The DMG MORI Magazine for customers around the world.

ECOLINE – The new revolutionary *ecoMill* V Series, with a SLIM*line*® display.

Additive Manufacturing – Hybrid Machining with laser deposition and 5-axis milling, all on one machine.

NLX and CTX – The most successful series in universal turning, with the highest stability and precision.

CELOS® and DMG MORI Software Solutions – Fully integrates and networks all machines within your organization.

DMG MORI

JOURNAL

Nº 1 – 2016

CELOS®
with SIEMENS

CELOS® and DMG MORI Software Solutions.

CELOS®, the APP-based control and operating software by DMG MORI, is as easy to operate as a smartphone, and networks all machines within your organization.

Learn more about CELOS® on page 14

2016 TRENDS AND INNOVATIONS

ECOLINE – HIGHEST FUNCTIONALITY, BEST PRICE!

ecoMill V

Compact, Efficient, Dynamic, Precise: the new *ecoMill* V Series 4–5

CELOS® and DMG MORI Software Solutions

Perfectly organised processes through networking machines within your organization. 14–19

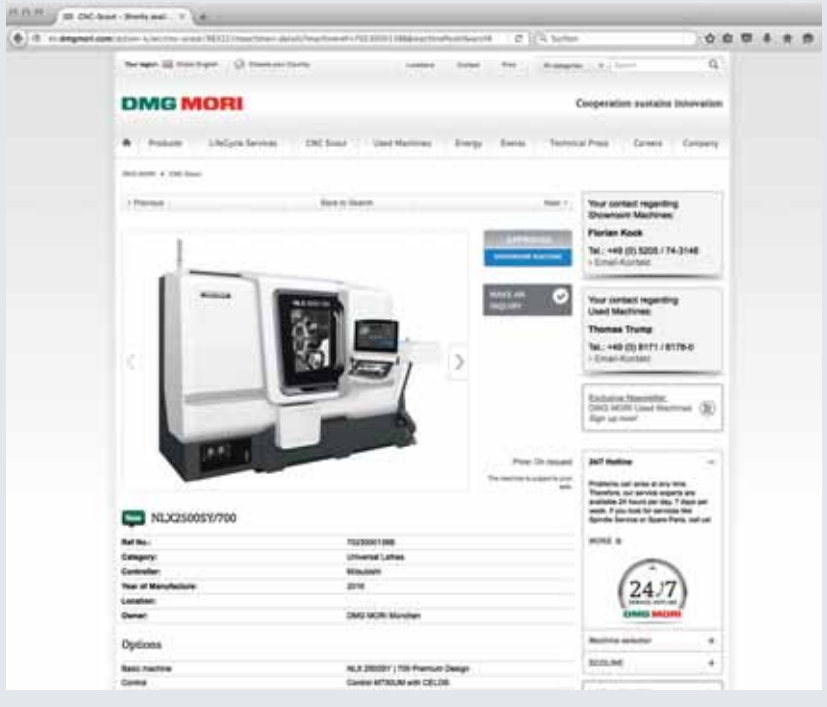
CNC Scout – View all offers of machines immediately available online at one glance.

Go online to see our daily updated selection of machines immediately available and find your dream machine with the right configuration at: **cnc-scout.dmgmori.com**

Over 700 machines available immediately!

View all available offers:

cnc-scout.dmgmori.com



Additive Manufacturing

Generative manufacturing of quality finished 3D parts 6–7

CONTENT

Key Events – First half of 2016

+ BIEMH, Bilbao / ES	30.05.–04.06.2016
+ MACHTOOL, Posen / PL	07.06.–10.06.2016
+ Innovation Days, Iga / JP	07.06.–11.06.2016
+ Open House, Bielefeld / DE	14.06.–17.06.2016
+ CIMES, Beijing / PRC	22.06.–26.06.2016
+ Opening, Stipshausen / DE	29.06.–01.07.2016

Experience DMG MORI live:

events.dmgmori.com

ECOLINE *ecoMill* V

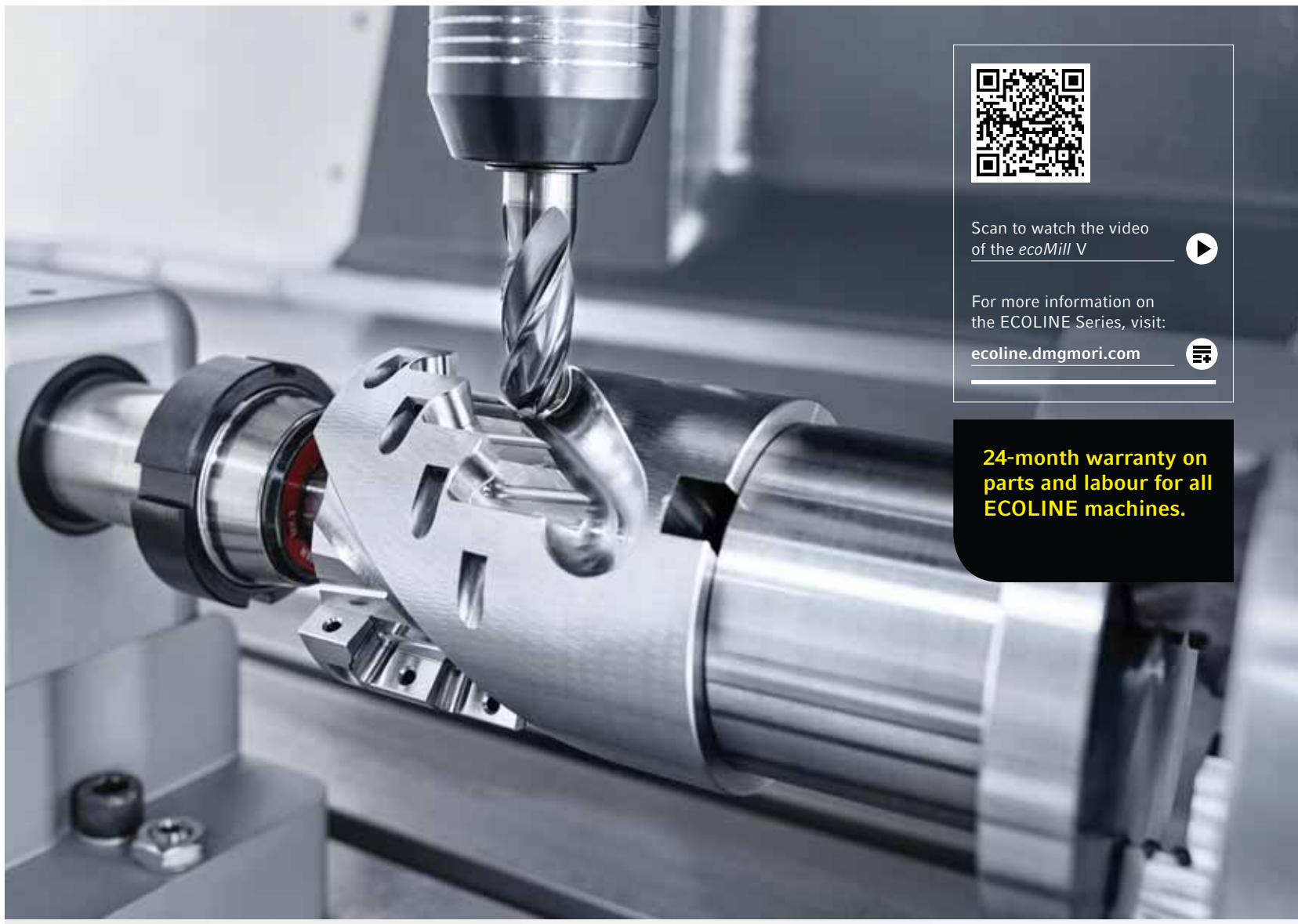
MAN INDUSTRY CO., LTD.

“Thanks to the 0.0002 in. positioning accuracy of the *ecoMill* V, all workpieces comply with our stringent quality requirements.“

President Jodai Takanori in front of his *ecoMill* V with a positioning accuracy of 0.0002 in.

President Jodai Takanori describes his vision, “**To minimise cycle times with as few machines as possible.** We have a large variety of parts with low quantities, but **fast delivery times.** Our goal is the “Just in Time“ Toyota production system.“ The company predominantly manufactures valve seats and parts for shock absorbers and gearboxes in the **automotive industry,** high-precision sintered components for sliding contacts in **train pantographs and hard-to-machine materials like carbon.** The key factor in increasing productivity is set-up. “A major advantage of the ***ecoMill* V** is its **great accessibility,** which enables us to exchange clamping fixtures easily. The **large work area** also allows us to use multiple clamping fixtures for **up to 30 workpieces and positioning accuracy** of the machine within **0.0002 in.** which is the decisive factor when it comes to the **quality** of our products. So far, we haven‘t had **a single reject.** In addition, the spindle load display helps with the machining accuracy; we now know exactly when a tool needs to be replaced. The **high-speed spindle with a maximum speed of 12,000 rpm.** and the magazine for **30 workpieces** enable us to provide **high machining speed** and respond to inquiries quickly. **Short delivery times significantly improve the company’s competitive position**. Another advantage of the ***ecoMill* V** is its beautiful **design**“, explains the President. “When customers visit our factory, they‘re very impressed with the machine and it gives them a good feeling about the **quality of the machine.** In addition, the **chip removal is optimised** and the work area is very easy to keep clean.“

MAN INDUSTRY CO., LTD.
288-1 Bessho, Maizuru City, JP-Kyoto 624-0805



Scan to watch the video of the *ecoMill* V

For more information on the ECOLINE Series, visit:
ecoline.dmgmori.com

24-month warranty on parts and labour for all ECOLINE machines.

ecoMill V – The highest precision at an unbeatable price!

