Standard automation
Flexible manufacturing cells
Production lines
Engineering
Software

DMG MORI LifeCycle Services

DMG MORI Systems
**Why automation?**

**Trends & applications – your opportunity, your profits.**

Automation offers incredible productivity growth potential while ensuring consistent production quality. With ever more complex custom job demands and associated cost pressure, automation is the effective solution for today’s manufacturing environment. With skilled labor shortages, automation can relieve highly skilled employees, reduce manpower requirements, save costs as well as eliminate any potential negative impact on productivity. DMG MORI Systems supports your modern production line with years of experience in all areas of automation.

**Your performance potential**

- More competitive for greater profits / ROI
- Increased productivity (e.g. to eliminate machine downtime during personnel breaks or to shorten non-productive time)
- Reduced labor costs and personnel requirements
- Economies of scale with small batch sizes
- Retain manual operation option
- Optimal production capacity utilization
- Consistent high quality
- Standardized operations
- Efficient use of space
- Greater flexibility
DMG MORI Systems

Experience & expertise – over 3,000 successfully implemented projects.

Increase performance – with automation solutions from DMG MORI Systems. Streamlined workflows and maximum production efficiency are our focus. DMG MORI offers the experience and technology to minimize workpiece costs while achieving consistent top quality. We can help you optimize the efficiency of a single machine tool or advise you on the development and implementation of complex production lines.

DMG MORI Systems assembly plant in Hüfingen, Germany
DMG MORI Systems

Our 360° expert solution – evaluate, advise, implement.

DMG MORI Systems will help you capitalize on every opportunity to realize your top performance potential through our core competency in machine tool manufacturing and our leading automation expertise. This combination gives our customers a competitive advantage with automation solutions that are tailored to their specific requirements. Whether automation for one machine or an entire multi-process production line: DMG MORI Systems can develop and implement the perfect solution for you.

Planning
+ Process analysis
+ Technology planning
+ Machine configuration
+ Cycle time calculation
+ Simulation

Logistics
+ Automation planning
+ Material flow analysis
+ Layout coordination

Start-up
+ Training
+ Process visualization
+ Back-up strategy
+ Remote diagnosis

DMG MORI Systems
+ 5 locations in Europe, Japan and the United States
+ Over 3,000 solutions successfully implemented worldwide
+ Comprehensive added value: evaluate, advise and implement
+ Largest and most innovative machine portfolio worldwide
Machine-integrated automation

Rotary and linear storage
DMG MORI offers a range of optional automation solutions that can be directly integrated into the machine tool at our production facilities.

Automated machines: 1

Flexible production cells

Linking of multiple process sequences
Gantry solutions, stationary or mobile robots and other available accessories for multi-machine loading and integration of additional operations.

Automated machines: 3 – 10

Standard automation

Workpiece or pallet handling
Efficient robot or gantry solutions with additional process modules (cleaning, measuring, brushing, etc.); available as a plug-and-play or custom solution.

Automated machines: 1 – 2

Production lines

Comprehensive solutions for mass production
Planning and implementation of pallet, gantry and robot handling for a complete production line.

Automated machines: > 10
Modular systems

Broad expertise – individual solutions.

Whether standard automation or complete manufacturing cells, we follow a simple and efficient principle to deliver your perfect automation solution. And this represents only a fraction of the possibilities.

Systematic combinations – DMG MORI Systems

+ Gantry options, robots
+ Conveyors
+ Gripper extensions
+ Controls
+ Additional stations
+ Workpiece carriers

System example with integrated workpiece finishing
incl. stamping, measuring and cleaning operations

Linear systems

- Traveling axis with supports
- Surface gantry
- H-loader*
- I-loader*
- Gantry cross axis

* Also available as a telescopic axis
**Robot systems, load capacity: 6.6 to 551.2 lbs.**

<table>
<thead>
<tr>
<th>6-axis robot</th>
<th>Robot on 7th axis</th>
<th>7-axis robot</th>
</tr>
</thead>
</table>

**Workpiece buffers**

<table>
<thead>
<tr>
<th>Rotary holder</th>
<th>Drawers</th>
<th>Paternoster</th>
<th>Basket stacker cell</th>
<th>Buffer conveyor</th>
</tr>
</thead>
</table>

**Gripper extensions**

<table>
<thead>
<tr>
<th>Double gripper</th>
<th>Gripper on C1-axis</th>
<th>Gripper on B1 + B2-axis</th>
<th>Hanging robot on 7th axis</th>
</tr>
</thead>
</table>

**Combination options**

**Additional stations**

<table>
<thead>
<tr>
<th>Parts measuring drawer</th>
<th>Deburring station</th>
<th>Oil centrifuge</th>
<th>Vent box</th>
<th>Measuring</th>
</tr>
</thead>
</table>
Standard automation / WH 2 workpiece handling

Compact handling for small workpieces.

