

Global Product Communications
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How to sustainably increase productivity on the shop floor through process integration, automation, digitization, and service.

Step by Step Toward Smart Manufacturing

Rising cost pressures, volatile supply chains, smaller batch sizes, and a growing variety of product variants are changing the demands placed on industrial manufacturing. At the same time, many smaller companies have only limited capacity. What is needed, therefore, are manufacturing solutions that not only improve productivity, quality, and flexibility in specific areas but also strengthen them across the entire process chain. However, this does not necessarily mean that companies have to completely overhaul their machinery. Often, the more economically sensible approach is to modernize existing machines in stages: integrating processes, making better use of existing capacities, adding automation where needed, and making manufacturing knowledge digitally available.

DMG MORI supports its customers in this approach with its Machining Transformation strategy, or MX for short. It combines process integration, automation, Digital Transformation, and Green Transformation into a holistic, long-term sustainable concept. The focus is on how production systems can be further developed throughout their entire life cycle. While the machine tool forms the productive foundation, its full potential is realized only through interaction with intelligent technology cycles, automated workpiece handling, integrated measurement technology, digital job planning, and a range of services designed for speed and availability.

Get off to the right start, grow as needed

With its Best Fit Machines (BX) DMG MORI is targeting, in particular, companies seeking a high-performance and cost-effective foundation for their manufacturing operations. The concept is aimed, among others, at small and medium-sized businesses as well as contract manufacturers who want to produce precision workpieces cost-effectively and then gradually expand their capacity as needed. BX machines combine proven technology in a standardized, modular product concept. They are ready for immediate productive use and provide fast, cost-effective access to DMG MORI's technology portfolio. At the same time, they are designed for future integration with CELOS X and standardized automation solutions, allowing them to grow alongside the business and its evolving needs.

The modular BX portfolio precisely reflects this technological range: In the field of milling, the DMV 160 vertical milling machine sets the standard for cost-effectiveness, while the DMX 80 U serves as a flexible solution for demanding 5-side and 5-axis simultaneous machining. DMG MORI covers its turning expertise with the universal CLX 450, a concept that can be scaled from the CLX 450 TC, which includes a B-axis milling spindle, all the way to highly efficient 6-side complete machining. The portfolio thus offers the ideal foundation for every requirement:

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from cost-effective machining of simple workpieces to highly complex manufacturing. Since April 2026, DMG MORI has been offering additional investment security with a standard 5-year warranty on selected core components such as turnMASTER spindles, turretMASTER turrets, and the ERGOline X control panel. This minimizes the risk of downtime and ensures long-term, predictable, and cost-effective production for contract manufacturers and SMEs.

The key factor is scalability. A machine does not have to be part of a fully automated production line from the outset to be future-proof. The BX machines are designed for use with CELOS X, allowing them to be integrated into digitally networked processes at a later stage and supplemented with pallet handling or robotic loading. In highly automated environments, they can also serve as robust and cost-effective additional capacity. Companies can then process simpler workpieces specifically on BX machines, while highly integrated machining centers remain available for more demanding and lucrative tasks.

Process integration reduces interfaces and increases vertical integration

Reducing process interruptions increases productivity: Every change between machines, every additional reclamping, and every internal transport route costs time and increases the risk of deviations due to the necessary retooling. Especially for components with tight tolerances or demanding surface finishes, consolidating critical machining processes into a single machine can therefore offer significant advantages.

DMG MORI integrates mill-turn operations, turning, and grinding in a single setup. This reduces setup changes, shortens cycle times, and minimizes the need for additional machines and interfaces. Positional relationships between individual machining steps can be maintained more reliably. Grinding integration is now also available from DMG MORI for machines with HEIDENHAIN controls, enabling its use across various control systems.

Integrated dressing and grinding cycles support, among other things, internal, external, and surface grinding. Depending on the machine, hardware package, and application, surface accuracies of less than 0.4 µm and roundness tolerances of less than 5 µm can be achieved. For users, this opens up the possibility of producing high-quality surfaces and precise geometries directly on the machine where the preceding milling or turning operations also take place. This not only shortens the process but also makes it easier to control and results in a higher-quality end product.

New technology cycles also expand the capabilities of existing machines. For example, the Gear Package ALL IN 2.0 bundles eight integrated cycles for gear manufacturing. With gearBROACHING, internal and external gear teeth can be machined on turn-mill machines without necessarily requiring a separate gear-cutting machine. Dialog-guided programming, clearly defined tools, and compensation parameters for toolholder deviations simplify setup and increase process reliability.

