

ALMÜ offers complete solutions for production



ALMÜ Präzisionswerkzeug GmbH has been using NUMROTO software for 26 years and has been a partner of NUM's from the very beginning. The tools ground with NUMROTO often form a part of the complete solution which ALMÜ develops with their end-users for their own production needs. True to their motto: everything from one source. With NUMROTO, ALMÜ provides a uniform programming environment for use on their wide range of machinery. This benefits not only the tool grinding experts but also the trainees.

Customized special solutions are essential at ALMÜ
ALMÜ does not focus on making a standard set of tools, rather the focus is on special high-precision and tailor-made tools. The customer base includes companies from the automotive, mechanical engineering and aerospace industries.

ALMÜ was founded in 1976 by Alfred Müller. In 2007 his son Markus Müller took over the management of the company. The company is based in southern Germany in Zell unter Aichelberg. An important milestone was reached in 2019 with the move into the new building. With almost 50 employees, ALMÜ focuses on speed, precision, flexibility and innovation in addition to the use of state-of-the-art production technologies. In the beginning the tools were made for grey or nodular cast iron, though today they are mainly made for aluminum. The company's philosophy is embodied by Mr. Müller and his innovative employees.

To be able to offer today's customers with precisely tailored tooling solutions requires technical competence, but also creative and innovative ideas. This often results in completely new tool shapes that offer high productivity and cost efficiency. The solid carbide tools manufactured by ALMÜ are characterized by polished chip chambers, individual cutting edge design and extremely precise grinding. Thanks to the use of NUMROTO, the geometry of the tools can be designed optimally.

NUMROTO in use since 1994

NUM CNC control with NUMROTO is used widely in ALMÜ's facility. The company started with NUMROTO DOS back in 1994, but now is using the latest NUMROTOplus® version. Thanks to constant updates of the software and NUM's ability to enhance the software with additional options, older machines can still be used with NUMROTO to a high standard. Mr. Markus Müller, Managing Director of ALMÜ, clearly sees strength in the fact that NUMROTO can be supplemented with new options at any time, meeting new customer requirements. He makes it clear: "NUMROTO is the soul of the tool grinding machine. If the software is up to date, we are able to manufacture any special tool."



Form milling cutter in use

Mr. Uwe Czommer, production manager, says: "We rely completely on NUMROTO. We now have well over 10,000 tools in our database, mainly drills and step drills, but also form cutters. All with special features, of course." Before NUMROTO, tools often had to be ground in many individual machining steps; since then, everything can be ground from a blank in one clamping. The on-going development of the NUMROTO software and options that are available are highly appreciated. Likewise, 3D simulation and NUMROTO Draw have become indispensable in production. With the integration of the 3D workpiece simulation including animation of the grinding process and the collision monitoring with 3D machine simulation into the NUMROTO CNC software, a consistent and highly functional solution is created that is easy to use.

NUMROTO Draw creates uniform and realistic product documentation for existing and new tools. This is generated almost completely automatically, which saves time and costs for the end-user. For example, NUMROTO Draw automatically generates the tool outline and the drawing header. This is particularly useful for small runs and resharpening jobs. The software has been greatly enhanced now that it can be used for very demanding tools with multiple section views.

Measuring probe tip

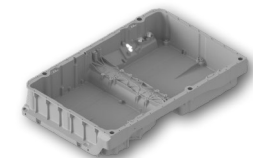
ALMÜ also uses the versatility of NUMROTO to grind special parts, such as probe tips, which are made of steel. These parts are used in tool grinding machines, along with other applications. The precision of the probe tip is always critical to getting an accurate measurement.



Measuring probe tip

Everything from one source

Tools and work fixtures are two devices always used in conjunction with each other. The tool usually comes from the tool manufacturer, while the work holding comes from the fixture manufacturer. When adding engineering, technology, and programming to this; ALMÜ refers to it as the "all-in-one principle". Only one contact person is required and all processes are coordinated. Mr. Müller posits: "An orchestra does not live from a violin alone, but from the perfect interaction of all instruments. This is also the case when developing a complete solution for production."



Battery tray for the electric vehicle industry

This can be easily explained using the battery tray of an electric car. In order for it to be drilled and milled on a machining center, it must be clamped to a high degree of precision. ALMÜ therefore develops and manufactures not only the tools (such as the drills, step drills, and form cutters required), but also the complete clamping device, including the associated engineering. Thanks to this

holistic solution, the machining strategy can be efficiently designed and optimized. The "all-in-one" principle includes:

- Creation of tool plans
- Definition of machining strategies
- Determination of the machining parameters
- Time studies
- Tool design
- Complete engineering
- Production of tooling packages
- Solid carbide tools, PCD tools, WP tools
- Completely assembled, balanced and adjusted tool packages are delivered together with measurement reports
- Typical tools and special tool solutions
- CNC programming
- Service and logistics

This adds value for the customers due to the synergy of the principles above.