The WH2 system is perfectly suited for loading small chuck parts on turning machines. It works continuously via a 6-axis industrial robot and workpiece storage unit for optimal small series production that provides impressive accessibility in a compact design. Robot and workpiece storage can be set up as a stand-alone solution while integrated workpiece storage can store parts weighing up to 44.1 lbs. per drawer.

**Your advantages / System highlights**

- Optimal workpiece loading and unloading
- Dynamic automation for small series production with fast loading
- 6-axis industrial robot, max. 11.0 lbs. load capacity (up to 15.4 lbs. optional)
- Integrated expandable workpiece storage comes with 2 drawers (up to 44.1 lbs. per drawer)
- Optional: Load unsorted parts via camera recognition

1: Transfer from workpiece storage to machine work area
2 + 3: Workpiece examples
Standard automation / Workpiece handling

WH 2 and WH 3 for the MILLTAP 700.

The compact and easily accessible WH 2 / WH 3 workpiece handling systems are perfectly designed to load and unload a MILLTAP 700 for small and medium series production. A 6-axis industrial robot operates continuously with a workpiece storage unit. Both have been integrated in a protective enclosure. Parts weighing up to 44.1 lbs. can be stored in each drawer and there is capacity for up to 15 part carriers in the rotary system.

MILLTAP 700 turnkey projects

+ Technology design
+ Clamping device arrangement
+ Application technology
+ Needs-based automation

Your advantages / System highlights

+ Greater autonomy (up to 2 hours unmanned operation)
+ Very flexible automation solution adapted to the MILLTAP 700
+ 6-axis industrial robot, up to 15.4 lbs. load capacity (optional)
+ 15-slot rotary workpiece carrier system for more storage capacity
Standard automation / WH 3 workpiece handling

Universal compatibility & unmatched storage capacity.

The WH 3 is exceptionally flexible, easily accessible and universally applicable for use with not only a wide range of turning and milling machines but many other machines as well, including eroding or LASERTEC machines.

Your advantages / System highlights

+ Greater autonomy and flexibility
+ Adaptable automation solution for turning and milling machines
+ 6-axis industrial robot, 11.0 lbs. load capacity (up to 15.4 lbs. optional)
+ 15-slot rotary workpiece carrier system for more storage capacity
+ Protective enclosure with integrated control panel
+ Optional: free sliding design for optimal machine accessibility, optional 30-slot rotary workpiece carrier system

Available as a retrofit solution

Easy access for quick machine setup
Standard automation / WH 10 workpiece handling

Reliable performance for heavy loads.

The WH 10 / WH 25 workpiece handling solutions are optimally designed to load up to 22.0 lbs. or 55.1 lbs. parts on turning and milling machines. Equipped with an industrial robot and 2-slot (optional 4-slot) pallet changer system, these standardized automation solutions still boast an impressively compact design.

Your advantages / System highlights

- Complete machining with additional operations
- Ready system with unmatched storage capacity
- 6-axis industrial robot, up to 22.0 or 55.1 lbs. load capacity
- 2-slot or 4-slot drawer models with up to 661.4 lbs. load capacity per drawer for loading during production
- Optional: free sliding design for optimal machine accessibility
Your advantages / System highlights

+ Complete machining with additional operations
+ Plug-and-play with maximum storage capacity
+ 6-axis industrial robot, up to 77.2 lbs. load capacity

Standard automation / WH 10 top workpiece handling

Space-saving automation.

Optimally matched with DMG MORI turning machines, this solution is setup for 2.2 to 55.1 lbs. workpiece handling and storage. Loading from above the machine saves precious floor space while the optimally arranged industrial robot ensures easy access to the setup station.
Simple and efficient.

The workpiece magazine with its restacking function ensures seamless transport of raw material and finished parts via a transport wagon. Additional stations (for measuring, cleaning, brushing, etc.) can be added between the workpiece magazine and machine tool.

**Highlights**

- Vertical axis load capacity: 132.3 / 264.5 / 551.2 lbs.
- ± 3.9 in. repeatability
- Scalable stacking cell adapted to a gantry device
- Greater autonomy
- Compact footprint
Optimal cost per piece thanks to pallet handling.

