



Practical utility of digitalisation

Data themed around the tool ensure transparent production



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High-precision tools have a key function in digital production operations. Application-tailored integration into the production sequences and purposeful processing of the tool data are the basis for up-to-the-future Industry 4.0 solutions. The digitalisation of production processes plays an important role for every company that wants to operate successfully on the market. Since the tool with its specific data is in metal-cutting machining a crucial constituent of the process chain, it has to fit in with the digital production environment. All digital options have to be rigorously implemented – from the tool itself, then the tool-holder, including the clamping operation and balancing, all the way through to tool presetting and deployment on the machine, is how Andreas Haimer, General Manager of Haimer GmbH, Igenhausen, summarises the spectrum involved.

One important approach in this context is the provision of digital services by tool manufacturers for their customers, e.g. by ensuring that all tool data can be retrieved online. According to Andreas Haimer, moreover, a tool management solution that enables a digital workflow of the tool data is crucial. This means: the software has to be able to integrate the entire tool environment – shrink-fitting, balancing, presetting – into the digital process and render it automatable.

One thing is certain: digitalisation is transforming the entire production sequence. With the aid of tool data stored in memo-

ry, the entire manufacturing process can be simulated and optimised in advance. Storage systems are often connected, too, and the location of each individual tool can be tracked. 'The bottom line is that thanks to digitalisation in their production operations companies save time, money and resources,' says Bernd Schwenning, Technical Sales Manager at E. Zoller GmbH & Co. KG, Pleidelsheim, a member of the GTDE association (Graphical Tool Data Exchange – Standard Open Base), which has taken on board the issue of data exchange under the aegis of the VDMA's Precision Tools Association.

The foundation for every automation process is always the tool data, which meanwhile subsume much more than merely the geometrical data. Besides machine-specific data, these include, for example, the remaining service lifetime available, or the storage location or magazine space on the machine. 'These data are, of course, available worldwide, if the company so desires,' adds Bernd Schwenning. It must, moreover, be assumed that the data inside a company are increasing-

ly being exchanged beyond the boundaries of individual facilities. 'That a purchase order is triggered at a tool vendor when stock levels in a production plant fall below a minimum inventory is, of course, only a minor aspect here, but one that's already in actual use.

'In digital production operations, too, the metal-cutting process as such is still crucially influenced by the tool in terms of component quality and cost-efficiency. The tool thus remains a crucial factor for success in metal-cutting production operations,' adds Dr. Steffen Lang, who heads the Service Division at Gühring KG in Albstadt.

The digital integration of metal-cutting machines enables the performative capabilities and the current status of the tool deployed in the machine to be acquired far more precisely than hitherto. Thanks to the resultant transparency, the entire logistics for tool supply to the machine can be optimised. Dr. Lang summarises the extent of an automated tool provision feature: 'This begins with presetting of the tools actually required at the machines, which are mounted and adjusted in the optimal sequence. It continues with consumption monitoring of the inventory levels and acquisition of service lifetime changes and factoring them directly into further tool plan-



ning. And finally the consumption and performance data are forwarded to the vendors, so as to optimise the tool's performance and supply.

In this context, Gühring offers a machine interfacing concept that enables the machine status and technological process parameters like spindle speed and torque, plus forces of the feed axes, to be acquired. Moreover, the machine data can be acquired directly in the production process, and on this basis the metal-cutting process can be immediately optimised.

Solutions for digitalisation in the tool environment

In order to progress digitalisation, moreover, the company has developed for its products a tool management software package of its own that executes and organises the exchange of setpoint and actual values, and other tool data, between the individual stations in the tool room and the company's network. Haimer's devices from the Industry 4.0 series, moreover, can be automated using modern digital features and interfaces.

For Zoller, the paramount focus is on holistic tool data handling. The company's setting and measuring devices determine the requisite tool geometry data, and edit them so that the machine tool can read them in. 'Even for this step of data transfer, we offer a wide range of highly disparate solutions for every size of firm. The data can be both entered manually and transmitted

over a network or an RFID chip,' reports Bernd Schwenning. The tool management capability subsumes not only the organisation of tool storage, but also evaluation options, e.g. for service lifetime or costs of tool utilisation, broken down into a specific order or even a specific component. 'Our goal is always to generate maximised transparency in the entire tool context, so as to optimise the production sequences involved and render them faster and more cost-efficient,' says Bernd Schwenning.