+ **HIGHEST PERFORMANCE AND EFFICIENCY**
with a standard 12,000 rpm. milling spindle.

+ **HIGHEST PRECISION**
through directly coupled ball screws.

+ **RAPID TOOL CHANGE**
with 30 pockets standard.

+ **PERFECT ERGONOMICS**
for efficient loading and unloading.

+ **VISIBILITY AND ACCESSIBILITY**
with large work area and 33.5 in. table height.

+ **EXCEPTIONAL DURABILITY**
Scratch and wear resistant surfaces.

+ **24-MONTH WARRANTY**
on all parts and labour.

19″ DMG MORI SLIM*line*® multi-touch control – intuitive interface for quick and easy operation.

HIGHEST RELIABILITY

+ 3D control technology
+ Better overview with 19“ multi-touch screen
+ Better control and overview of machine status
+ 45° swivelling panel for greater operating comfort
+ DMG MORI SMART*key*®

MORE EFFECTIVE OPERATION

+ Quick and comfortable access to parameters and user data
+ Manage & document order and process data
+ Efficient data management with the optional DXF Import

MORE OPERATING COMFORT

+ Simplified process for reliable touch control with full ASCI keyboard
+ ShopMill in newest version
+ Optimization of touchscreen elements
+ 3D simulation with touch functions

15″ DMG MORI SLIM*line*® with MAPPS IV on a FANUC control.

+ MAPPS IV user system with control panel and front-end Windows PC
+ 3D machining simulation for easy contour verification
+ CNC operation through use of the external and user storage
+ Import and export of programs via external PC
+ File display and note function for accessing operating instruction, drawings and texts

ø 3.1 × 3.9 in.
Milling cutter // Tool production
Material: Stainless steel (grade 1.4305)
Machining time: 40 min.

5.9 × 5.9 × 2.8 in.
Demo sample // Machine tools
Material: Steel (grade 45)
Machining time: 2 min.

ø 7.1 × 0.6 in.
Collar // Machine tools
Material: Aluminum
Machining time: 19 min. 13 sec.

15″ DMG MORI SLIM*line*® with MAPPS IV on FANUC

19″ DMG MORI SLIM*line*® multi-touch control with Operate on SIEMENS

ADDITIVE MANUFACTURING

PTOOLING

"Thanks to Additive Manufacturing, we can now produce 19.7 in. diameter components that are 30% lighter and 50% more stable – and we can do it faster, with lower material costs."

Marv Fiebig, President of PTooling, manufactures components with diameters up to 19.7 in. for the energy, aerospace, and injection moulding industries on his LASERTEC 65 *3D*.

Marv Fiebig, President of **PTooling** based in Amherstburg, Ontario (Canada), is proud to look back on the 35 years of practical experience of his certified, 6-member family enterprise. PTooling has experience in the areas of **manufacturing technology for components from industries such as oil and gas equipment, gas compression, aerospace, and injection moulding.** "All of our machine tools are new, well-maintained, rugged, and durable. We have invested in the **most innovative technologies on the market,** and our foremost goal is to prove to our competitors that we are the "best of the best." We are particularly proud to be the first and so far the only service provider to house a **DMG MORI LASERTEC 65 *3D*** in North America. Not only does this machine allow us to provide universally applicable **laser deposition welding,** it also offers us the benefits of a **5-axis milling machine for producing components with diameters up to 19.7 in.** in finished part quality. The flexible **switch between laser machining and milling** not only means huge **material cost savings** for our customers, it also opens up new design options for us."

PTooling
200 St. Arnaud Street, Amherstburg, ON
N9V 3X9 Canada
marv@ptooling.ca, www.ptooling.ca

Laser deposition welding + 5-axis milling

= ADDITIVE MANUFACTURING

Additive Manufacturing – Generative manufacturing of quality finished 3D parts.

LASERTEC 65 *3D* –
Laser deposition welding and 5-axis milling intelligently combined.

ADDITIVE MANUFACTURING

+ **Best surfaces** and component precision.
+ Laser deposition welding with powder nozzle: **10 times faster** compared to powder bed process.
+ **Complete machining in finished part quality** with fully automated change between milling and / or turning / milling and laser operation.
+ Cross-process software module.
+ Deposit welding included on different **material combinations, such as stainless steel, Inconel 625/718, non-ferrous metal alloys, and stellites**.

CELOS®
from DMG MORI

Scan to watch the video of the LASERTEC 65 *3D*

For more information on the LASERTEC Series, visit:

lasertec.dmgmori.com

THE 3 MAJOR AREAS OF APPLICATION

Manufacturing

Multi-material
e.g. copper on Inconel

Integrated cooling ducts

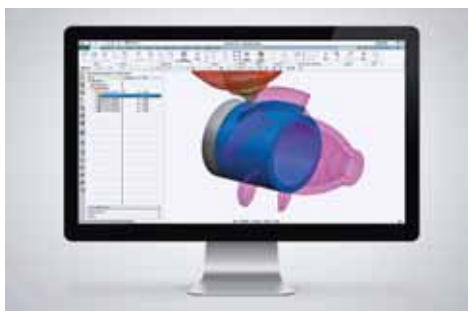
Repair

Blade tip repair

Pelton turbine blade

Coating

3D drill head coating



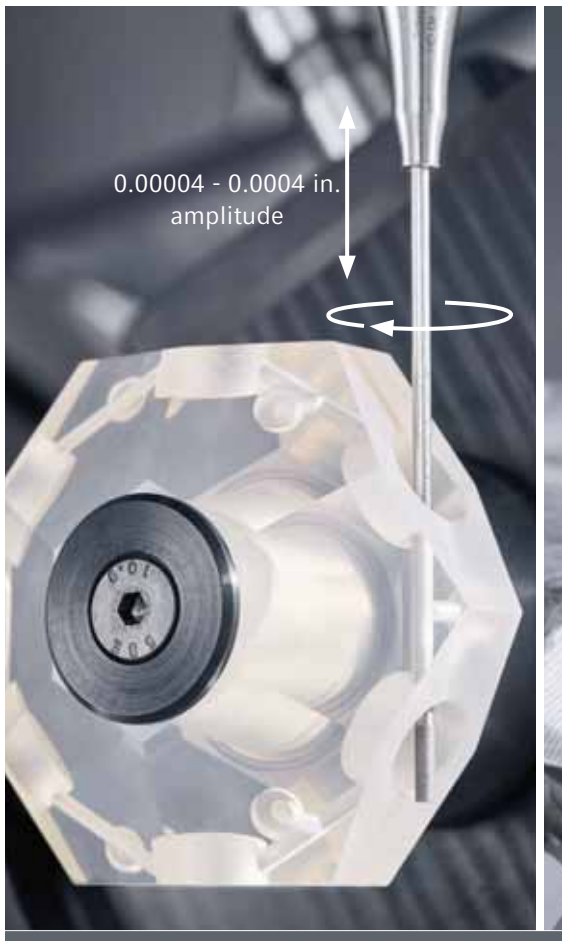
Hybrid CAD / CAM
for additive buildup and chip removal.

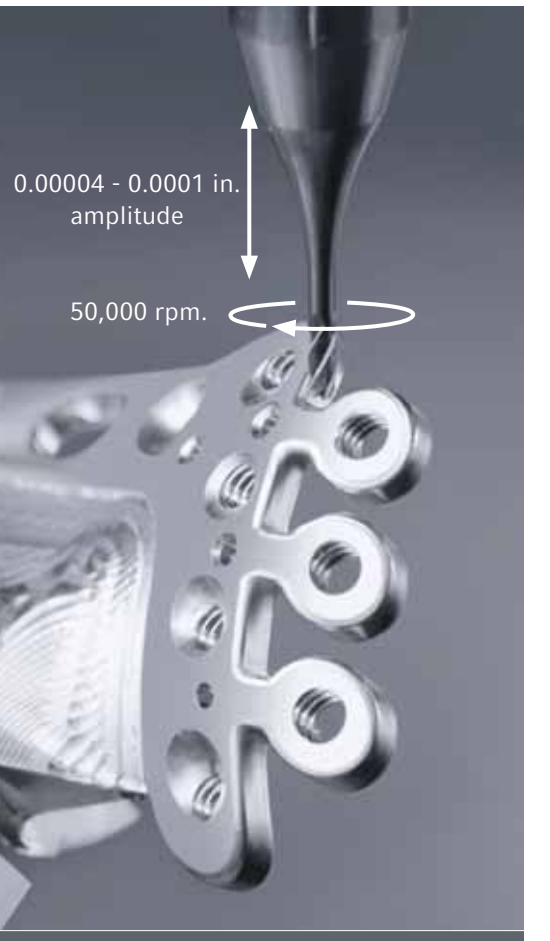
Adaptive process control
Automatic adjustment of laser performance.

LASERTEC 4300 *3D* – Laser deposition welding with integrated 6-sided turn-mill complete machining of workpieces up to 26.0 x 59.1 in. and 3,306.9 lbs.

CELOS® from DMG MORI

ULTRASONIC





ULTRASONIC 1st Generation
Grinding of glass, high-performance ceramics, sapphire, and carbide.

\+

NEW: ULTRASONIC Milling
of difficult-to-machine metal alloys and composites.

= **ULTRASONIC 2nd Generation –** grinding/drilling/milling machining

World Premiere:
ULTRASONIC 20 *linear* – HSC milling with a 60,000 rpm. maximum and ULTRASONIC grinding/milling with a 50,000 rpm. maximum, including CELOS® APP.