Our linear handling systems are easy to use, flexible and highly efficient. As a perfect complement for virtually any milling machine, the PH 150 I 8 offers a range of possibilities for workpieces up to 551.2 lbs. on any number of pallet storage slots.
Standard automation // Pallet handling / Robot

Maximize your potential.

With a pallet handling system from DMG MORI Systems, you are always one step ahead. High storage capacity and up to 551.2 lbs. loads per pallet give you unparalleled production autonomy. Our many options and modular system components ensure that you will always receive the best possible automation solution.

Workpiece examples:
1: Interlocking mechanism
2: Knee joint

3: PH 50 I 20, machine setup
4: PH 3 | 100, finished part storage in the pallet storage
5: PH 50 I 20, pallet loading
Perfect for small & medium production runs.

This highly robust and stable pallet system will take your small and medium production runs to a new level of efficiency. The modular system of standardized, predefined components allows you to automate 1 - 4 machines with up to 2 setup stations.

**Your advantages / System highlights**

+ Easy installation with workpiece storage systems
+ Automated workpiece transfer for greater productivity
+ Ideal for small and medium production runs
+ Easy integration thanks to efficient design and predefined components
+ 8 different automation solutions available
+ User-friendly MCC-LPS III control system, 3 available versions: BASIC, STANDARD & ADVANCED
Power & precision for up to 110.2 lbs.

Ideal for highly productive mold and tool making, the PH 50 | 20 has capacity for 20 pallets with up to 110.2 lbs. load capacity each. This high storage capacity makes extended unmanned operation and flexible expansion possible. All jobs are easily controlled via the Automation Job Manager from the control panel.

**Your advantages / System highlights**

- **Greater autonomy with Automation Job Manager**
- **6-axis industrial robot**, up to 110.2 lbs. load capacity
- **Integrated pallet magazine** with 20 slots and an integrated setup station for loading during production
- **Optional**: expandable with additional rack-type storage

1: Pallet magazine for 20 pallets & up to 110.2 lbs. load capacity each
2 + 3: Workpiece examples
Added value & greater productivity with supplemental production steps.

All automation solutions with a 6-axis industrial robot or gantry design can incorporate additional operations that run automatically during production. Minimizing manual tasks while adding value can significantly increase your productivity and competitive advantage.

**Conventional value-added chain**

- Turning / milling
- Deburring
- Labeling

2 shifts

**Modern value-added chain**

- Turning / milling, deburring, labeling

1 shift (time savings)

**Supplemental production step example**

1: Deburring  2: Labeling via needle embosser  3: Combined grinding/brushing station  4: Measuring via tactile measuring device
Custom solutions for your unique requirements.

Do you have very specific production requirements? Whether a tailored workpiece-specific loading system, machine-linking process optimization, or adding production steps (e.g. optical image processing, position recognition, multi-machine loading, etc.), we can develop the perfect solution for you with our modular systems (see page 6).
Workpiece handling / Pallet handling

Floor plans

**WH 2**

**WH 3**

Enclosure (side-sliding)

**WH 3 U**

**WH 10**

**WH 25**

**WH 10 top**

Loading sides / Machine tools
Example on a CTX beta 1250 TC

PH 3100

PH 50|20 / 200|20

PH 150|18

Loading sides / Machine tools
Example of a flexible manufacturing cell

- **DMC 55 H duoBLOCK® with pallet storage**
  Transfer of a finished part from the DMC 55 H to an available CTV 250

- **Two 6-axis robots**
  with 44.1 lbs. max. load capacity per robot

- **Cycle conveyor**
  for loading and unloading of the complete system
  + Conveyor also used as intermediate buffer
  + Fast track for SPC parts
  (Upon request, SPC parts can be prioritized over parts in the buffer)

- **Additional devices**
  Measuring, cleaning, embossing devices
  + SPC drawer (statistical process control)
  + NIO drawer (defective part sorting)

- **2-axis gantry**
  for two NZX 2500 production turning machines
  + SPC conveyor for statistical process control
  + Double gripper for quick part exchange (8-10 seconds)
  + Pneumatic loading hatch, deselect specific machines

- **CTV 250 with a rotary storage magazine and integrated centering device**
  + Rotary table for intermediate decoupling
  + Rotary table for decoupling automation / machine
  + By deselecting a machine, manual machining is possible via the rotary table (unique parts / finishing work)
Flexible manufacturing cells

From raw material to finished part – complete machining tailored to your requirements.

