30 exclusive DMG MORI Technology-Cycles

COMPLEX MACHINING EASILY REALIZED
DMG MORI Technology Cycles

Complex machining simply realised!

**HANDLING CYCLES**
- Integrates new machining technologies e.g. gearSKIVING
- Expands machine capability - e.g. Grinding
- Simplifies complicated programming tasks – e.g. Multi threading 2.0

**MEASURING CYCLES**
- Increases machine safety – e.g. MPC – Machine Protection Control
- Increases process safety – e.g. Easy Tool Monitoring 2.0
- Adapts process parameters to eliminate vibrations – MVC – Machine Vibration Control

**SHAPING CYCLES**
- Increases machining accuracy – e.g. 3D quickSET
- Opens up new measuring possibilities for bulky component geometries – e.g. L-measuring probe package
- Increases transparency in QC processes - e.g. gearMILL with in-process measurement

**MONITORING CYCLE**
- Simplifies machine operation e.g. – B-axis Plunging
- Automates workflows – e.g. Counter spindle tip
- Protects against operator errors with higher safety. For example. Steady rest for turret

If your mobile phone has QR code recognition software, you will be taken straight to the video.
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Without technology cycles
Classic DIN programming

+ Long programs
+ Unclear structure
+ Difficulties during re-entry
+ User-dependent know-how

More informations about the DMG MORI technology cycles:

DMG MORI.COM
With **technology cycles**

**Dialogue-guided programming**

- Proper program structure
- Program up to 60% faster
- Error minimization by dialog-guided programming
- New technologies (gearSKIVING, Grinding)
- Technology know-how stored in the program

DMG MORI executive technology cycles are the true assistants of the production-oriented programming to increase productivity and safety as well as to extend machine capability.

If your mobile phone has QR code recognition software, you will be taken straight to all informations about DMG MORI technology cycles.
TURNING AND TURN & MILL

**Tool sort cycle**

**Highlights**

- Shorter non-productive times thanks to sorting of tools in the tool magazine according to the sequence of the tools in the program*
- Time-optimized sorting in the chain magazine due to the use of the tool shuttle instead of the spindle

*Optimization is not done in parallel to main time.

**Customer benefits**

- Minimized tool changing times from lot sizes > 3
- Flexible tooling in the magazine depending on the NC program

**Machine type:** CTX TC | CTX TC 4A*
**Control system:** CELOS with SIEMENS
* only with tool magazine

**User Interface**

- Actual tool sequence according to the first program is logged
- Tools are implemented by means of the tool shuttle in the chain according to the generated tool insert list

*It is perfect for me as a Job shopper, that the machine can sort the tools as needed in the NC-program.*
Tailstock for turret

**Highlights**

- Centring tip mounted on the turret
- Centring tip data is saved directly in the tool memory
- For fixed and spring-loaded centring tips

**Customer benefits**

- Easy operation for positioning the centring tip
- Position-locking the turret leads to increased process safety
- Pressing force of the tip is variable, programmable and monitorable

**Handling**

- Automatic retraction after program interruption and repositioning after restart

**User Interface**

Start position and support position in X and Z-axis can be programmed via the operator screen. Monitoring of support position in a predetermined position can be programmed by the operator.

“...A real value addition to my turret, being able to use it with a tail-stock.”

Machine type: CTX TC 4A | NTX | SPRINT 50/65 | CTX 4A

Control system: CELLOS with SIEMENS | CELLOS with MAPP5
TURNING AND TURN & MILL

Steady rest for turret

**Highlights**

- Hydraulically operated steady rest to support long and slim components
- Expansion of the possibility of using multi-channel machines
- The cycle allows both approaching to and retraction from the steady rest

**Customer benefits**

- Hydraulically operated steady rest in the tool table
- Position-locking the turret leads to increased process safety
- Fix the steady rest position, to position and shape tolerances to comply with the program after reboot

**User Interface**

Support positions in X and Z-axis directly via the user interface.
Automatic calculation of the approach and retract traverses.