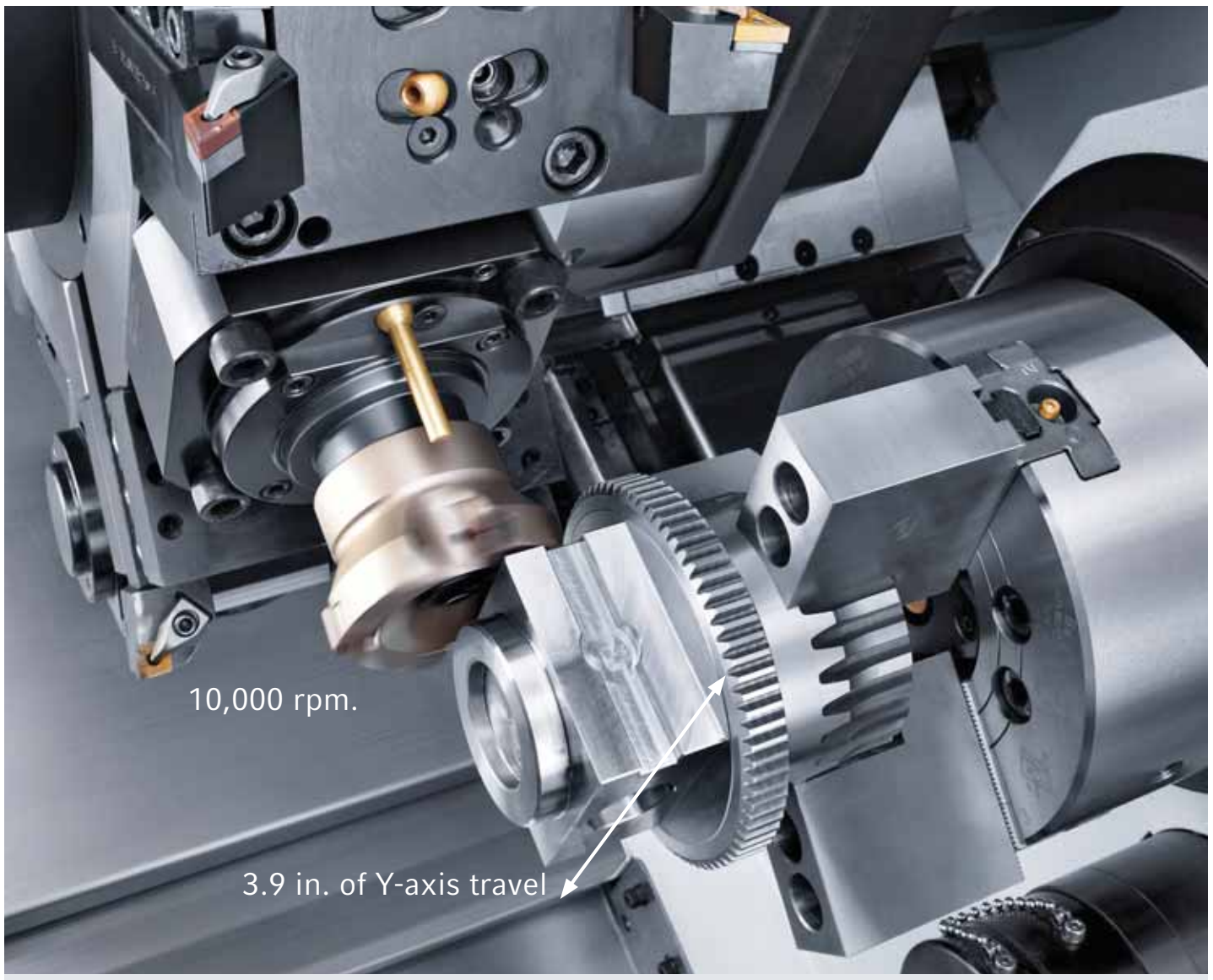
\+ **HSC milling with a 60,000 rpm.* max.**
\+ ULTRASONIC external / internal cylindrical grinding with a **mill-turn table with a 1,500 rpm.* max.**
\+ **CELOS®** with integrated ULTRASONIC APP for **automatic frequency and amplitude detection / tracking.***

* optional

The new **ULTRASONIC 20 *linear*** enables ULTRASONIC grinding / drilling / milling and HSC milling on one machine.

2016 World Premiere DMG MORI

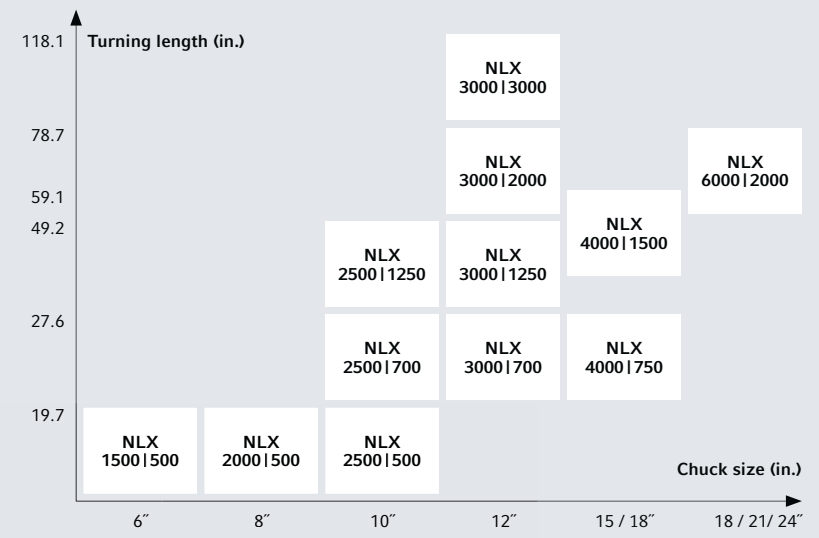
CELOS® from DMG MORI



› NLX 2500SY | 700 – 6-sided machining with main and counter spindle, as well as a turret with 3.9 in. of Y-axis travel.

Ideal for difficult-to-machine applications by means of flat guides in all axes and turrets with BMT technology.

› The right solution for every application – the NLX Series includes 12 machines.



NLX 2500SY | 700
The most successful model with a counter spindle and Y-axis.

CELOS®
from DMG MORI

From the 2-axis lathe, to the 6-sided complete machining with counter spindle and Y-axis, the NLX Series covers all areas of machining.

NLX SERIES

+ **Flat guides up to 7.1 in. in width in all axes,** with optimised damping features and dynamic rigidity.
+ Integrated coolant circulation in machine bed for improved thermal stability.
+ **BMT® turret** (Built-in Motor Turret) with up to 10,000 rpm. and 86.3 ft./lbs. for milling performances comparable to machining centres.
+ **Various automation processes available by** including rod loaders and gantry loaders.

For more information on the NLX Series, visit:
nlx.dmgmori.com

Download the NLX Series brochure at:
download.dmgmori.com

NLX 2500 | 700

+ **Chuck components up to 18.1 in.** or 14.4 in. diameter with Y-axis, maximum chuck size diameter 11.8 in.
+ **Rod machining up to 3.1 in. diameter**
+ Y-axis (Y- and SY-design) with 3.9 in. for eccentric machining.
+ **BMT® turret** (Built-in Motor Turret) with 10,000 rpm. for **milling performances comparable to machining centres,** up to 20 tool pockets.
+ **BMT60 interface,** optional with VDI-TRIFIX® (12 positions).
+ **CELOS®** with MAPPS on MITSUBISHI.

NEW: In addition to the NLX 2500SY | 700, the NLX 2500Y | 700 is now being built by GILDEMEISTER Italiana S.p.A. in Brembate di Sopra, near Bergamo, Italy

ø 3.2 × 5.8 in.
Clamping element // Automotive
Material: S45C
Machining time: 17 min. 43 sec.

ø 6.0 × 6.7 in.
Pulley // Machine tools
Material: SCM435
Machining time: 19 min. 10 sec.

CTX Universal Turning Machines

SIEFER TRIGONAL®

60% shorter throughput times due to turning and milling with up to 73.8 ft./lbs. in one setup.

Gerd Birkenkamp (left), Director of Siefer Trigonal®, in front of his NLX 4000 | 1500.

Wilhelm Siefer GmbH & Co. KG, under its brand name Trigonal®, produces mixing and size reduction machines for processing low to high viscosity products such as liquid mixtures or solids in liquid suspensions. Since early 2015, an **NLX 4000 | 1500** has been backing up the process chain with a **BMT® turret for power-driven tools up to 73.8 ft./lbs.** "We exclusively work with stainless steel, so we depend on high-performance manufacturing technologies," explained Director Gerd Birkenkamp. Accordingly, the **stability** of the NLX machine is an essential basis of **excellent permanent precision in the µm range.** In the same context, he praises the **coolant circulation integrated** into the machine bed and the resulting **high thermal stability.** Furthermore, the key productivity factor is the option to carry out **both turning and milling in one chucking thanks to the Y- and C-axis,** said Birkenkamp, quantifying: "The complete machining has **reduced throughput times by at least 60 percent.**"

SIEFER Trigonal®- Maschinen

Wilhelm Siefer GmbH & Co. KG
Bahnhofstr. 114, D-42551 Velbert
info@siefer-trigonal.de, www.siefer-trigonal.de

50% more precision and speed thanks to the High Precision Turret and active cooling.