But users, too, have to engage with the issue of digitalisation. For new investments, in particular, companies should take care to ensure that every element in the tool's environment has Industry 4.0 capability and can be integrated into the digital workflow. A tool should, for example, be unambiguously identifiable using RFID data chips or using QR or data matrix codes, and through this detection capability supply further tool data like Article Number or 3D models,' says Andreas Haimer, citing specific key data. Bernd Schwenning adds: 'The most important factor for optimal tool deployment is properly updated tool data. Without tool data, the entire sequence is inconceivable: neither digitally aided inventory management nor the retrieval of metrological programs nor reading tool data into the machine.' This first step, of course, he admits, is tediously hard work, but it does offer the

requisite foundations for corporate survival in the future.

Online monitoring of the machine parameters determinant for the metal-cutting process, like torque and power consumption of the spindle, feed forces of the axes, etc. enables tool utilisation to be optimised or the dimensioning of the tool to be rendered more suitable for the machining job involved. 'Both provide the user with an option for raising his productivity more selectively. It's important for him to know and exploit these advantages of machine interfacing, so as to upgrade his competitiveness,' emphasises Dr. Steffen Lang.

At the METAV, the exhibitors will in the context of tool utilisation also be presenting disparate solutions in digital pro-

duction operations. For instance, Haimer will be showcasing its concepts in regard to the digitalisation of tool presetting, networking and concatenation of systems. Moreover, the company will be presenting many new tools and holders, and in its role as a complete-system vendor for everything to do with machine tools be spotlighting at the fair the very latest shrink-fit, balancing and presetting devices.

company provides information on automation solutions that support daily tool handling for enhanced process reliability. On the Gühring company's stand, the machine's interfacing with the tool management software and the evaluation of machine data acquired will be on show live on the spot on a CNC machine. Further exhibits from the Gühring company will be new drills and metal-cutting concepts for the field of e-mobility.

METAV 2020 – 21st International Trade Fair for Metalworking Technologies displays the full spectrum of manufacturing technology. The focus is on machine tools, manufacturing systems, precision tools, automated material flows, computer technology, industrial



electronics and accessories. Added to this are new topics such as Moulding, Medical, Additive Manufacturing and Quality. They are firmly established in so-called Areas in the METAV exhibition programme, each with its own nomenclature. The target group of METAV visitors includes all branches of industry that process metals, in particular mechanical and plant engineering, the automotive and supply industry, the aerospace sector, the electrical industry, energy and medical technology, tool and mould making as well as metalworking and trades. The VDMA Precision Tools Association is the institutional patron of METAV and is responsible for planning the tools exhibition area.

Zoller will be showcasing solutions for measuring and managing tools, and for tool data management. This involves metrology, software and services that guarantee complete-system solutions for adjusting, measuring, testing and managing metal-cutting tools. In addition, the

Mi-38 helicopter

Rostec delivers the first serial produced to client

Russian Helicopters Holding Company (part of Rostec State Corporation) delivered the first serial produced Mi-38 helicopter with a highly comfortable cabin to its client, Gazprombank Leasing Company. The helicopter, built by Kazan Helicopters, will be operated by Russian Helicopter Systems (RHS). The delivery ceremony for the first serial Mi-38 was held at the Kazan Helicopters facility. The ceremony was attended by the President of the Republic of Tatarstan Rustam Minnikhanov, Director General of the Russian Helicopters Andrei Boginsky, as well as Director General of Kazan Helicopters Yuri Pustovgarov.

'The newest Mi-38 is a multi-purpose helicopter that will fill the empty niche between medium Mi-8 and heavy Mi-26 models. It can be used for transportation of cargo and passengers, search and rescue operations, and as a flying hospital or an offshore helicopter for delivering specialists to oil production platforms at sea. The first serial produced machine will be used for business class transportation. We have already demonstrated this helicopter with highly comfortable cabin to the leaders of Russia and foreign countries. The superior flight performance characteristics and competitive price will guarantee that Mi-38 will find its place in the helicopter fleet of Russia, our partners in the Middle East, Southeast Asia, Latin America and other regions,' said the Industrial Director of Rostec Aviation Cluster Anatoly Serdyukov.