We can project the entire material flow for a workpiece – together with you, we develop a plan to most effectively arrange your various machine tools. Of course, we consider any other required production tasks (e.g. deburring, cleaning or assembly) to achieve the optimal workflow. The result is an automation cell with maximum productivity.

Example

Complete machining of drive shafts

Maximum productivity with optimal material flow. The system combines outer turning, gear cutting and inner turning in a continuous material flow. It is controlled via a process management computer with component tracking capabilities. Two independent lines allow simultaneous production of different components.

Example

Production of turning parts

This extremely compact cell can produce highly complex turning parts by combining CTX alpha 500 machining with a subsequent step on a CTX alpha 300 via a linear gantry. Of course, supplemental production steps (e.g. embossing, measuring, cleaning, etc.) are incorporated as well. Raw materials inflow and finished parts output is facilitated via a transport wagon to the storage cell.

Your advantages

+ Tailored to your requirements
  _ Requirements analysis
  _ Value-added chain planning
  _ Communication with ERP systems
  _ Modular solution
+ Efficient use of space
+ Heavy workpiece load capacity
+ Unmanned production
+ Just-in-time production
+ Turnkey projects
+ Medium and large production runs
  _ Optimized production steps in the machine
  _ Optimized machine loading and unloading
  _ Automation of supplemental production tasks
+ Broad workpiece compatibility
  _ Automated switching between various workpieces
  _ Machining a mix of workpieces
Example of a flexible production system
Production lines

The future is here – material flow with fully automated production.

Whether mass production, complex process chains or highly specialized manufacturing: DMG MORI Systems offers highly efficient solutions that maximize parts throughout. Use our engineering and technology expertise to achieve fully automated production with maximum efficiency. Welcome to the future – with DMG MORI Systems.

Your advantages

+ System solution for mass production
  (3 – 10 machines, or more machines)
  _ Optimized production steps
    in the machine
  _ Optimized machine loading
    and unloading
  _ Automation of supplemental production steps
    (e.g. cleaning)

+ Integrate multiple machining centers

+ Fully automated set up stations (robot or gantry loading)

+ Control via LPS III software
  (details on page 29)

+ Automated functions: loading and unloading, transport, measuring / testing
DMG MORI Systems

Engineering expertise – we plan and implement your vision.

For the most competitive manufacturing cells and production lines, only the best engineering skills will do. This is precisely what you get with DMG MORI Systems. We have the expertise to maximize your production planning and help you develop an optimal workflow that incorporates the right technologies for your unique manufacturing environment. Our goal is to plan and implement the most efficient production of your parts.

**Your advantages**

+ Years of experience in global production planning
+ Expertise and experience in machine tool manufacturing
+ More than 3,000 successfully implemented automation projects
+ Client-oriented focus on economical solutions
+ Broad expertise for unique customer requirements
+ Success through combined, advanced production technology and leading machining expertise

1: Planning, engineering  
2: Simulation  
3: Implementation
Engineering expertise for all project phases

From design concept development and feasibility studies to final implementation – our expert engineers will advise you through the entire process. This comprehensive support will help you optimize production reliability and competitive advantage.
Every customer challenge is a growth opportunity – we look forward to yours.

Pioneering solutions often arise from unique technical challenges. We place the highest value on continued growth of our engineering expertise. That is why we embrace all production issues to stay focused on how overall solutions relate to technical details. Engineering today brings us closer than ever to customers and presents unprecedented opportunities to develop sophisticated solutions for tomorrow.

Phase 1, Consultation
We will evaluate your unique challenges to define specific requirements.

Phase 2, Concept study
Initial proposal tailored to your requirements and cost expectations.

Phase 3, Kick-off
Presentation of all relevant technical information and implementation steps.

Phase 4, Implementation
Preliminary and final inspection of mechanical, electrical and functional sequencing.

DMG MORI Systems
Software

MCC-LPS III software – the advanced cell control system.

Flexible and efficient material flow for your workpieces: choose the ideal workpiece transfer for your workpieces and production volume. The newly developed MCC-LPS III is 100% flexible. Many functions help you achieve maximum productivity and process reliability - including task/order management, machining program management, material/device/tool management, system monitoring and diverse production reports. This software is available in three versions: BASIC, STANDARD & ADVANCED.

**Highlights**

- Job-based planning and operation
- Job/order grouping
- Input and output of machining program and workpiece correction
- Workpiece mounting on various stations
- System monitoring
- Job setup display
- Access authorization verification
- Tailored reports
- Diagnosis and recovery reports

1: Complete system visualization
2: Production plan