in the mechanical engineering sector and consequently Tool Data Management. These regions are, however, still more strongly reliant on local sales partners. Firstly due to distance and time differences, and secondly because some sites do not yet have their own TDM employees. Here, contact is established and quote/order processing is performed mainly via local partners who know the country, people and market very well. This has many advantages.

Christian Kübel emphasizes that "the feedback from countries with local partners is really positive. The customers feel they are being looked after as well as possible and receive very good support which they can rely on."

### Partner team measures

The team prepares customized market entry strategies and analyzes where the population centers of the focal markets are and what the key industries are. Communication is instrumental in success – it is all about closer and, above all, more intensive communication with partners. To this end, there will be two major partner meetings a year, one at the headquarters of TDM Systems in Tübingen and one virtual meeting. In addition, regular telephone conferences are held with the individual partners. This is so that the team in Tübingen knows what the partners are working on. That makes cooperation easier.

Market analysis also involves knowing the partners well. To provide targeted support, it is important to know where the partners stand, what they achieve their successes with and where TDM Systems can offer them even greater assistance. "Logically, new partners will still have a lower sales volume," points out Christian Kübel. "Here in particular, we are strengthening our partners through training." The presales team also comes into play here – with targeted in-house training, service support and safeguarding the transfer of knowledge in both directions. The partners receive the required knowledge to be able to advise the customers to their best of their ability and TDM Systems obtains important information from the markets, so that it can adapt product and service packages and market strategies.

The clear objective here is getting even closer to the partners and consequently to the customers. In this way, the requirements of individual markets can be determined even more effectively. Because TDM Systems knows that you can only be truly successful internationally if you have local sales and service partners.

# TRAINING
# WEBINARS
# EVENTS

## 2019

| | |
|---|---|
| **NOV 4-7** | **TDM Base Module** <br> Tübingen <br><br> Training |
| **NOV 08** | **TDM 2019** <br> *10 a.m.–12:00 p.m. (German)* <br><br> Webinars |
| **NOV 21** | **TDM 2019** <br> *4 p.m.–6 p.m. (English)* <br><br> Webinars |

| | |
|---|---|
| **NOV 5-7** | **TDM Tool Crib Module** <br> Tübingen <br><br> Training |
| **NOV 11-13** | **TDM Form Generator** <br> Tübingen <br><br> Training |
| **NOV 20** | **TDM User Day** <br> at BOSCH Rexroth, Schweinfurt <br> Events |

| | |
|---|---|
| **NOV 14-15** | **TDM System Users** <br> Tübingen <br><br> Training |
| **NOV 21** | **TDM Info Day** <br> at BOSCH Rexroth, Schweinfurt <br> Events |

## 2020 TRAINING

| | | |
|---|---|---|
| **MAR 2-4** TDM Base Module <br> Tübingen | **MAR 5-6** TDM Tool Crib Module <br> Tübingen | **MAR 9-11** TDM Form Generator <br> Tübingen |
| **MAR 12-13** TDM System Users <br> Tübingen | **APR 20-22** 3D models and tool parameters for CAM systems <br> Tübingen | **JUN 15-17** TDM Base Module <br> Tübingen |
| **JUN 18-19** TDM Tool Crib Module <br> Tübingen | **JUN 22-24** TDM Form Generator <br> Tübingen | **JUN 25-26** TDM System Users <br> Tübingen |
| **SEPT 14-16** TDM Base Module <br> Tübingen | **SEPT 17-18** TDM Tool Crib Module <br> Tübingen | **SEPT 21-23** TDM Form Generator <br> Tübingen |

| SEPT 24-25 | **TDM System Users** Tübingen | OCT 5-7 | **3D models and tool parameters for CAM systems** Tübingen | NOV 2-4 | **TDM Base Module** Tübingen |
|---|---|---|---|---|---|
| NOV 5-6 | **TDM Tool Crib Module** Tübingen | NOV 9-11 | **TDM Form Generator** Tübingen | NOV 12-13 | **TDM System Users** Tübingen |

# 2020 WEBINARS

| FEB 14 | **TDM WebCatalog** *8 a.m.–2 p.m. (German)* | MAR 19 | **TDM WebCatalog** *2 p.m.–7 p.m. (English)* | MAY 17 | **TDM Multi Plant Management** *8 a.m.–2 p.m. (German)* |
|---|---|---|---|---|---|
| JUN 18 | **TDM Multi Plant Management** *2 p.m.–7 p.m. (English)* | OCT 9 | **AME interface mapping extension** *8 a.m.–2 p.m. (German)* | OCT 22 | **AME interface mapping extension** *2 p.m.–7 p.m. (English)* |
| NOV 6 | **TDM 2019** *8 a.m.–2 p.m. (German)* | NOV 19 | **TDM 2019** *2 p.m.–7 p.m. (English)* | | |

# 2020 EVENTS

| FEB 7-8 | **binea** Reutlingen, Germany | MAR 17-20 | **TechniShow** Utrecht, Netherlands | MAR 16-19 | **Aerodef** Fort Worth, Texas, USA |
|---|---|---|---|---|---|
| APR 31.3.-3.4 | **Industrie Paris 2020** Paris Villepinte, France | APR 7-11 | **CCMT** Shanghai, China | APR 20-24 | **MACH** Birmingham, UK |
| MAY 25-29 | **Metalloobrabotka** Moscow, Russia | SEPT 14-19 | **IMTS** Chicago, USA | SEPT 15-19 | **AMB** Stuttgart, Germany |

# PHOTO WALL

# TRADE SHOWS
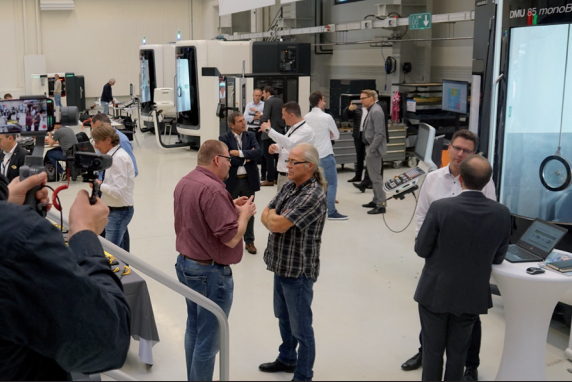
"Digital manufacturing is not just a trend, but also a clear competitive advantage. An enormously important basis here for every company in machining production is efficient and customizable Tool Data Management. And this is where we at TDM Systems come into play. We support our customers on their way to digitalization and the implementation of digital manufacturing."

DIETMAR BOHN, MANAGING DIRECTOR OF TDM SYSTEMS

## Answers

1. Sweet Home Chicago
2. Dolly Parton
3. March Madness
4. Dietmar Bohn
5. Kristin Shepard
6. Charlotte

Solution: TDM video

### TDMessage

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IndustryArena
competence network for production

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