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With Interpolation Turning 2.0, complex contours, including asymmetrical, can also be machined using axis interpolation. This is particularly relevant, for example, for sealing surfaces or special geometries that must not be milled. Instead of requiring additional special tools or separate machining stations, the machine can perform the process directly using integrated cycles. For manufacturing, this means less setup time, a broader range of applications, and greater value creation on the existing machine.

Automation integrates quality into the process

Today, automation means more than just the automatic loading and unloading of a machine tool. It only reaches its full potential when workpiece handling, machining, quality assurance, and process correction are integrated. One example of this is the combination of MATRIS WPH and Renishaw Equator.

The loading robot handles automated workpiece handling and can transfer components to external stations equipped with a measurement system. There, the Renishaw Equator inspects the manufactured parts directly in the production environment. The measurement results can then be fed back directly to the machine as correction data. This creates a closed-loop control system: dimensional deviations are detected early, and the process can be corrected immediately and automatically based on the measurement results. As a result, component quality remains stable even during extended periods of autonomous operation.

For companies, this integration reduces manual inspection steps and lowers the risk that defects will go unnoticed across a large number of units. At the same time, it increases machine uptime because quality inspection and manufacturing are more closely integrated. Scalable automation solutions such as Robo2Go, PH Cell, or WH Cell make it possible to flexibly adapt this approach to different batch sizes and production environments.

Autonomous guided vehicles (AGVs) can also expand automation capabilities. The PH-AMR 750 from DMG MORI, for example, handles autonomous pallet handling within a limited area. Since the system operates without fixed rails or additional safety barriers, it can be flexibly integrated into existing environments. Such solutions are particularly valuable for companies that want to expand their production capacity without fundamentally redesigning the shop floor.

Targeted Further Development of Existing Facilities

Even for companies with older machinery, increased automation isn't necessarily only achievable through new purchases. Retrofitting gives them the opportunity to adapt their high-performance existing equipment to meet new requirements. This can include retrofitting automation, integrating additional technologies, or adding digital capabilities. They can continue to use their existing investments productively for longer while better meeting the growing demands for machine uptime, flexibility, and modern manufacturing processes.

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Hintersdorf GmbH & Co. KG, based in Rahden, demonstrates how this approach can work in practice. With the help of DMG MORI, the service provider retrofitted an existing DMU 60 eVo linear with a flexible PH Cell 300 pallet automation system. The retrofit took just one week to complete, after which the company was able to operate the system autonomously during night and weekend shifts. This retrofit doubled spindle runtime; the investment paid for itself in less than a year for the customer.

This example shows that productivity gains can also be realized with existing machinery, provided the manufacturer incorporates retrofitting and upgrades directly into its product strategy. The key is to choose the right level of automation: a solution that is tailored to the variety of parts, the existing workforce, the available floor space, and the planned capacity growth.

Knowledge Management and Customer Service as Factors in Productivity

In addition to physical manufacturing, digital job planning also determines how quickly a new order can be reliably transitioned into production. With the Technology Library, the DMG MORI add-in for ESPRIT EDGE, and the Smart Process Mapper, proven machining strategies, part properties, and process knowledge can be centrally stored and reused. Recurring machining areas within part families can be identified more quickly and linked to existing processes. This shortens programming times, reduces sources of error, and facilitates the standardization of manufacturing processes across machines, employees, and locations.

CELOS X serves as a digital interface between the machine, process data, and employees on the shop floor. Complementary applications such as TULIP help provide customized no-code solutions for capturing information, workflows, and subsequent knowledge transfer. The complementary Part Cost Price Calculator also creates transparency in cost calculations and supports more robust quotation planning.

However, productivity also depends on machine availability. DMG MORI combines service and digitization through its “Zero Disruption” approach. Via the my DMG MORI customer portal, users can clearly identify replacement parts using a digital twin of their machine. More than 350,000 different original parts are available; within Europe, delivery to the customer is scheduled within 24 hours. This makes maintenance and repair processes easier to plan and helps limit unplanned downtime. In addition, the digital service enables flexible, on-demand access to technology cycles: If a company needs specific functions, such as complex gear-cutting cycles, at short notice for a new customer order, these software modules can be requested digitally directly through the portal and activated on the machine. The machine tool thus adapts immediately to new market opportunities without requiring any hardware changes.