'The delivery of the first serial Mi-38 is an important step,

confirming that Kazan Helicopters is ready to serial delivery of this type of machine for both commercial operators and governments. The demand forecast of potential buyers for Mi-38 by 2030 is more than 100 aircraft,' said the Director General of Russian Helicopters Andrei Boginsky.

The Director General of Kazan Helicopters Yuri Pustovgarov handed a symbolic key to the new Mi-38 helicopter to the CEO of RHS Mikhail Kazachkov. The helicopter with a highly comfortable cabin is designed to carry up to 10 people.

The first serial Mi-38 helicopter was introduced to the general public at MAKS-2019 Moscow Air Show, where it was demonstrated to the President of Russia Vladimir Putin and the President of Turkey Tayyip Recep Erdoğan. Mi-38's foreign debut took place during the Dubai Airshow 2019, where the head of the Russian Ministry of Industry and Trade

Denis Manturov showed it to the Crown Prince of the Emirate of Abu Dhabi, Sheikh Mohammed bin Zayed Al Nahyan.

'We are glad to continue our cooperation with Russian Helicopters and implement another deal – financing the production of Mi-38 in the framework of the previously signed cooperation agreement. Renovation of aircraft fleets requires high capital investments, and leasing allows you to divide the cost of expensive asset acquisitions into long periods comparable with the life of the asset, making it undoubtedly an effective financial tool in solving such problems. Together with Gazprombank, we see good prospects for leasing aircraft and, in particular, helicopters. We have the capability and resources to finance the renewal of fleets of both commercial and federal subjects in the Russian Federation,' commented the CEO of Gazprombank Leasing Maxim Agadzhyanov.

During the ceremony, employees of Kazan Helicopters were awarded for their active participation in the production of Mi-38 and a significant contribution to the development of domestic helicopter construction. Employees of the enterprise were awarded the title of Honored Mechanical Engineers of the Republic of Tatarstan, and also received honorary di-

plomas of the Ministry of Industry and Trade of the Russian Federation, Rostec State Corporation and Russian Helicopters Holding Company.

The design of Mi-38 consists of a single-rotor scheme and a twin-engine power plant with high power and economic performance. The main structural elements of the fuselage are made of aluminum alloys, individual components and parts are made of steel, titanium and composite materials. The helicopter uses two Russian-made TV7-117V engines, equipped with dust protection devices with a high degree of air purification. An advanced six-blade rotor provides high thrust and low vibration levels. The blades are equipped with an anti-icing system, and the X-shaped tail rotor gives the helicopter excellent handling with low noise level.

Mi-38 is equipped with a modern navigation system and satellite navigation system. The cockpit of the helicopter is equipped with five versatile LCD color screens to ensure the effective display of information. The flight range of the new helicopter is up to 1,200 kilometers (with additional fuel tanks). With its maximum take-off weight of 15.6 tonnes, the helicopter can carry 5 tonnes of payload on board or on an external sling.

Covid-19: Statement by Deutsche Messe on the current situation concerning HANNOVER MESSE

Dr. Jochen Köckler, Chairman of the Deutsche Messe Managing Board: 'We are taking all developments concerning the coronavirus (Covid-19) very seriously. We are in close contact with the responsible health authorities, the HANNOVER MESSE Exhibitor Advisory Committee and our partner associations VDMA and ZVEI. On 25 February we held a meeting with the Executive Board of the Exhibitor Advisory Committee and the associations to discuss the current situation. All participants agreed

that it is too early at this point to decide on postponing HANNOVER MESSE. We have received no substantial cancellations from exhibitors at the event, which opens its doors on April 20. We will be conducting further discussions with the health authorities this week to decide on the kind of measures that need to be implemented at HANNOVER MESSE.

Developments in Europe and the postponement of individual trade fairs in Germany however reveal that the situation

can change from day to day. In that regard, we will continue to monitor and discuss the situation intensively – with the aim of re-evaluating the situation together with the health authorities and the Exhibitor Advisory Committee in mid-March, in week 12.

Irrespective of this, we will ensure the highest possible degree of hygiene, safety and medical care at the fair. The health and safety of all employees, customers, partners and guests enjoys the highest priority for Deutsche Messe.'

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