- + **Chuck components up to 16.1 in. diameter,** chuck up to 16 in. diameter and bar machining up to 4.0 in. diameter.
- + **6-sided complete machining t**hrough optional counter spindle with up to 265.5 ft./lbs.
- + **< 0.0004 in. tolerance** in diameter.
- + **< 0.0004 in. thermal stability** through active cooling.
- + **1,160.3 psi. cooling lubricant pressure** at each tool place.
- + **50% higher speed of power-driven tools,** continuous operation 100% DC with 6,000 rpm.
- + **12 times VDI40 disc turret** with 13.4 // 13.4 hp., 26.6 // 20.7 ft./lbs. (40 / 100% DC).
- + **Linear drive in the X-axis** with 1 g acceleration, maximum precision, and a 5-year warranty.
- + **CELOS®** with Operate on SIEMENS.

NEW: 50 % higher speed with 6,000 rpm. of continuous operation.

CTX beta 500 *linear* and CTX beta 800 *linear* – 50 % higher precision and speed.

< 0.0004 in. thermal stability through active cooling of turret disc and tool drive.

CTX beta 800 *linear*
Shortest chip-to-chip times due to the linear drive with 1 g acceleration.

linear DRIVE
5-year warranty

CELOS®
from DMG MORI

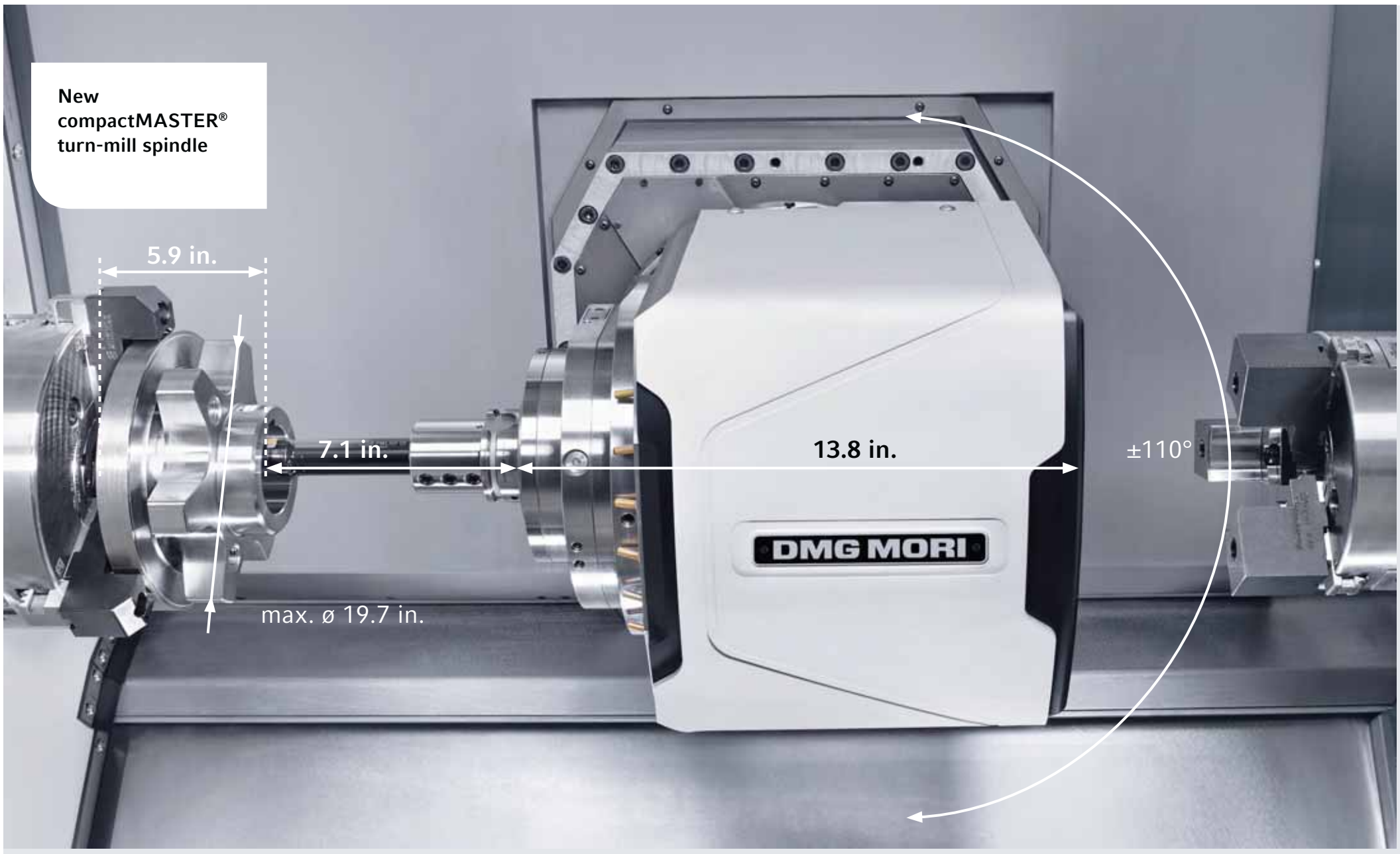
Magnescale

Magnetic absolute length and angle measurement systems are the perfect solution for machine tools with the highest performance.

For one thing, the SR67A/27A length measurement systems with their high response speed of up to 7,874.0 ipm. are the perfect solution for highly precise and dynamic machine tools with linear motors. For another, the high robustness enables them to be used in difficult-to-machine applications.

The absolute magnetic principle of the SR67A/27A series guarantees:

- + **7,874.0 ipm. speed of response for high-speed applications.**
- + **High resistance to vibrations and shock** for highest chip removal rates. The SR67A **vibration resistance is 820.2 ft./sec.²** and the **shock resistance is 1,476.4 ft./sec.²**
- + **Same coefficient of thermal expansion as steel** for minimised temperature impact.
- + **Up to 0.0000004 in. resolution** for high precision of measurement results.
- + **Resistant to moisture,** oil mist, and dust for **high reliability** even under challenging environmental conditions.



88.5 ft./lbs. torque, 7.9 in. Y-axis

CTX beta 800 TC with the compactMASTER® turn-mill spindle – added value compared to any other universal turning machine.

9.1 × 9.8 in.
Diameter control casing // Engineering
Material: C45
Machining time: 28 min.

- + **100% universal turning.**
- + **100% milling:** 88.5 ft./lbs. and 7.9 in. Y-stroke.
- + **100% more tools** in standard design (24 pockets), optionally chain magazine for up to 80 pockets.
- + **Use of convenient milling tools** through the Direct Drive B-axis with ±110° swivel range and continuously indexable.
- + **Multitools** – short chip-to-chip times comparable to a turret machine.
- + **Optimised accessibility,** only 13.8 in. cutting depth to spindle centre.
- + **CELOS®** with Operate on SIEMENS.

Up to a **60% shorter programming time** thanks to 11 exclusive **DMG MORI Technology Cycles** with dialogue-guided programming.

More on page 16

Scan to watch the video of the CTX beta 800 TC

For more information on the CTX TC Series, visit:

ctx-tc.dmgmori.com

Download the CTX TC Series product brochure:

download.dmgmori.com

DMG MORI COMPONENTS

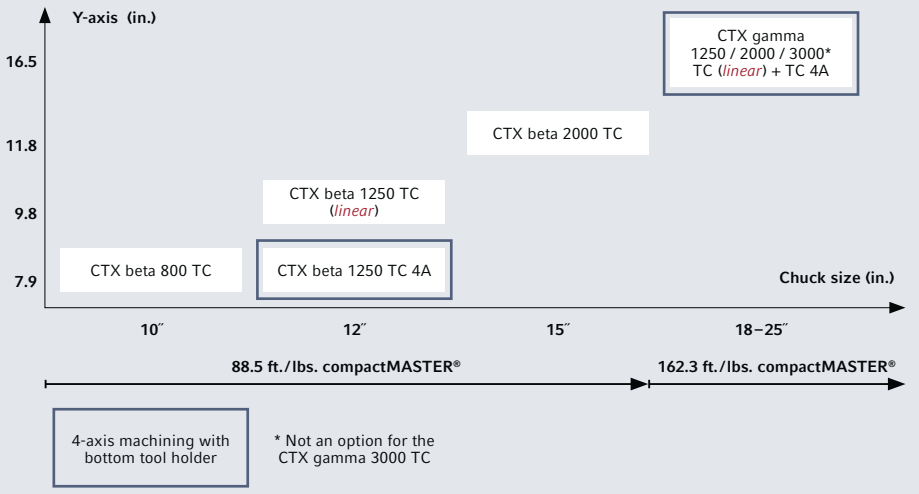
compactMASTER® – Turn-Mill spindle with the same milling performance as a machining centre.

+ **32.3 in.³/min stock removal rate.***
+ Planing blade head diameter 2.5 in. // ae = 1.2 in. // ap = 0.4 in.
+ Spindle speed: 1,768 rpm. (Vc = 13,779.5 ipm.)
  M20 threads.*
+ Thread size M20 × 0.1 in. // spindle speed 606 rpm.

* CK 45 // compactMASTER® with 88.5 ft./lbs.

compactMASTER® design size	CTX beta TC	CTX gamma TC
Spindle length	13.8 in.	17.7 in.
Speed	12,000 / 20,000 rpm.	12,000 rpm.
Torque	88.5 ft./lbs.	162.3 ft./lbs.

CTX TC – Turn-Mill Complete Machining:
From universal machining to production turning with second tool holder.



World Premiere: CTX gamma 3000 TC –
31.5 in. X-axis travel and the new compactMASTER® turn-mill spindle with 162.3 ft./lbs. torque.

