



## Today's Interview

### The New World of 3D-Digital Models and Realistic Tool Simulations

We talked to Angela Albus, our Training and Project Manager for Software, about the advantages of centralized tool data management in generating 3D-data models for NC-programming and simulation.



**TDMmessage: Ms. Albus, tell us about the relationship between digital data and speedy, accurate creation of NC-programs and true-to-life processing simulations.**

Albus: It's no longer enough for NC-programming and simulation systems to use standard geometric and technology data. What is required first and foremost is true-to-scale 3D-digital models corresponding exactly to the real tools. We're talking here about complete tool images, with all the relevant geometric data and the different cutting and non-cutting contours. But that's only the start: Today's NC-programs and simulation systems require actual, geometrically precise displays of reference points for cutting edges and lengths. The 3D-data must serve as a basis from which to extract useable 2D-drawings.

**TDMmessage: How does TDM V4 provide this data?**

Albus: Up to now, data were acquired from electronic tool catalogues. The TDM tool contour generator, which creates digital 3D-models of rotational tools on the basis of 2D-digital images, has always supported them in this. However, the images sometimes contained errors due to uncertain data in the catalogues of the tool manufacturers. Moreover, data in the catalogues of tool manufacturers is often inconsistent, since every toolmaking company focuses its attention on different information, e.g. various tool characteristics. Data models created on this basis cannot be relied on for accuracy in creating simulations and in finding points of interference.

This situation, along with the difficulty of creating 3D graphic images for stationary tools, prompted us to develop a brand new TDM software solution. Our new TDM Data and Graphic Generator creates precise, standardised 2D and 3D graphic data models of tools with all relevant tool information. The data is generated on the basis of software macro programs which are integrated directly into

TDM. This frees the user from the need for additional CAD software and enables him to create 2D and 3D tool data with a maximum of speed and a minimum of wasted effort. This generator for data and graphic images can be integrated directly into the TDM software as an option.

**TDMmessage: What do you see as the major advantage of centralized data management?**

Albus: The advantage is that tool data can be created, adjusted to needs, and stored once and for all users. In other words, each set of data remains consistent throughout the entire process, that is, from tool management through NC programming and simulation to the actual production process itself. The result is much greater processing accuracy, along with a minimum of wasted time and effort in data management. Moreover, the quality of stored data and the NC programs based on it increases by enormously.

**TDMmessage: How are the 3D-data converted into NC-programs and simulation software?**

Albus: There are two ways of doing this: The first is to exchange data via standard data formats like STEP, SAT, STL and DWG. This makes it possible to transfer tool data and graphics into almost any conventional CAD or CAM system. But TDM V4 also offers a second, much more elegant way of transferring data for some types of CAD-CAM software, like CATIA V5 or TDM AutoCAD, and that is to integrate the auxiliary functions and user interfaces of TDM V4 directly into the CAD-CAM-software environment. The CAD-CAM-software then taps directly into the TDM V4 database by way of an online connection. In this way, the CAD-CAM-software has direct access to all complete tool information required for generating 3D-data models.



**TDMmessage: And how does the plant production process benefit when data is taken over from the TDM V4 database?**

Albus: First of all, taking over data directly as just described radically reduces errors in processing, starting with NC-programming and ending with final production. Secondly, there is no duplicate storage of required and relevant tool-making data, and data management becomes centralized. By acquiring data from TDM V4, NC programming systems and 3D-simulations become absolutely reliable and deliver true-to-life results. What's more, quality-related data moves much faster than in the past from TDM V4 into the CAD-CAM-systems, and this greatly reduces the time required for NC-programming and for running realistic 3D-simulations. There are no more delays due to incomplete data or information about the availability of tools. The reason is clear: the high-quality of tool data with TDM V4 eliminates errors in NC-programs from the very start.

**TDMmessage: Ms. Albus, many thanks.**

Case Study: A company works with 20 NC machines and appr. 4.000 tool items		
	thereof 20 % (800) with technology data	
	80 % (3.200) with 2D- and 3D-graphics	
data & graphic generation	without generator	with generator
geometry- & commercial data	500 h 7,5 min x 4.000	100 h 1,5 min x 4.000
technology data	100 h 7,5 min x 800	100 h 7,5 min x 800
2D-graphic	2.600 h 50 min x 3.200	80 h 1,5 min x 3.200
	<b>3.200 h</b> 400 days 2 years	<b>280 h</b> 35 days 2 months

**time savings  
appr. 87 %**