The economic aspect of modernization is also part of the overall approach. With Used Machines and DMG MORI Finance, companies can trade in underutilized machines at market-based terms and use the proceeds as seed funding for a new machine or automation

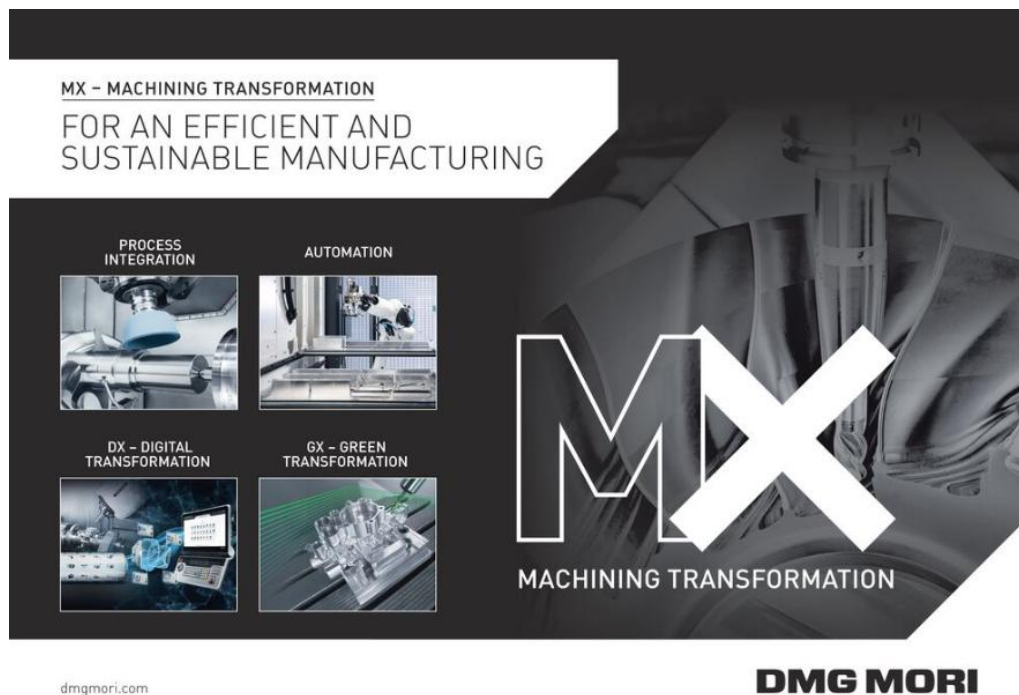
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solution. Complementary leasing and financing models offered by the DMG MORI Finance team reduce the strain on customers' liquidity and make it easier to plan modernization initiatives.

This results in an approach that views manufacturing not as a rigid system, but as a comprehensive solution that can be continuously refined and grows alongside the company. Process integration, automation, digitization, retrofitting, and service mesh together like gears. Companies can develop their manufacturing operations step by step, thereby remaining competitive in the long term.

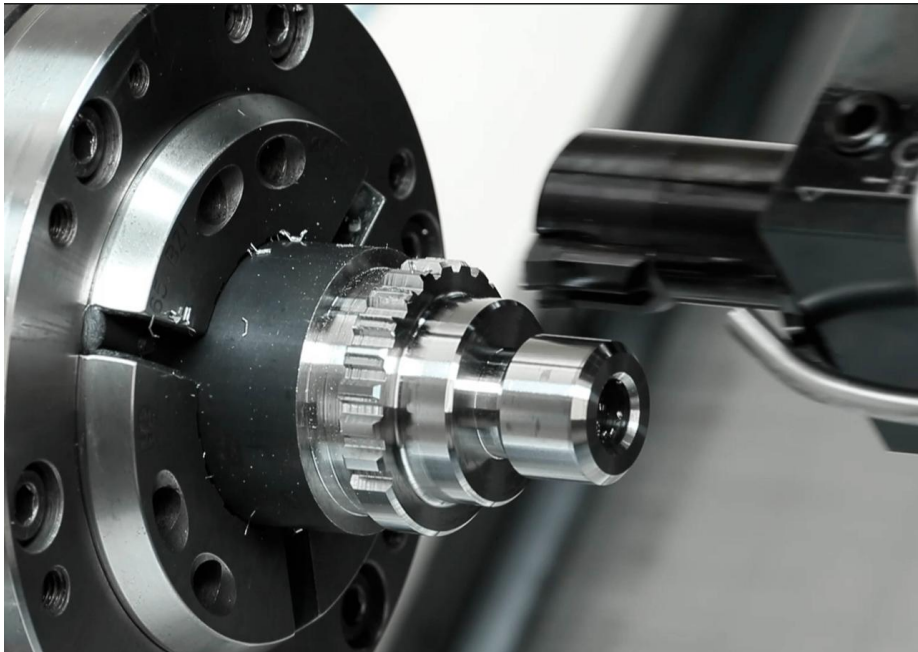


Picture 1: DMG MORI's Machining Transformation (MX) combines state-of-the-art machine technology with end-to-end automation and digitization for maximum efficiency.