Focus on values like education and sustainability

ALMÜ trains up to five precision toolmakers per year. Great importance is given to ensuring that the trainees get to know the NUMROTO software systematically. Initially, they train on cylindrical grinding machines, and then move on to universal tool grinding machines. Thanks to the uniform user interface, the system is easy to learn. By the end of the apprenticeship, the trainees should be able to produce solid carbide tools on their own. This requires innovation and creativity along with manual skills to succeed.

ALMÜ is not only thinking about the future during training, they are also focused on sustainability. With a state-of-the-art cooling oil treatment and filter system, the environment is protected to the greatest possible extent and resources are saved. For decades to



Tool grinding machines with NUMROTO software in ALMÜ's machine park

come, this investment will be crucial to production and the environment. At ALMÜ, environmentally compatible action and sustainable management is an important element of corporate policy.

High market presence also in the future

ALMÜ and NUM will continue to work together. Mr. Müller affirms: "With NUMROTO every crazy idea can be realized. So we have a strong presence on the market and convince with our innovation and highest precision."



From right to left: Mr. Uwe Czommer, Production Manager, and Mr. Markus Müller, Managing Director, both from ALMÜ Präzisionswerkzeug GmbH, with Mr. Jörg Federer, Manager Application Technology NUMROTO NUM AG

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Issue 24, March 2021

We look positively towards the future

With fresh élan into the new decade: that was the motto last year. The crisis created uncertainty but a few months later on we can say that we are maintaining our momentum and looking positively towards the future.

stands a strong team of specialists and engineers with comprehensive user knowledge. We are very proud of our employees' long-time know-how, commitment and confidence in NUMROTO.

A rethinking has definitely taken place during 2020: thanks to virtual sessions, online training and remote meetings, we are there for you even during severe global restrictions to provide you with the best possible support. Thanks to extensive 3D simulations, we can precisely analyze complex situations and solve them on any of more than 100 different machine types. The current crisis continuously shows its effects, but we offer you the solution for future challenges, as well as international support. Whether you are at home, in the office, or on the road, we guarantee you the best possible support.

NUMROTO is a reliable partner. We are there for you even in times of crisis.

NUMROTO version 4.2.1 has now been released: we are happy to present you with a whole range of new features and improvements. Study our Release Notes and learn about the most important new features of NUMROTO version 4.2.1.

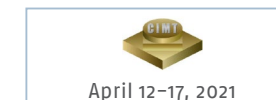
We look to the future with great confidence and hope to welcome you again very soon to one of our trade fairs.

I wish you an exciting read and send you my best regards,

Peter von Rüti
CEO NUM Group



Experience counts: all the more reason for us to rely on personal and professional support. Quite a few of our employees have been using their skills for many years in the development of our software. Behind NUMROTO



Exhibitions 2021/2022 NUMROTO is there

With NUMROTO, NUM will once again take part in various trade fairs around the world this year. We will present the latest NUMROTO innovations and are ready for constructive discussions. Visit us at the above-mentioned trade fairs. Our team is looking forward to meeting you.

Go to our website www.num.com to find our respective stand numbers before the start of the trade fairs.

And of course, there will also be many machine manufacturers on site with machines that are equipped with NUM CNC systems and NUMROTO.



Release Notes 4.2.1

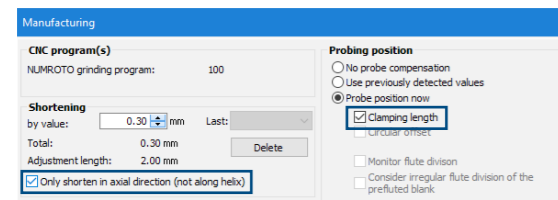
Release Notes 4.2.1

Release Notes 4.2.1

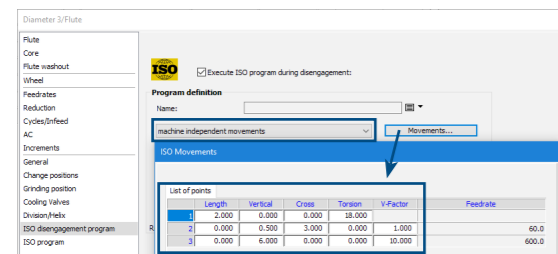
Extract of the most important modifications of version 4.2.1 compared to 4.1.2

General

- In manufacturing mode, it is now possible to choose that the stock removal shall only work in an axial direction and that the tool does not rotate additionally along the cutting edge. This new type of shortening is especially recommended for crosscut tools (up-down end mills, side milling cutters) in order to avoid errors coming from bigger shortening amounts. When this function is active, only the clamping length can be measured.