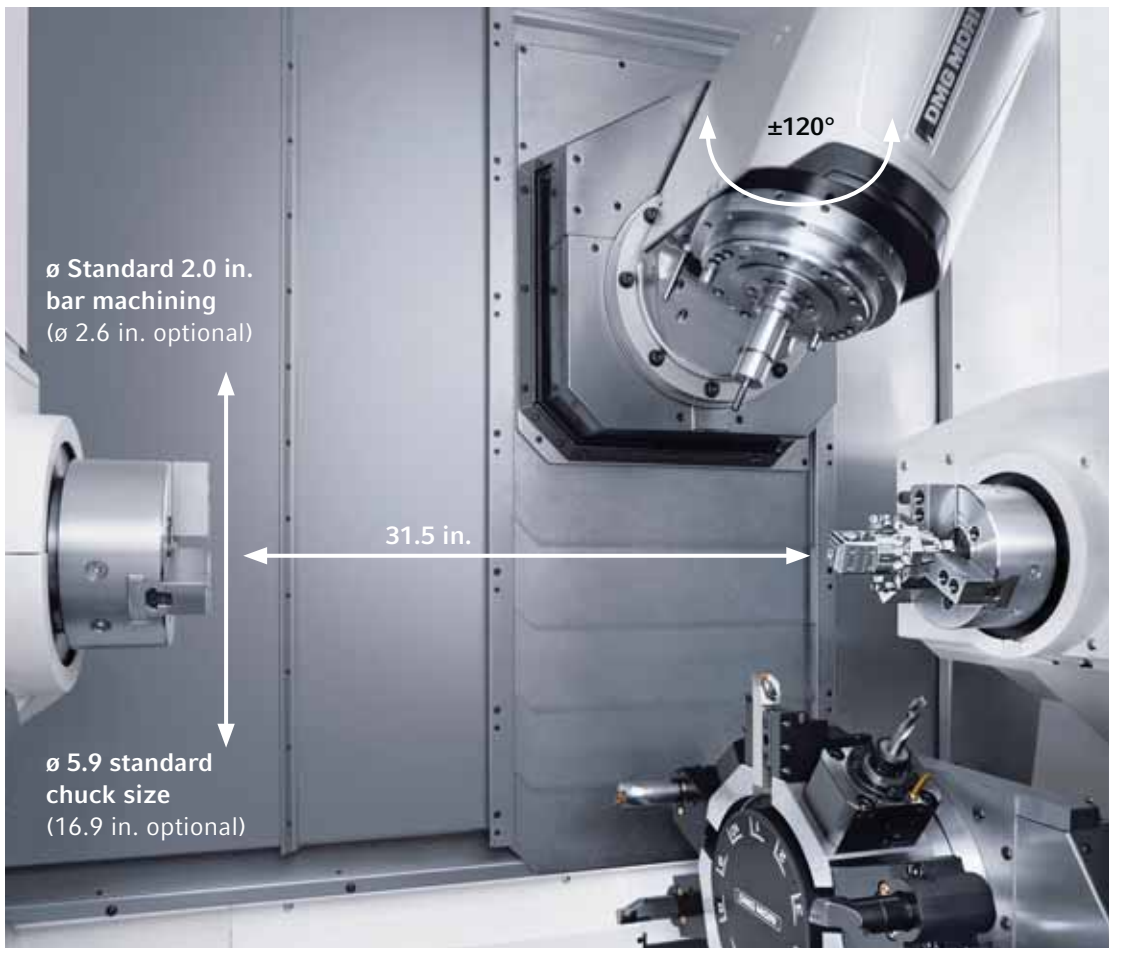
2016 World Premiere DMG MORI

CTX beta 800 TC –
universal turning package.
(incl. chuck, chip conveyor, IKZ, 2 × multi-tools, etc.)

from DMG MORI Magnescale

CELOS® from DMG MORI

NTX Turn-Mill Complete Machining



6-sided complete machining with main and counter spindle; maximum productivity through use of 2 tool holders.

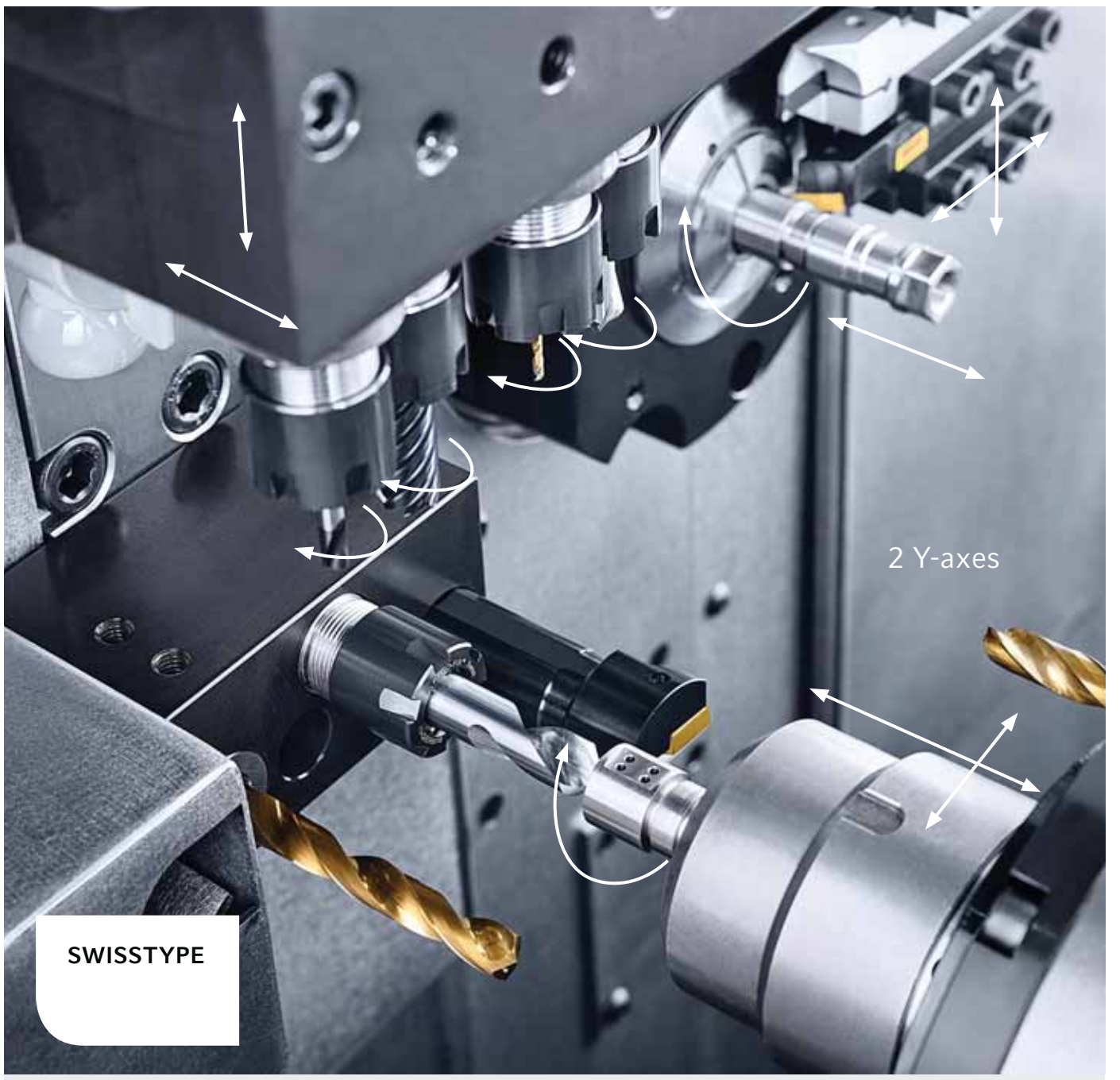
ø 2.4 in.
Acetabulum // Medical
Material: Titanium
Machining time:
7 Min. 30 Sec.

ø 3.5 × 4.2 in.
Tool holder // Tooling
Material:
1.2343 (X37CrMoV5-1)
Machining time: 15 Min.

NTX 1000 – Production turning with second tool holder.

+ **Direct Drive** (DDM® technology) B-axis for **simultaneous 5-axis machining** of complex workpieces for the medical, tooling, aerospace, or automotive industries: **±120° swivel range** in B-axis and 100 rpm., rapid traverse.
+ **Capto C5 turn-mill spindle** with up to 20,000 rpm., 12,000 rpm. as standard.
+ **Simultaneous machining** with B-axis and lower optional **10-station turret.**
+ **Simultaneous machining** with B-axis and lower **ø 2.6 in.,** 2.0 in. as standard; **chuck up to ø 7.9 in.**
+ **Workpieces up to 31.5 in. length** and **ø 16.9 in.**

