Tools Standardizes on NUMROTO

Engineer, Kent Nielsen and Henrik Larsen, both CNC operators at TN Værktøjsslibning, Denmark’s second-largest precision tooling company, is deploying NUMROTO, the renowned programming software from NUM, to improve programming and grinding cell efficiency. The company cites highly successful long-term productivity gains and an increase in successful tooling results that significantly exceed the company’s expectations.

One of TN Værktøjsslibning’s prime business advantages is its ability to respond quickly to customer needs. As a result, the company has only a few hours between orders. In order to maintain productivity and to perform the high-precision requirements of the customers, the company relies on the latest technology and a high-quality tool production chain. TN Værktøjsslibning produces a comprehensive range of standard “TN” brand tools, namely high-speed end mills, step drills and form cutters, the majority of which are coated both before and after polishing, to extend their service life and to help optimize chip evacuation. The company maintains a friendly, accessible and approachable attitude towards its customers. The company has many years of experience in the field and offers a complete product range.

In 2000, TN Værktøjsslibning began a transformation of its operations to introduce automatic tool grinding machines. TN Værktøjsslibning operates six high-speed end mills, step drills and form cutters, the majority of which are coated both before and after polishing, to extend their service life and to help optimize chip evacuation. The company additionally operates a tool grinding machine. As a result, all orders can be processed at TN Værktøjsslibning. The company utilises a modern 2000 m² industrial building, which has been selected technology for tool grinding from NUM across its entire production floor. The company cites highly successful long-term productivity gains.

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High-precision work with high accuracy on a single spindle

Numerous images of workpieces are being produced with high accuracy on a single spindle, which means that a high degree of process efficiency and knowledge is required. In-plant and on-the-shop floor tool production technologies and processes need to be continually improved. Tool grinding is a critical part of the entire manufacturing process. It allows for the production of high-quality tools that meet the high demands of the industry. As a result, the company relies on the latest technology and a high-quality tool production chain.

TN Værktøjsslibning has grown steadily to become a leading player in the manufacture of special solid carbide tools, with an enviable reputation for the quality and precision of its products. Operating from a modern 2000 m² industrial building, the company serves the world market and currently produces a comprehensive range of standard “TN” brand tools, namely high-speed end mills, step drills and form cutters, the majority of which are coated both before and after polishing, to extend their service life and to help optimize chip evacuation. The company maintains a friendly, accessible and approachable attitude towards its customers. The company has many years of experience in the field and offers a complete product range.

The programming and machining of special tools, which constitute as one-fifth of the company’s output in production, is carried out using the software and hardware infrastructure. The company is using the latest technology and software infrastructure. The company is using the latest technology and software infrastructure. The company is using the latest technology and software infrastructure.

As an interesting facet of TN Værktøjsslibning’s operational structure, which is quite possibly a factor behind the company’s long-term success, it is decidely configured and defined from a large number of user roles. Each machine operator is responsible for programming, grinding the tools and only documenting the process.

According to Kent Nielsen – who is still at the helm of the company, since its initial establishment back in 1987 – TN Værktøjsslibning, Denmark’s second-largest precision tooling company, is deploying NUMROTO, the renowned programming software from NUM, to improve programming and grinding cell efficiency. The company cites highly successful long-term productivity gains and an increase in successful tooling results that significantly exceed the company’s expectations.

The most important features of the new software, according to Andreas Hartig, Managing Director CEO NUM Group, are as follows:

- A highly intuitive and modern user interface.
- Version 6.0 for NUMROTO has been released, the software is perfect for grinding both simple and highly complex tools and is extremely reliable. It is very easy to work with and the simulation is very precise. In a client/server configuration, the software can be used to fulfill all the process of expanding its multi-user programming facilities.
- NUMROTO provides an extensive range of standard tools, including high-resolution Keyence digital microscopes and a new Tokyo Seiki cylindrical grinding and two horsetail surface grinding machines. The programming and machining of special tools, which constitute as one-fifth of the company’s output in production, is carried out using the software and hardware infrastructure. The company is using the latest technology and software infrastructure. The company is using the latest technology and software infrastructure. The company is using the latest technology and software infrastructure.

NUMROTO's initial release, development has centered around the core functionality of the software and subsequent releases have been primarily configured and defined from a large number of user roles. Each machine operator is responsible for programming, grinding the tools and only documenting the process. The company maintains a friendly, accessible and approachable attitude towards its customers. The company has many years of experience in the field and offers a complete product range.
Today, the paths of NUMROTO are calculated so precisely that deviations from the ideal paths can no longer be detected by the naked eye. This high quality standard has been established over the years, and on one hand due to the perfectly calculated NUMROTO grinding paths, but also thanks to the very high resolution of the digital microscope, which allows the detection of the contours of the calculated paths below 1 µm.

Unfortunately, this high accuracy does not always reach the ground truth. Technical faults and wear on the grinding wheels or the machine itself, such errors can be determined and generally corrected. However, errors that are too small to be visible without a high-resolution digital microscope in order to be able to detect deviations is a larger margin.

This can show itself well as a cutter cross cutting edge. The transition of the cross - cutting edge into the rotation axis must be exactly tangential. With the digital microscope, the precision of the transition can be measured during production and corrected if necessary. This also applies to the grinding wheel, bottom with a dressed grinding wheel and top with a new grinding wheel.

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D-MEAS

- New feature “Radius at cutting edge end 1-3” for milling cutters with helix A. This is then also taken into account 3D simulation.

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- Individual feed rates can now be programmed for the front and end supports.

- Own increment for the chisel edge.

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- Own increment for the chisel edge.

- Form cutter

- The axis plane can now be automatically adjusted when entering the tool.

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- For clearance grinding an exit slant can now be programmed.

- The label of a measuring line is now always displayed at the visible measuring point, regardless of whether only one or the other measuring point is visible.

- Various optimizations when simulating cylindrical grinding operations.

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