Machine type: CTX TC 4A | NTX I SPRINT 50/65 | CTX 4A
Control system: CELOS with SIEMENS

“Now I can also use the turret as the steady rest.”
**Counter spindle tip**

**Highlights**
- Perfect combination of 6-sided complete machining and tailstock function
- Automatically load and unload a tailstock centre into the chuck of the main spindle or counter spindle via the milling spindle and into the magazine
- Support of long and slender workpieces on the main spindle thanks to the synchronous counter spindle tip

**Customer benefits**
- Higher component accuracy due to automatic change without opening the door (heat flow constant)
- Position-locking the spindle with the tip leads to increased process safety

**User Interface**

“Through the fully automatic changing of the counter spindle tip I save a lot of time machining without interruptions.”

**Machine type:*** CLX* | CTX* | NLX | CTX TC | CTX TC 4A | NTX* | SPRINT 50/65* | NZX* | CTX 4A* | ALX*  
Control system: CELOS with SIEMENS | CELOS with MAPPS  
*in combination with counter spindle without automatic change from tool magazine
Control of program status

**Highlights**

+ In combination with the GILDEMEISTER structure programming, a safe and fast reboot of the machining program after an interruption
+ Easy program operation especially with multiple spindles or tool magazine
+ Displays the process status of the workpiece

**Customer benefits**

+ Display of the detailed status on the controller
+ Enter remarks automatically by the GILDEMEISTER structure programming
+ Safe re-entry into the program by the press of a button instead of searching for a specific block

Machine type: NEF | CTX | CTX TC | CTX TC 4A | NTX 1000* | SPRINT 50/65 | CTX 4A | CTV

Control system: CELOS with SIEMENS*
* with SIEMENS

**GILDEMEISTER Structural Program**

+ Structured approach with more than 20 standard programs and more than 200 processing variants incl. automation (bar processing, robot / portal loading, ...)

Display of the program status with additional markers [EPS] for the sub-programs.
TURNING AND TURN & MILL

5-axis simultaneous machining

**Highlights**
- Free form surfaces by 5-axis interpolation on the main and counter spindle
- Turning and milling with interpolated B-axis
- With ATC-Turning for increased machine dynamics
- An intelligent Look-ahead function for a continuous process

**Kundennutzen**
- High surface quality and transitions in combination with thermal compensation
- Machines calibrated to half tolerance

"Due to the intelligent movement control I can achieve top machining profiles on my turn-mill machine which are comparable to that of a 5-axis Milling machine."

**User Interface**

**Cycle activation**

**Machine type:** CTX TC | CTX TC 4A | NTX | CMX V | NVX | DMU | NMV
**Control system:** CELIOS with SIEMENS | CELIOS with MAPPS

**Online help on the controls**
### Multi threading 2.0

**Highlights**
- NEW: On-Point-threading – Position oriented thread production
- Free definition of contours, pitches and number of starts possible
- Creation of large transmission threads, which can not be manufactured by simple thread chasing

**Customer benefits**
- Trapezoidal, buttress and knuckle thread easily programmable at the machine
- Screw conveyor with any profile geometry
- Ball screw nut with cross holes simple to realize

**User Interface**

> “Without an expensive CAD / CAM system, I can create complex threads and screw geometries directly on the machine.”

Input of the parameter for thread length, position of the thread and the distance of the retract movement.

Parameters for thread shaping, e.g. profile height, pitch diameter, etc.

Machine type: NEF | CTX | NLX | NZX (Tailstock) | CTX TC | CTX TC 4A | NTX | SPRINT 50/65 | NZX | CTX 4A | CTV
Control system: CELOS with SIEMENS | CELOS with MAPPS
TURNING AND TURN & MILL

Polygon- / Oval-Turning

**Highlights**

- Easy handling of non-circular parts
- Intuitive user interface for polygons / oval turning

**Customer benefits**

- Making the required geometries with possibilities of simple fine-tuning
- Possibility of fine tuning of the geometric parameters (long/short Semi-axis and bearing angle)
- Machining can be combined with main spindle or counter spindle

**Machine type:**
- CTX* | CTX TC | CTX TC 4A | NTX*
- SPRINT 50/65* | CTX 4A* | CTV

*only in combination with a Y-axis

**Control system:** CELOS with SIEMENS

**User Interface**

Programming and fine adjustment of the required shapes, capto or oval, is realizable in a few steps.