CELOS® from DMG MORI

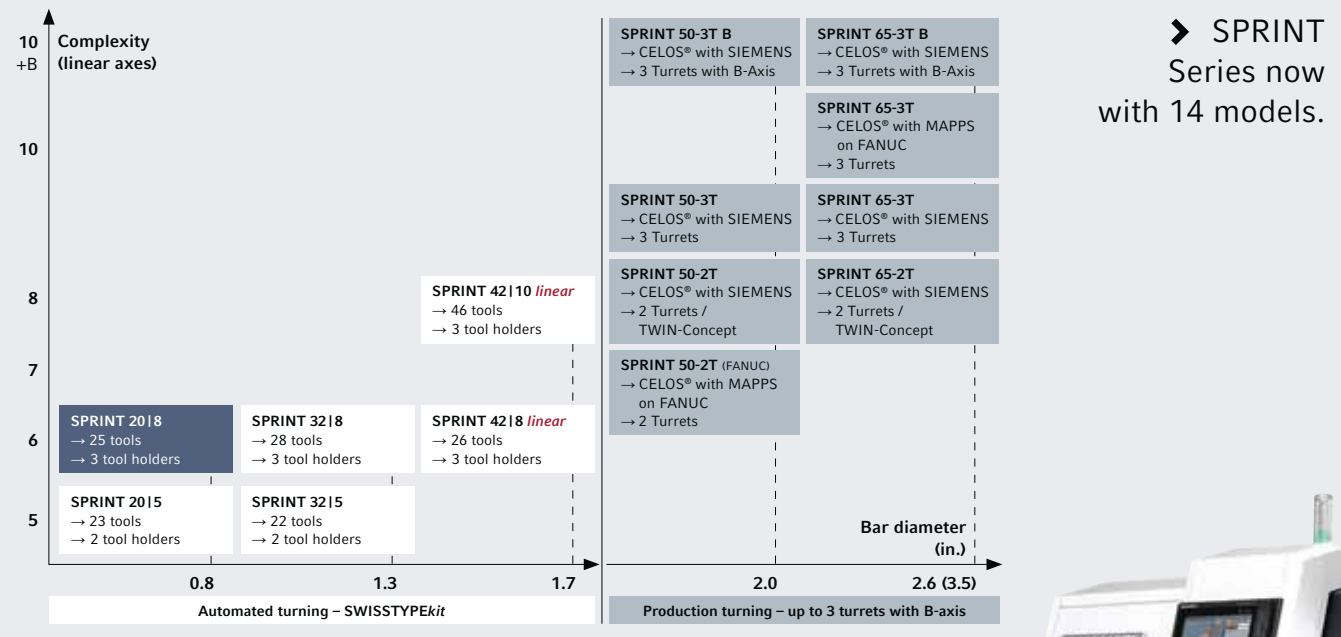


› Work area of the SPRINT 20|8 with 6 linear axes and 2 C-axes; up to 25 tools used on 3 independent tool holders for 4-axis machining at the main spindle, including 8 places for powered tools.

NEW: SPRINT 20|8 – Machining of workpieces up to ø 0.8 × 23.6 in. with a footprint of less than 21.5 ft.²

+ **6 linear axes and 2 C-axes.**
+ **25 tools on 3 independent tool holders for 4-axis machining at the main spindle.**
  – 4 powered tools for the main spindle (radial)
  – 2 stationary deep-hole drill tool places
  – 4 powered tool places for the counter-spindle (frontal and/or radial)
+ Unloading unit for **long workpieces up to 23.6 in. through the counter spindle.***
+ **SWISSTYPE*kit** for short and long turning operations on a single machine,** < 30 min. setup time.
+ **20% shorter setup times** thanks to the quick tool-change system.*
+ **High-pressure coolant supply* up to 1,740.5 psi.**
+ FANUC 32i-B with 10.4“ color display.

* Optional



› SPRINT Series now with 14 models.

■ New in 2016

SHORT TURNING
ø 0.6 × 2.0 in.
Valve // Hydraulics
Material: Steel (X8CrNiS18-9)
Machining time: 98 sec.

SWISSTYPE*kit*
ø 0.4 × 3.3 in.
Bone screw // Medical
Material: Titanium (Ti6Al4V)
Machining time: 240 sec.

Scan to watch the video on “Local Production in Italy“

For more information on the SPRINT Series, visit:

sprint.dmgmori.com

Download the SPRINT Series product brochure at:

download.dmgmori.com

SPRINT 20|8
6 linear axes and 25 tools on 3 independent linear holders.

CTV Production Turning

SPECK PUMPEN WALTER SPECK GMBH & CO. KG

"In times of smaller lot sizes, automated solutions that can be flexibly adapted are the future."

Dieter Meier, Mechanical Production Manager, is excited about the enormous productivity of the systems.

For over 100 years, **SPECK PUMPEN Walter Speck GmbH & Co. KG**, based in Roth, has been manufacturing pumps and pump systems for industrial applications. Their customers come from various sectors such as the **medical, chemical, and plastics industry** and trust in the quality and reliability of their specialised products. **DMG MORI's CNC technology** has been dominating the manufacturing sector since the start of the century, but since 2010, the automated units of **DMG MORI Systems** have also held significant value. DMG MORI Systems has optimised the production of motor bearing shields by **linking a CTV 160 with a DMC 635 V.** In 2015, this area was expanded to include a nearly identical system – a **MILLTAP 700 and a CTV 160**.

"**The output of the two systems is enormous,**" states Dieter Meier, Mechanical Production Manager. SPECK produces over **250,000 die-cast aluminium bearing shields** on the two linked machine tools. However, the high quantities should not disguise the fact that the actual lot sizes are relatively small, adds the Production Manager. "We produce very different variants, so both systems had to have **an extremely flexible design.**" To achieve this, **DMG MORI Systems** installed flexible chuck jaws. The devices in the round magazine can be adjusted to the appropriate diameter in just a few steps.

DMG MORI Systems designed and implemented the two links based on the components. "Within three months, we were able to start production," says Dieter Meier about the **quick implementation of linking.** To him, automation is the future of manufacturing: "Thanks to **short cycle times, higher capacities,** and a **significant increase in productivity** due to the multi-machine operation, automated production systems are amortised within a very short time."

Speck Pumpen
Walter Speck GmbH & Co. KG
Regensburger Ring 6 - 8, D-91154 Roth
www.speck.de

BURGMAIER TECHNOLOGIES GMBH + CO. KG

Johann Bernhard (left) and Gunnar Deichmann, Burgmaier Technologies GmbH.

Production on the SPRINT 65 with the highest accuracy, e. g. an evenness of 0.0002 in.

"By using the SPRINT 65, we were able to increase the process safety and decrease the previous operating time by 50%."

BURGMAIER has been specializing in the production of **precision turned parts** for the **automotive engineering, hydraulics, and electronics industries** for over 80 years. The company employs over 750 people at four locations in Germany, France, and Slovakia. BURGMAIER has been collaborating closely with **DMG MORI** on its turning operations for many years. As part of an order of **eight SPRINT 20** units, the company also invested in a **SPRINT 65**. "It helped us successfully close a short-term production bottleneck," remembers Gunnar Deichmann, COO. With the SPRINT 65, BURGMAIER produces an injector part for a common rail fuel injection for trucks directly off the bar, eliminating the downtimes previously caused by workpiece changes. "This has also helped us increase our **process safety and the machining precision is extremely high,**" explains Johann Bernhard, his fellow executive. The tolerance is at a reliable **0.0008 in.** and the evenness and parallelism at an impressive **0.0002 in.** and **0.0003 in.**, respectively. With three turrets, a **swiveling B-axis,** and 36 specialised tools, the **SPRINT 65** is very productive. The experience of the high-precision turning company and the modern **CNC technology of DMG MORI** have **reduced the throughput times** in this process by **50 percent**. Gunnar Deichmann states, "In a large-scale production with 10,000 parts, that is a huge accomplishment."

BURGMAIER Technologies GmbH + Co. KG
Hauptstraße 100 - 106, D-89604 Allmendingen
www.burgmaier.com

WASINO Automatic Turning

Director Gianluca Marchetti of M.T. S.R.L (left) and Corrado Brevini of DMG MORI Italia (right).

M.T. S.R.L.

"We now produce workpieces with 0.00002 in. circularity and a surface in grinding quality."

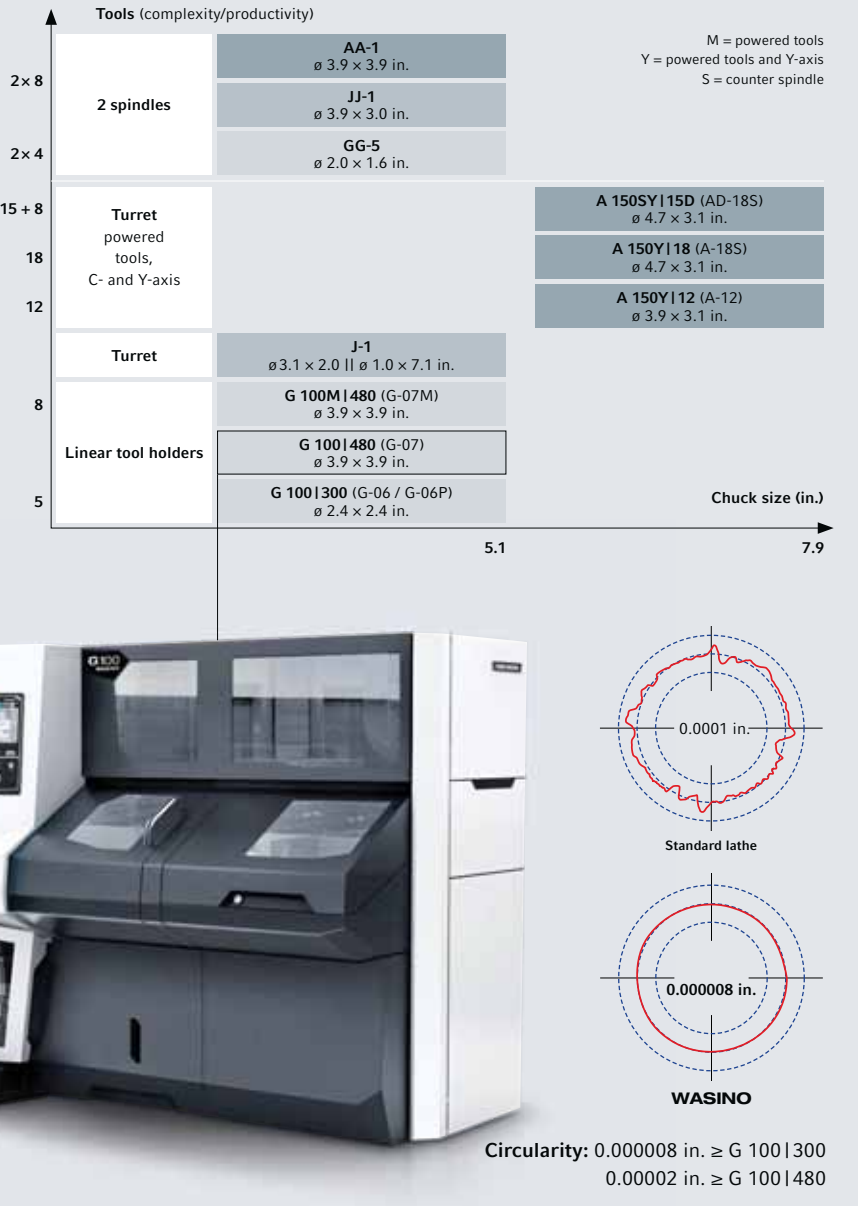
Founded in 1972 as a contract manufacturer, **M.T. S.r.l.** has continuously expanded its range of services. Today, the company based in Marignano, Italy, produces a multitude of powered and stationary tool holders. In order to further expand production capacities, Director Gianluca Marchetti invested in a **WASINO Automatic Lathe** in 2015: "The highly precise **WASINO G100|480** (formerly G-07) is ideally suited for lot sizes between 50 and 1,500 parts." He considers the series an optimised addition to DMG MORI's lathe portfolio. For Gianluca Marchetti, one persuasive argument for purchasing a WASINO G100 was its **high precision of 0.00002 in.** when it comes to circularity, with an equally high **resistance to temperature**