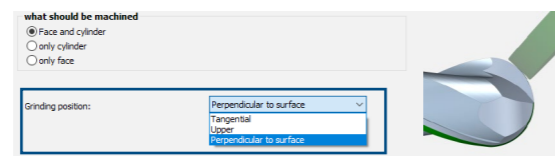


- Tool names can now be up to 200 characters long.
- When working with the end mill tip (regardless of whether it is an end mill, drill or form cutter), the Walk-out radius of the widening can now be adapted according to the wheel corner radius, so that the walkout radius no longer changes when a wheel with a different corner radius is used.
- The profile editor now allows to mark transitions, which are not tangential or are not connected, with a special color.
- Instead of an ISO disengagement program the movements can now also be defined in a machine independent table. The user defined disengagement moves create exactly the same results on all machines, independent of the axis names.

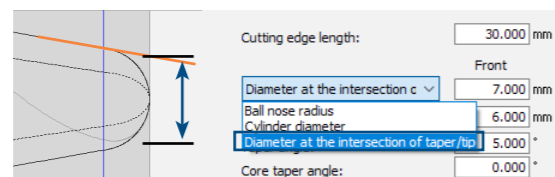


Cutters

- For Flute-X, there is a new land width calculation "according to flute opening angle".
- New possibility to position the wheel "perpendicular to the surface" when grinding reliefs.



- When using a cup wheel, the direction for the grinding point offset can now be specified (for ball and corner end mills).
- There is a new parameter for a land width correction available for Flute-X.
- In the operation "Body clearance", you can now define to what it refers to.
- For tapered tools with ball or corner radius, the diameter can now be defined at the theoretical intersection point between the taper and the tip.

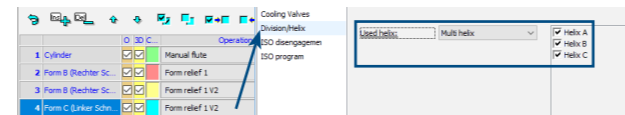


Drills

- The new Kennametal HPX, HPR, and SGL points have been added as a new NUMROTO option (Kennametal HP Point o2). This new option is available only to customers who can get a special license from Kennametal. Any existing license permissions you may have for Kennametal points are not valid for the new points.
- For the operation "Rounding radius relief", you can now select "wheel grinds on the inside" (when using a peripheral wheel).

Form cutters

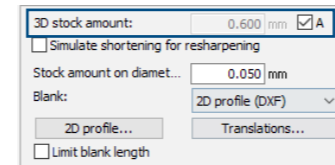
- The operation "Gash out X flat" for flat tips can now also be used in the form cutter package.
- A multi-helix function is now available for the form cutters, so that one machining operation can follow multiple helices.



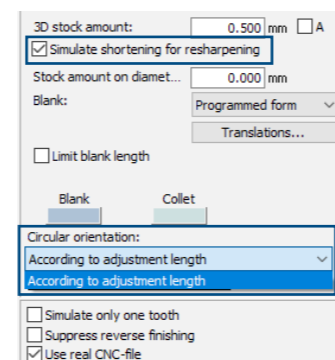
- Profile points can now be selected as a reference for the range of the profile. This is in many cases better than using the profile length or the length coordinate.

3D Simulation

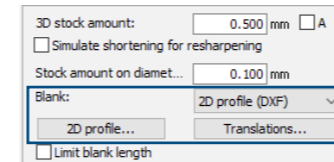
- Instead of an "end stock amount", a new 3D stock amount can be defined for the 3D simulation. This amount can also be automatically transferred from the Manufacture dialog or the Tip stock removal of reshaping. This ensures that collisions with the collet or tool holding are detected even more accurately. There are also other advantages. For example, the same stock removal is used for collision checking as for actual grinding.



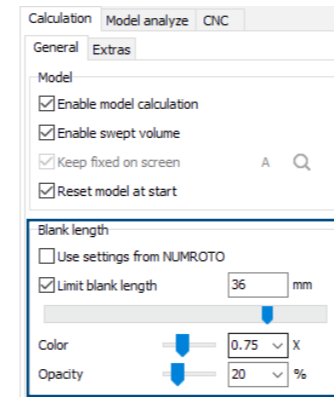
- For the 3D simulation, the stock removal can now be calculated in such a way that the rotary position of the tool is simulated in exactly the same way as when the tool is ground in the machine. For crosscut tools, the behavior of regrinding can be simulated. When this new function is active, only "According to adjustment length" can be used for the circular orientation. Training is required to explain this function in detail.