- Pre-position and support position in X and Z-axis can be directly entered over the surface.
- Monitoring of the support position via a defined Position window.

“By synchronizing the spindle and spindle powered tools, I can make non-circular surfaces significantly faster.”
TURNING AND TURN & MILL

Gear hobbing

**Highlights**
- Programming of the gearing parameters via dialog input
- Straight, oblique, curved gears and worm wheels possible
- Gear cutters and disk cutters can be used
- Maximize tool life by “shifting” the cutter
- Achievable quality ≤ DIN 7

**Kundennutzen**
- Gear profile modifications easy to handle
- Use of regrinded tools
- Error prevention by monitoring (e.g., wrong axis cross angle, or wrong turning speed, or turning direction)

**User Interface**

Dialogue-supported input of all necessary gearing data

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“Thanks to dialog-based programming I’m up to 50% faster.”

Machine type: CTX* | NLX | CTX TC 4A | NTX | SPRINT 50/65* | NZX | CTX 4A | CTV | DMU eVo
Control system: CELOS with SIEMENS | CELOS with MAPPS
* only in combination with a Y-axis
TURNING AND TURN & MILL

Runtime Monitor

Highlights
+ Application especially for multi-channel machines for time analysis of the production process and as a basis for the cycle time optimization
+ Individual zoom in to view minute details for cycle time optimization

Customer benefits
+ Histogram up to three channels
+ Provides the basis for cycle time optimization by graphical inputs
+ Save/load the recorded data to compare individual optimized steps

User Interface

Program run time recording - with individual zoom for up to 3 channels:
+ Primary and auxiliary time
+ Program pause
+ Waiting for tool change

Machine type: NEF | CTX | CTX TC | CTX TC 4A | NTX | SPRINT 50/65 | CTX 4A | CTV
Control system: CELDS with SIEMENS*

"I save a lot of time during machining, because of the complete monitoring of my program status that allows me to quickly optimize the program at the right position."
TURN & MILL / MILLING & MILL-TURN

Multitool

Highlights

+ Efficient use of multi-tip turning tools with more than one cutting edge on turn & mill
+ Several “sister tools” on one main tool holder

Customer benefits

+ Reduction of tool change times
+ Saves tool magazine space

User Interface

Selection of the tool cutting edge overview of tool details

"The non-productive times can be reduced significantly and I require less space in the tool magazine.”
ATC 2.0 – Application Tuning Cycle

**Highlights**

+ Process-oriented adjustment of the feed rate in relation to the table loading
+ Minimization of machining time with maximization of the component quality
+ NEW: Now also available for CTX TC. Ideal machining result with the highest machine dynamics*
+ NEW: Recommended with 5-axis simultaneous machining, e.g. for blade machining*

* Without consideration of feed weight

**Customer benefits**

+ Easy operation
+ Time saving in roughing
+ High surface finish during finishing

**User Interface**

ATC 2.0 – Milling: Consideration of table loading

ATC 2.0 – Turning: for CTX TC for easy adjustment of the machine dynamics

Machine type: CTX TC | CTX TC 4A | NTX | CMX V | DMC V | NVX | MILLTAP | NHX |
+ SERIES | DMC H linear | DMU | NMV | DMU/DMC monoBLOCK |
DMU eVo | HSC linear | DMF | DMU/DMC duoBLOCK | DMU P/DMC U |
DMU Gantry | ULTRASONIC 20/65 | LASERTEC 65 3D

Control system: CELDS with SIEMENS | MAPPS | HEIDENHAIN

“Mit einfacher Eingabemasken und ohne Expertenwissen in der Steuerung kann ich meinen Prozess perfekt optimieren.”
“Only three parameters and I can avoid vibration problems in the machining very pragmatically.”