Thanks to integrated automation, M.T. produces lot sizes of up to 1,500 parts almost entirely on unmanned systems.

fluctuations. "Even the surface finish achieved was almost in **grinding quality**," states the Director – even with complex workpieces: "Before, I had to grind the surfaces of my workpieces with specialised tools, changing fixtures several times. Now I can achieve the same surface quality on the G100 **in a single chucking**." Combined with standard **automation**, he says, the model is perfectly equipped for the required lot sizes.

M.T. S.r.l.
Via Casino Albini 480
IT-47842 S.Giovanni in Marignano
www.mtmarchetti.com

› WASINO portfolio with 10 machines:
Ultra-precise lathes with up to 0.000008 in. circularity.



Circularity: 0.000008 in. ≥ G 100|300
0.00002 in. ≥ G 100|480

CELOS® AND DMG MORI SOFTWARE SOLUTIONS

Christian Thönes
Chairman of the Executive Board
DMG MORI AKTIENGESELLSCHAFT, Bielefeld

"With CELOS® and our DMG MORI Software Solutions, we accompany our customers on their way towards digital manufacturing."

What does "Industry 4.0" mean for DMG MORI?
For us, "Industry 4.0" means accompanying customers on their digital transformation with holistic solutions. User benefit is always the main focus. This is proven by the examples of Porsche Motorsport and Schaeffler Technologies (among others) in this edition.

How does DMG MORI support its customers?
A central element is CELOS®, with its currently 16 APPs. Order, process, and machine data can be managed, documented, and visualised both at the control unit and on a PC.
In addition, CELOS® facilitates the exchange of information with superordinate software systems, thus closing the gap between the IT environment and production.

So, soon nothing will work at all without software?
Many things will work better with software! This is demonstrated by our DMG MORI Software Solutions, for example, the DMG MORI Process Chain with the DMG MORI Virtual Machine. With the support of the digital mirror image of real manufacturing, maximum process safety and product quality can be ensured even before making the very first chip.

The 24 DMG MORI Technology Cycles are another example. Assisted by dialogue-guided programming, the employee can create the NC program 60% faster. In addition, we offer our customers the new sensor package i4.0 for optimised data handling, improved accuracy, and more process safety.

Scan to watch the video of Porsche Motorsport CNC Competence Centre in Seebach

For more information on our technology partnership with Porsche, visit:
microsite.dmgmori.com

DMG MORI Software Solutions for digital production.

CELOS® networks Porsche's organization and planning with DMG MORI's production.

Process Planning & 1:1 Simulation

2

1

Order / CAD data from Porsche

PORSCHE MOTORSPORT LMP1 TEAM
EXCLUSIVE PREMIUM PARTNER
DMG MORI

1. ORDER

CAD DATA

+ Porsche's developers deliver the component's CAD data to the Porsche Motorsport CNC Competence Centre.

2. PROCESS PLANNING

DMG MORI Software Solutions and CELOS® APPs for production engineering and process planning.

CAD-CAM / SIMULATION

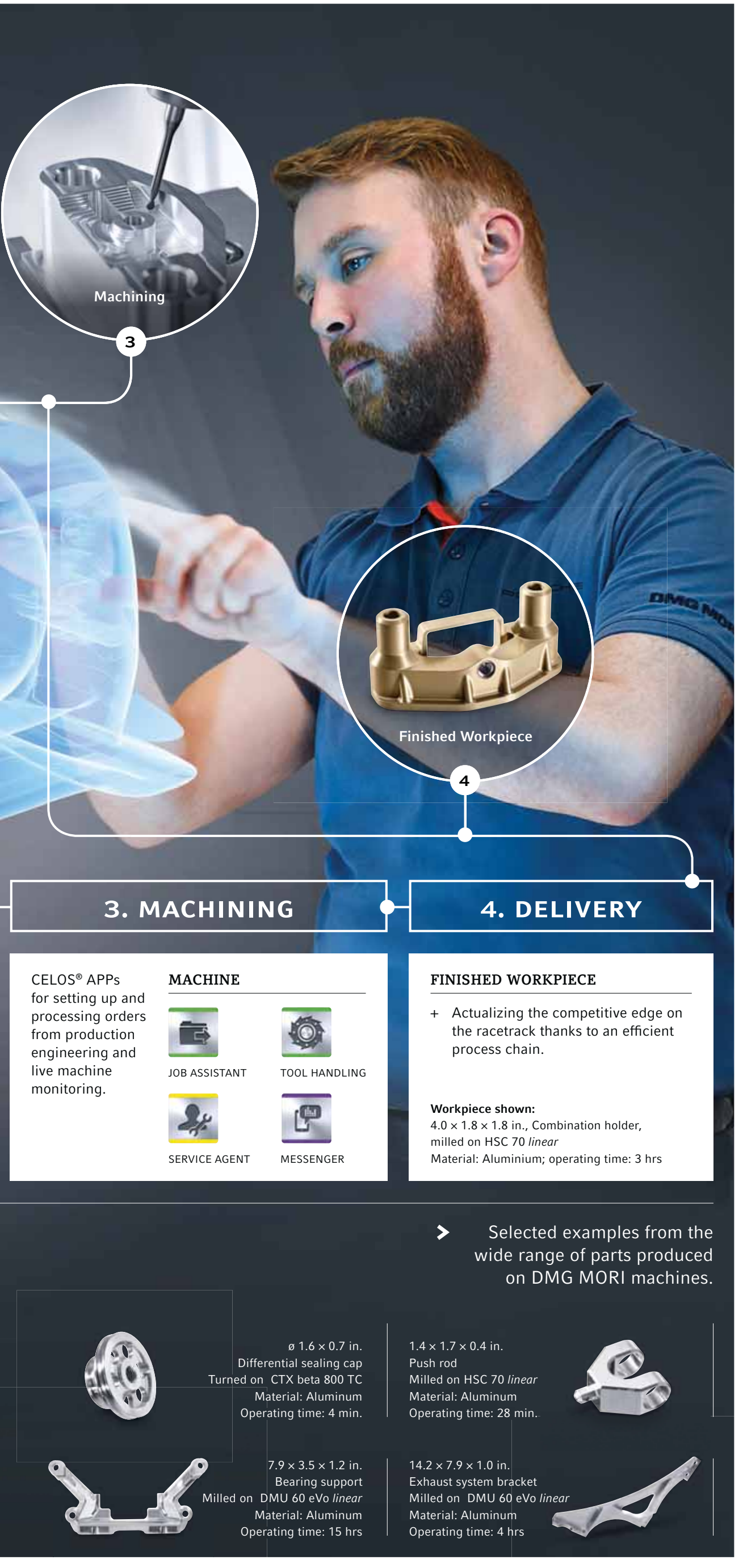
+ DMG MORI Process Chain
+ Programmer 3D Turning
+ DMG MORI Virtual Machine

CELOS® PC VERSION

JOB MANAGER
JOB SCHEDULER
TECH CALCULATOR
DOCUMENTS

PORSCHE MOTORSPORT CNC COMPETENCE CENTRE IN SEEBACH

+ CNC Competence Centre specifically set up for Porsche to develop intelligent manufacturing solutions for sophisticated components.
+ Focus: long-term technology transfer.
+ 5 DMG MORI employees work on the production of the Porsche parts in 2-shift operation.
+ Machine outfit currently installed:
  – **CTX beta 800 TC** with CELOS®
  – **HSC 70 *linear*** with CELOS®
  – **DMU 60 eVo FD** with CELOS®



Porsche Motorsport CNC Competence Centre

Success through technology partnership.

Assisted by CELOS®, the Porsche Motorsport CNC Competence Centre from DMG MORI produces high-quality components in perfectly organised processes.

A successful partnership enters round three: Once again, DMG MORI and the Porsche LMP1 Team join together in the fight for place on the podium at the FIA World Endurance Championship (WEC) 2016. As a leader in innovation, DMG MORI provides the Porsche team with the most cutting-edge manufacturing technologies. In the **Porsche Motorsport CNC Competence Centre** at DECKEL MAHO Seebach, DMG MORI combines decades of machining excellence with advanced trend-setting software.