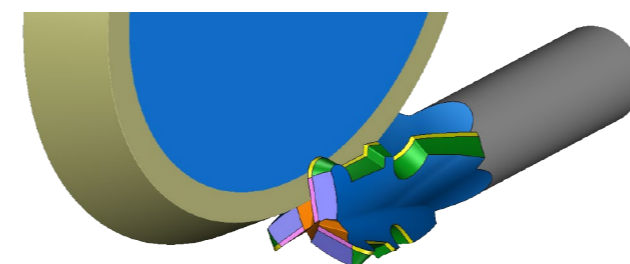
- The blank for the 3D simulation can now alternatively be defined with a separate 2D profile.



- The blank can now also be shortened directly in NUMROTO-3D. In addition, the opacity for the not active blank part can be changed.

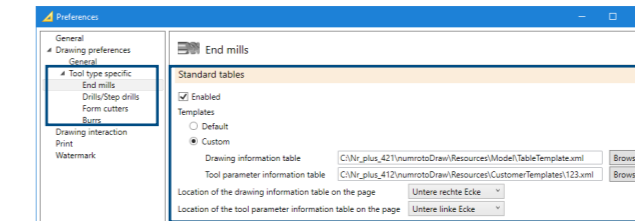


- The size of the wheel body can now be defined. In the near future this will also be used for the 3D collision check and the wheels will be displayed accordingly in the 3D simulation.

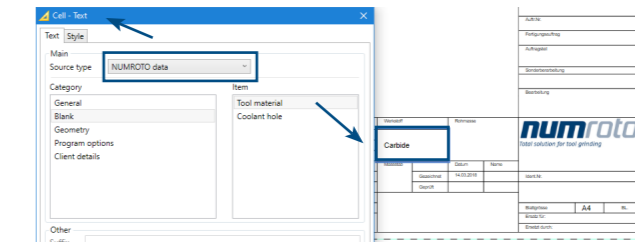


NR-Draw

- For each tool type, a separate drawing header and a separate data table can now be selected. This information will be used to generate new drawings. Like this, the user can use his own drawing headers instead of the NUMROTO drawing header. A training is recommended to explain all the details.



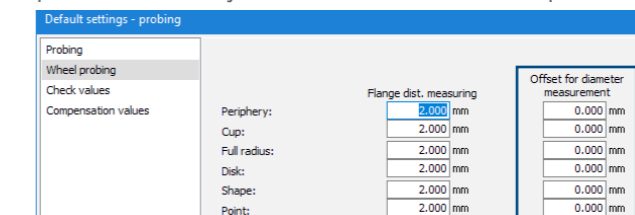
- In a data table, it is now possible to add a direct reference to a NUMROTO parameter. Like this, always the current value from NUMROTO will be displayed.



- In tables, it is now possible to format the text of each cell individually.
- Each grinding wheel can now be painted in a separate color or with different hatching.

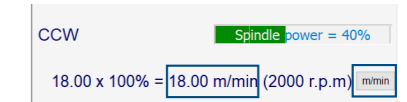
Probing

- For wheel probing the number of measurement points can now be defined separately for probing the flange distance and the diameter. For flange distance probing more points are recommended than for diameter probing.
- For wheel probing the feedrates can now be individually defined for measuring the flange distance and the diameter. For probing the diameter, a lower feedrate is recommended.
- For wheel probing it is now possible to define different offsets for the diameter probing on different wheel types. Like this the probe will not always be touched at the exact same point.

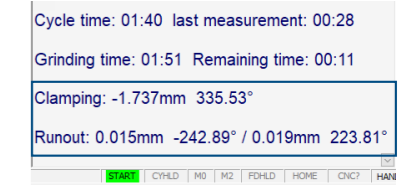


NCI

- It is now possible to show the cutting speed of the current grinding wheel instead of the rpm.

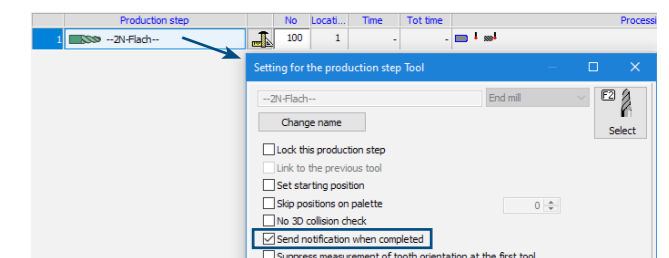


- It is now possible to display the difference to the programmed clamping length, the value of rotation probing and the results of the run-out probing.



NR-Control

- At the end of a process, which is generated by NUMROTO (tool grinding, probing, wheel dressing), it is now possible to execute a notification. This function first must be activated in the NR-Control settings.



It is almost a tradition for our customers and interested parties to visit us at our GrindTec stand and to inform themselves about innovations in NUMROTO. As GrindTec was canceled, we present the most important innovations here and in a more detailed version online:

www.numroto.com

If you have any questions, we will be happy to explain them to you by phone, e-mail or in an online meeting.

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