**Alternating Speed**

**Highlights**
- Easy to operate through three parameters and without additional sensors
- Avoiding vibrations by means adaptation of the speed
- Application for the main spindle and counter spindle, or for milling machines with FD tables with DirectDrive

**Customer benefits**
- No manual intervention by the operator
- Identical repeatability for all components
- Increased process safety for special applications by avoiding vibrations.
- Example, When using long thin drills or for milling parts with critical clamping

**User Interface**

Enter the parameters for the setpoint, the differential speed and revolution frequency

**Machine type:** NEF | CLX | CTX | NLX | NZX [Tailstock] | CTX TC | CTX TC 4A | NTX | SPRINT 50/65 | NZX | CTX 4A | CTV | DMU eVo | DMF | DMU/DMC dueBLOCK

**Control system:** CELOS with SIEMENS | CELOS with MAPPS
TURNING AND TURN & MILL

Retraction Cycle

**Highlights**

+ By pushing the associated key the X-axis and the Y-axis travel to the positive end-positions for external machining
+ Ideally suited to prepare the work space for set-up and alternatively also as an emergency rescue function

**Customer benefits**

+ Easy operation when setting up multi-channel machinery
+ Possibility of a Fast response during external machining as a rescue function

**Functionality:**

Selection of the cycle by pressing the associated key on the operating panel

**Simultaneous retraction of the tool holders**

“Really user friendly option during machine set-ups, to be able to retract both axis to the safe end-position with the push of a button.”

**Machine types:**

- NEF
- CLX
- CTX
- NLX
- NZX (Tailstock)
- CTX TC
- CTX TC 4A
- NTX
- Wasino
- NRX
- NZX-S
- SPRINT 50/65
- NZX
- CTX 4A
- ALX
- CMX V
- NVX
- NHX
- i-Series
- NMU

**Control system:**

- CELOS with SIEMENS
- CELOS with MAPPS
“By regular recalibration of the machine, we leave nothing to chance and avoid rejections.”

### 3D quickSET – Turning

**Highlights**

- Measurement and correction of the position of turning and Pivot axes (C4/C3/B)
- Sag compensation possible
- Can be used in combination with standard probes from customers (recommended Renishaw, Blum)

**Customer benefits**

- Reliable re-calibration of the machine before a highly precise processing
- Continuous documentation of machine accuracy
- No rejected parts due to unknown Geometric-deviations

**User Interface**

- Dialogue-guided measurement of the B- and C-axis

**Machine type:** CTX TC | CTX TC 4A | NTX*  
**Control system:** CELOS with SIEMENS*
“My 5-axis machine is always ready, having the right kinematic accuracy setting.”

3D quickSET – Milling

**Highlights**

- Toolkit for checking and correcting the kinematic accuracy of 4- and 5-axis machine configuration
- All head variations and table axes

**Customer benefits**

- Periodic recalibration of the machine with comprehensive documentation
- Highest kinematic accuracy in self-regulation

**User Interface**

Defined head kinematics

Defined table kinematics

**TURNING AND TURN & MILL**

**3D quickSET – Milling**

In a few steps:
1. Confirm ball diameter
2. Enter angular step
3. Select axis to be measured
4. Move the measuring probe to the start position
5. Confirm the cycle with start button
6. Automatic adaptation in the kinematics settings

Machine type: MILLTAP | DMC H linear | CMX U | DMU |
DMU/DMC monoBLOCK | DMU eVo | HSC linear | DMF |
DMU/DMC duoBLOCK | DMU P/DMC U | DMU Gantry |
ULTRASONIC 20/65 | LASERTEC 65 3D

Control system: CELDS with SIEMENS | HEIDENHAIN

[Image of machine]
**Highlights**

- Straight and helical external or internal spur gears and splines
- Arrow teeth with tooth offset Turn-mill machines*
- Ball-shaped toothing by mathematical transformation of the 6th virtual axis *

*On CTX TC with counter spindle

**Customer benefits**

- Internal toothing without angular head possible
- Short processing times, 10 × faster than shaping
- Synchronization and tool path controlled by the cycle

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"An ingenious processing process, what was exclusive to the gear-cutting machines is now available in a universal machining centre with top quality."