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Picture 2: The gearBROACHING technology cycle allows even complex internal and external profiles with small diameters or deep bores to be reliably integrated into standard turn-mill centers.



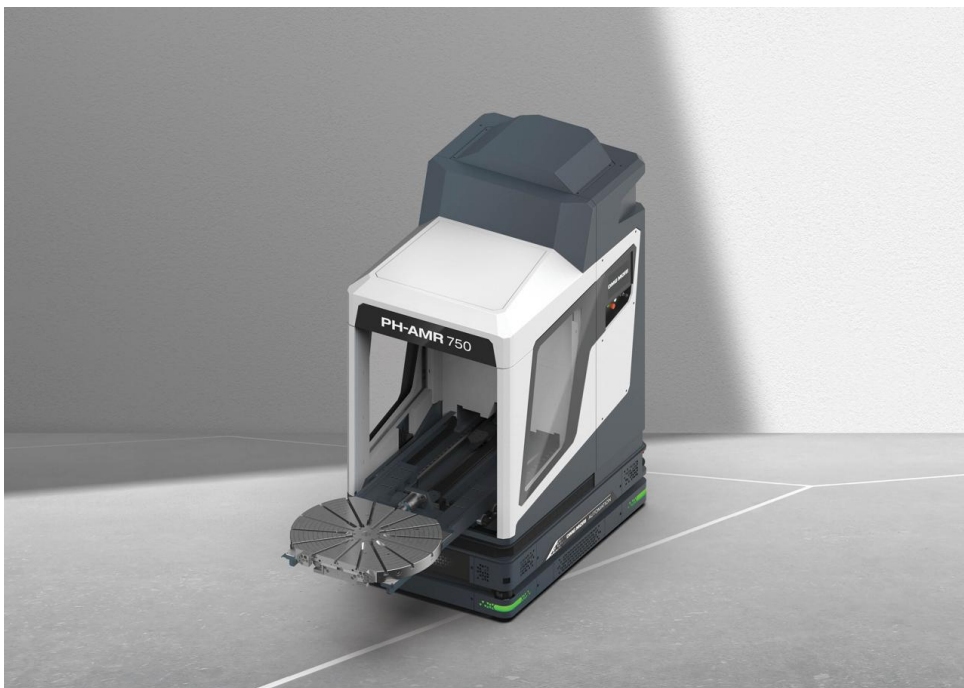
Picture 3: Efficient CAM Programming: Hexagon's state-of-the-art CAM software, ESPRIT EDGE, allows you to centrally store proven machining strategies and process knowledge. Combined with the DMG MORI Technology Library, this reduces programming time and ensures standardized production.

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Picture 4: Flexibly scalable autonomous manufacturing: The CLX 450 TC turn-mill center from DMG MORI, combined with the Robo2Go robotic workpiece handling system.



Picture 5: The PH-AMR 750 autonomous guided vehicle (AGV) from DMG MORI transports pallets autonomously on the shop floor. Since the system requires neither fixed rails nor safety fences, it can be seamlessly integrated into existing production environments while saving space.

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Company Profile // DMG MORI

DMG MORI is a leading global manufacturer of high-precision machine tools and is represented in 45 countries with 128 locations, including 18 production plants. In the "Global One Company", around 13,500 employees are driving the development of holistic solutions in the manufacturing industry. Under the guiding principle of Machining Transformation (MX), DMG MORI combines four pillars for the efficient, sustainable production of the future: Process Integration, Automation, Digital Transformation (DX) and Green Transformation (GX).

DMG MORI stands for innovation, quality and precision. Our portfolio covers sustainable manufacturing solutions based on the technologies turning, milling, grinding, drilling as well as Ultrasonic, Lasertec and additive manufacturing. With technology integration, end-to-end automation and digitization solutions we make it possible to increase productivity and resource efficiency at the same time.

At our production sites worldwide, we realize holistic turnkey solutions for the main sectors of Aviation & Space, Data & Semiconductor, Die & Mold, Mobility, and Medical. With the DMG MORI Qualified Products (DMQP) partner program, we offer perfectly matched peripheral products from a single source. Our customer-oriented offerings cover the entire life cycle of a machine tool – including training, repair, maintenance and spare parts service.

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