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**User Interface**

Machine type: CTX | NLX* | NZX [Tailstock] | CTX TC | CTX TC 4A | NTX | NZX | CTV** | DMU eVo | DMF | DMU/DMC duoBLOCK**

Control system: CELOS with SIEMENS | CELOS with MAPPS

*only in combination with a Y-axis   ** only with DF/FD

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Inside gear profile machining

Outside gear profile machining
TURN & MILL / MILLING AND MILL & TURN

DMG MORI gearMILL

**Highlights**

- Productive complete processing
- Cost-effective gear cutting on standard machine with standard tools
- Flexible for different gear geometries
- Quality inspection in the process

**Customer benefits**

- Program creation based on blank drawings and gear data
- Optimization of workpiece orientation e.g. after heat treatment
- Interface for coordinate measuring device (Klingenber, Leitz, Zeiss)

Machine type: NLX* | NZX (Tailstock) | CTX TC | TX TC 4A | NTX | NZX | ALX* | CMX V | NVX | NHX | DMC H linear | DMU | DMU/DMC monoBLOCK | DMU eVo | DMF | DMU/DMC duoBLOCK | DMU P/DMC U | DMU Gantry

Control system: PP für CELOS with SIEMENS | CELOS with MAPPS

*only in combination with a Y-axis ** only with DF/FD

**User Interface**

- Input of the gear parameters for the geometry calculation of a spur gear
- Graphic observation of tooth contact

“We can now produce different gear geometries on my standard machine with standard tools without the need of further investment.”
“With this process integration, we are able to achieve new manufacturing tolerances and surface qualities, which give us further technological advantages and profitability.”

TURN & MILL

Grinding – Turning

Highlights
- Turning, milling and grinding in one clamping
- Grinding cycles for internal, external and face grinding as well as dressing cycles
- Body-borne sound sensors for start-up and dressing

Customer benefits
- Expansion of the technological limits of the CTX TC
- Surface accuracy < 0.4 μm
- Roundness < 5 μm
- Quality 5 for ø < 120 mm

User Interface

Machine type: CTX TC | CTX TC 4A
Control system: CELOS with SIEMENS

External, internal and circular grinding.
Grinding with straight/angle or cup disc
Dressing straight, angled or cup discs simply visualized
Grinding – Milling

"Due to this process integration we can now cater to more customer requirements on our universal machines."

**Highlights**
- Better surface quality through integration of the grinding technology
- Grinding cycles for internal, external and face grinding as well as dressing cycles
- Body-borne sound sensors for start-up and dressing
- 1,300 l Cooling system with integrated centrifugal filter for the filtration of particles > 10 μm
- AKZ nozzle unit optionally available for best possible flushing of the grinding gap

**Customer benefits**
- Surface accuracy < 0.4 μm
- Roundness < 5 μm
- Quality 5 for ø < 120 mm
- Quality 4 for ø > 120 mm

**User Interface**
- Machine type: DMU/DMC duoBLOCK
- Control system: CELDS with SIEMENS

Spiral plane grinding or oscillating plane grinding
Longitudinal grinding
Interpolation turning - turning recessing cycle

"I can now generate eccentric part geometries on both turn – Mill machines."

Movement 2: circular interpolation Of the TC spindle in X and Y

User Interface – Turn & Mill

External, internal and surface grinding

Dressing straight, angled or potted discs easily visualized
TURNING AND TURN & MILL / MILLING AND MILL & TURN

Interpolation turning

Highlights

+ With interpolation turning, the tool cutter follows a circular movement, where the cutter is always oriented towards the center of the circle
+ Possible for external and internal machining
+ Synchronization and tool path controlled by the cycle

Customer benefits

+ Easy manufacturing of sealing surfaces where milling operation might not be possible
+ Complete component processing in one clamping possible
+ Reduced investment costs for tools

Machine type: CTX TC | CTX TC 4A | NTX | DMC V | NVX | MILLTAP | NHX |
DMC H linear | DMU | DMU/DMC monoBLOCK | DMU eVo | HSC linear |
DMF | DMU/DMC duoBLOCK | DMU P | DMC U | DMU Gantry

Control system: CELOS with SIEMENS | CELOS with MAPPS

User Interface – Milling and Mill & Turn

Grooving inside (above) and below 45° (bottom)

Grooving outside (top) and below 45° (bottom)
**Excentric turning and milling**

**Highlights**
- Superposition of the turning movement by additional X- and Y-traverses
- Applicable for turning and milling

**Customer benefits**
- Eccentric geometries easy to manufacture
- Exact axis coupling and synchronization in the background

**User Interface**
- Enter the parameters for the position of the external workpiece area
- Graphical representation of the position within the workpiece

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“Instead of using a complex and expensive CAD/CAM system, its just a matter of pushing a few buttons on these machines.”
“Every second counts in a production environment. Now I can safely and easily optimize my process.”

Efficient Production Package

**Highlights**

+ Solutions for a safe process and for the efficient use of important machining steps
+ Applications: cone cleaning, tool data monitoring, safe withdrawal movement, tapping, deep hole drilling, external thread and spigot milling, internal thread and circular milling, reverse countersink cycle
+ 12 stored machining strategies for stock removal, deep hole drilling, Pocket milling machines*

**Customer benefits**

+ Runtime optimization according to individual application
+ Safe retraction after program break
+ Tool data monitoring

**User Interface**

Machine type: NLX* | NZX (Tailstock) | NTX | NZX* | ALX* | CMX V | NVX | NHX | i-SERIES | DMC H linear | NMV | DMU/DMC monoBLOCK | DMU/DMC duoBLOCK | DMU Gantry

Control system: CELOS with SIEMENS | CELOS with MAPPS*

* only in combination with a Y-axis

Shaping
“Finally a simplified system, to save money for unnecessary machine repairs and tool costs.”

Easy Tool Monitoring 2.0

**Highlights**
- Prevention of damage due to tool breakage or tool overload
- Sensorless with automated learning of load limits
- For turning, milling and drilling (up to 3 mm diameter)
- NEW: User interface on CELLOS SideScreen
- NEW: Powerful algorithm for efficient monitoring after the first workpiece

**Customer benefits**
- Protection Package: Perfect supplement to MPC on CTX TC machines. Price advantage (approx. 30%)
- Save the monitoring limits for each tool and every cutting edge in the program

**User Interface**
- LIVE status display in CELLOS SideScreen; current, set process values
- Easy operation of the monitoring parameters in the tool table

**Machine type:** NEF | CLX | CTX | NLX | NZX | Tailstock | CTX TC | CTX TC 4A | NTX | Wasino | NRX | NZX-S | SPRINT 50/65 | NZX | CTX 4A | ALX | CTV | CMX V | NVX | NHX | i-SERIES | NMV

**Control system:** CELLOS with SIEMENS | CELLOS with MAPPS
“Since using MPC, spindle or machine damage that occurred due to overload or collision has been reduced significantly.”

MPC 2.0 – Machine Protection Control

**Highlights**

+ Vibration monitoring in the process
+ Rapid shutdown in case of a crash
+ Manual retraction even in swiveled machining plane
+ NEW: Torque monitoring
+ New: Recommended with Protection Package for CTX TC machines

**Customer benefits**

+ Avoiding tool breakage
+ Increase in machine availability
+ Damage reduction

**User Interface**

MPC Graph: current and learned process values
MPC Diagnostics: stock condition, number of impact and crash

Machine type: CTX TC | CTX TC 4A | NTX | DMC V | NVX | NHX | DMC H (linear)
CMX U | DMU | DMU/DMC monoBLOCK | DMU eVo | DMF | DMU/DMC duoBLOCK | DMU P/DMC U | DMU Gantry
ULTRASONIC 20/65 | LASERTEC 65 3D

Control system: CELOS with SIEMENS / MAPPS / HEIDENHAIN
Fit in – B-axis Plunging

**Highlights**

- Full utilization of the working space during internal machining of high workpieces with long tools
- Positional changes of the B axis during the turning are balanced by the X- and Y-axes
- The Z-axis remains at the retracted position while the B-axis is moving

**Customer benefits**

- Easy programming
- Collision-free plunging in the workpiece
- Safely coming out from the workpiece after machining

**User Interface**

Machine type: DMU eVo | DMF | DMU/DMC duoBLOCK
Control system: CELOS with SIEMENS

"Workpieces with extra height can also be internally machined safely."
**Dynamic Tool Scanning – Dyna Line**

**Highlights**

+ Precise tool measurement with the CMOS laser measuring device
+ Due to the rotation of the turning tool, errors in the tool assembly and cutting edges can be detected

**Customer benefits**

+ Visualization of the most important measurement results in CELOS-SideScreen
+ Automatic measurement cycles easy to program

*“Unrecognized errors in tool assembly or cutting edges are now the problems of the past. Proactive testing before cutting protects against bad surprises!”*

User Interface

- Display of the measuring result of the tool profile in CELOS
- Display of the TIR (Total Indicated Runout) in CELOS

**Machine type:** NVX  
**Control system:** CELOS with MAPPS
L-Measuring probe packet

**Highlights**

+ Measurement of webs and grooves on components
+ Measurement of diameter in difficult to access places
+ Available with manual and retractable Calibration unit
+ L-Measuring probe according to Customer-specific design

**Customer benefits**

+ Flexible application possibilities
+ In process measurement

"With this measurement package I can now also measure complex geometries directly in the process and correct the deviations. The perfect support for Aerospace applications."

**User Interface**

Machine type: DMC H linear | DMU | DMU/DMC monoBLOCK | DMU eVo | HSC linear | DMF | DMU/DMC duoBLOCK | DMU Gantry
Control system: CELOS with SIEMENS

Semi-automatic Measurement solution
Automatic measurement solution
W-Setter

**Highlights**
- Manual tool length measurement and workpiece centering in simple steps
- Guided instructions in the measurement. Short set-up times with high operational safety

**Customer benefits**
- Shorter set-up times
- No expertise prerequisite to take simple measurements

*Without the fear of error, even inexperienced machine operators can take measurement manually as well as save time.*

**User Interface**
- Structured user notes for the measurement results

**Machine type:** CMX V | NVX | NHX | i-SERIES
**Control system:** CELOS with MAPPS

**Toolsetter mode** – length/diameter and wear measurement
MILLING AND MILL & TURN

VCS Complete

**Highlights**
- Geometric fingerprint of the machine
- Volumetric calibration at the touch of a button
- Detection and compensation of geometrical, positioning and angular errors of all axes
- Easy handling and implementation by the customer directly at the machine

**Customer benefits**
- Regular compensation of the machine geometry over the entire life cycle of the machine
- Dialogue-led operation for easy and fast handling
- Data recording for further analysis

„Thanks to easy handling I can check the machine’s accuracy at any time.”

**Possible accuracy deviation without VCS Complete**

<table>
<thead>
<tr>
<th>Accuracy (µm)</th>
<th>VCS calibration</th>
<th>Constant accuracy through calibration with VCS Complete</th>
<th>Life cycle (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible accuracy deviation without VCS Complete</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Machine type: DMU/DMC monoBLOCK
Control system: CELOS on Operate with SIEMENS 840D solutionline | HEIDENHAIN TNC 640

**NEW**

+ Easy fixation by using two magnets
+ Structured input mask
+ Fully automatic implementation
MILLING AND MILL & TURN

MVC – Machine Vibration Control

**Highlights**

+ Vibration sensors in the milling spindle
+ Various indicators to display the vibration status
+ New machining proposal to reduce vibrations
+ With the edit function, the new machining state is easily applied to your program

**Customer benefits**

+ More productive cutting condition with less vibration
+ Automatic suggestions for suitable process parameter
+ The simple visualization serves as an orientation aid for machine operators

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**User Interface**

Status display of the process vibrations in CELOS

**Machine type:** NTX | NVX | NHX
**Control system:** CELOS with MAPPS

**Algorithms for the automatic recognition of regenerative vibrations**
Mill and Mill & Turn

TCC – Tool Control Center

Highlights

- Chip detection on plan pad and tool cone
- Monitoring of pull-in force
- Cutting edge control in process by symmetry monitoring of the bending moment per cutting edge
- Visualization of the bending moment over time via Graph

Customer benefits

- Tool and workpiece protection
- Optimized tool process
- Monitoring of the radial and axial spindle load depending on the actual pull-in force.

"Thus I have the best use of the tool life and can even increase production profitability."

Tool edge in polar plot

- New
- Wear
- Cutting edge break

Machine type: DMC H linear | DMU/DMC monoBLOCK | DMU/DMC duoBLOCK | DMU P/DMC U | DMU Gantry

Control system: CELOS with SIEMENS | CELOS with HEIDENHAIN
Your contact persons

**Your contact for technology cycles turning and turn & mill:**

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### Categories

<table>
<thead>
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<th>Universal Turning // Turn &amp; Mill</th>
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### Description:
- • optional available
- – not available
- 1 only with Y-axis, 2 only customized on demand, 3 only with counter spindle,
- Optional with 4 = SIEMENS, (4) = FANUC, (4,4) = MITSUBISHI
- 5 = MAPPS (F+M) standard, (5) = FANUC standard, (5,5) = MITSUBISHI standard
- Optional with 6 = FANUC and SIEMENS, (6) = SIEMENS and HEIDENHAIN, (6,6) = FANUC and MITSUBISHI
- 7 = FANUC standard and SIEMENS optional, (7) = SIEMENS standard, (7,7) = SIEMENS standard and HEIDENHAIN optional
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Complex machining simply realised!

**HANDLING CYCLES**

- Simplifies machine operation e.g. - B-axis Plunging
- Automates workflows - e.g. Counter spindle tip
- Protects against operator errors with higher safety. For example: Steady rest for turret.

**MEASURING CYCLES**

- Increases machining accuracy - e.g. 3D quickSET
- Opens up new measuring possibilities for bulky component geometries - e.g. L-Measuring probe package
- Increases transparency in QC processes - e.g. gearMILL with in-process measurement

**SHAPING CYCLES**

- Integrates new machining technologies e.g. gearSKIVING
- Expands machine capability - e.g. Grinding
- Simplifies complicated programming tasks - e.g. Multi threading 2.0

**MONITORING CYCLES**

- Increases machine safety - e.g. MPC – Machine Protection Control
- Increases process safety - e.g. Easy Tool Monitoring 2.0
- Adapts process parameters to eliminate vibrations - MVC – Machine Vibration Control

If your mobile phone has QR code recognition software, you will be taken straight to the video.
Customer First –
Our service promise!

“We have good news for you: Our service and spare parts prices have been completely revised. With our service commitments, we want to meet your high demands with the highest service quality.”

Please contact us – your sales and service team is at your disposal!

Top quality at fair prices. It’s a promise!

**Best Price Guarantee for Original Spare Parts.** Should you get a spare part offered by us at least 20% cheaper elsewhere, we will refund the price difference up to 100%.*

**Spindle service at best prices.** The highest level of competence from the manufacturer at new and attractive prices – DMG MORI spindle service!

**Up to 50% lower service costs.** New Flat Call-Out Rate – without travel expenses or any additional costs!

**Our protective shield for your productivity.** Reduced operating costs, highest machine availability and maximum precision – DMG MORI Service Plus!

* All information and price advantages for Customer First are available at: customer-first.dmgmori.com