CELOS® – competitive edge thanks to integrated process organization. By the end of 2015, DMG MORI produced more than **60 different components,** with a total quantity of over **2,300 individual parts** for the Porsche Team. The range of parts included complex housings for pumps and electric motors, as well as intricate fastening elements for the innovative braking system. The CAD data needed for this process is delivered by the developers of the Porsche LMP1 Team. From that point forward, the machining experts at Seebach handle the **complete process through the finished workpiece.**

CELOS® has proven to be a key pillar in the collaboration of DMG MORI and the Porsche Team. At the Motorsport CNC Competence Centre, all machine tools are equipped with CELOS®. In addition, the **CELOS® PC version** is also available to the team.

The **CELOS® PC version serves as the central planning and control software.** The individual orders are created from a control centre, completely independently of the machines. In the **Job Manager,** NC programs, chucking plans, and tools are linked together into one order. As a result, you won't find any technical drawings or paper documentation at the Porsche Motorsport CNC Competence Centre. Detailed planning of jobs, including exact assignment to a machine, takes place in the **Job Scheduler**. The current status and the effects of rapid changes can be viewed in the CELOS® control centre. In addition to the planning and control functions, the CELOS® control centre also facilitates **real-time access to the machine data of all connected machine tools**. The stored data can be used to carry out additional business analyses in order to optimise production in the short and medium term. The **networking of the machines** in combination with the continuous recording of real-time data represents a crucial step towards **Industry 4.0**.

› Selected examples from the wide range of parts produced on DMG MORI machines.

ø 1.6 × 0.7 in.
Differential sealing cap
Turned on CTX beta 800 TC
Material: Aluminum
Operating time: 4 min.

1.4 × 1.7 × 0.4 in.
Push rod
Milled on HSC 70 *linear*
Material: Aluminum
Operating time: 28 min.

7.9 × 3.5 × 1.2 in.
Bearing support
Milled on DMU 60 eVo *linear*
Material: Aluminum
Operating time: 15 hrs

14.2 × 7.9 × 1.0 in.
Exhaust system bracket
Milled on DMU 60 eVo *linear*
Material: Aluminum
Operating time: 4 hrs

CELOS® PC version as the control centre: CELOS® combines production engineering and the shop floor in a unique way, resulting in a highly efficient service partnership.

CELOS® AND DMG MORI SOFTWARE SOLUTIONS

24 exclusive DMG MORI Technology Cycles

DIALOGUE-GUIDED PROGRAMMING

+ Up to 60% faster
+ New applications, e.g. grinding and gearSKIVING
+ Visualised, interactive, and user-friendly

WITHOUT TECHNOLOGY CYCLES
CLASSIC DIN PROGRAMMING

WITH TECHNOLOGY CYCLES
DIALOGUE-GUIDED PROGRAMMING

Software solutions for easy implementation of complex machining – dialogue-guided programming.

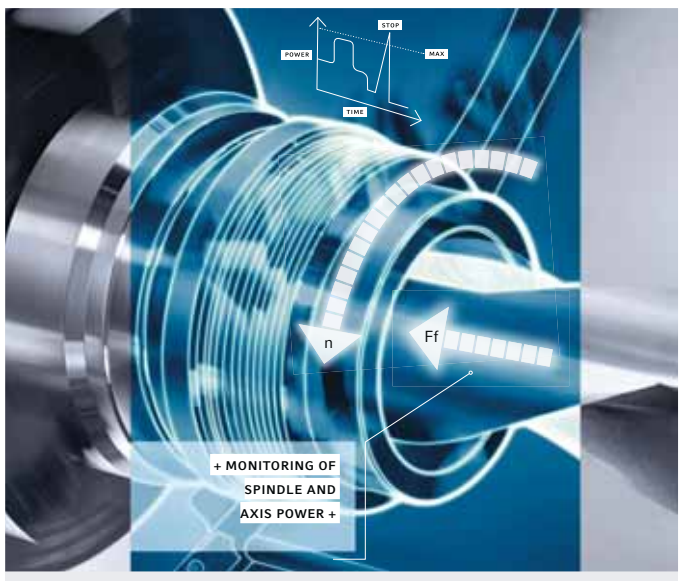
Scan to watch the video of DMG MORI Technology Cycles

Download the product brochure for the 24 exclusive DMG MORI Technology Cycles:
download.dmgmori.com

› 3 selected examples

MPC 2.0 – Machine Protection Control

+ Stop at critical vibration states.
+ **Vibrations sensors** at the milling spindle.
+ **NEW cutting force monitoring** for drilling and thread cutting.
+ **NEW unbalance display** when idle.
+ **NEW upgrade** for all milling and mill/turn machines with MPC Version 1.0.



Easy Tool Monitoring 2.0 – tool monitoring system

+ **Damage prevention** due to the controlled stop of the spindle and axis in cases of tool breakage or tool overload.
+ **Immediate feed stop:** Spindle stop after one second (tool cutting free).
+ **Sensorless with automated learning** of load limits.
+ **For turning, milling, and drilling operations.**

Multi-threading cycle 2.0

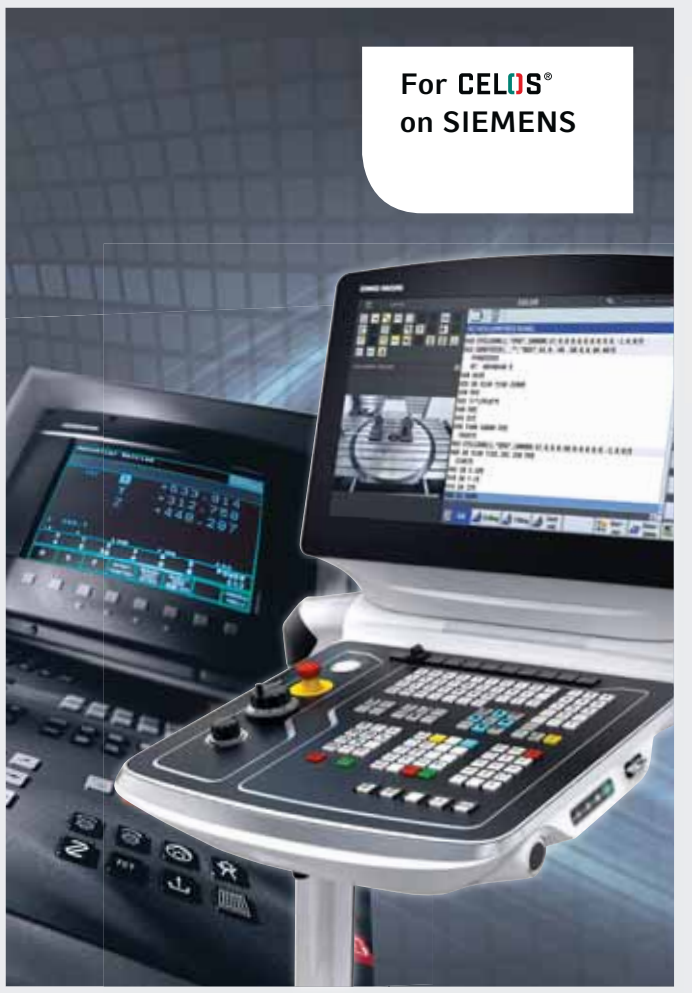
+ **Creating large transmission and/or special threads,** that cannot be produced with simple thread chasing.
+ **Free definition** of contours, pitches, and gears possible.
+ **On Point Position –** Position-oriented thread creation.

NC Program Conversion

REFERENCE PROJECT – ENGINEERING SECTOR

Program conversion of old and external controls for Operate on SIEMENS 840D solutionline.

Use old programs on a new machine! Save time by letting us translate your programs now!



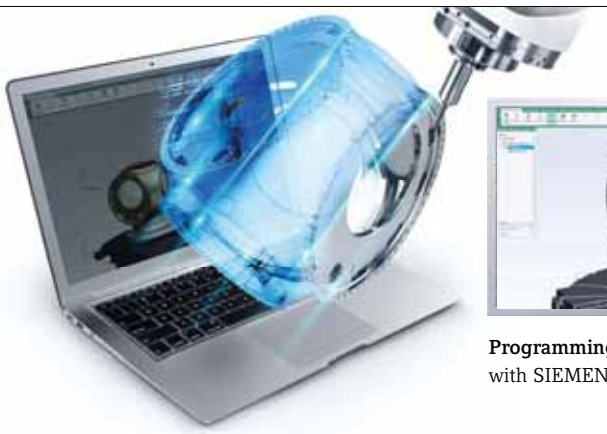
+ New DMG MORI machine with **immediately effective** operation.
+ Programs are **available immediately.**
+ **Support for cycles** installed on the old machine.
+ Programs can be **adapted for specific machines**, particularities are accommodated.
+ **Additional start-up support** by DMG MORI Academy Trainers available (e. g. when setting up the workpieces).
+ **Time-saving service, no additional personnel required** for converting the programs.
+ Ideal for new machines with **CELOS® from DMG MORI.**

Quicker production start by conversion of more than 500 old programs!

When replacing the old lathe with a new, high-performance CTX beta 800 4A, it would have been necessary to completely rewrite all existing programs for this machine type. The perfect solution is now provided with the new "NC program conversion" service by DMG MORI. Within one week, all 535 old programs had been adapted for the new, specific machine concept and converted into the new control format.

DMG MORI Process Chain

Safe and quick manufacturing with certified post-processors and 1:1 simulation.



Programming with SIEMENS NX CAD / CAM

1:1 Simulation with the DMG MORI Virtual Machine

Production with DMG MORI machine tools

ZAHORANSKY FORMENBAU GMBH

"Thanks to the 1:1 simulation in the DMG MORI Virtual Machine, we were able to reduce the set-up time by 30%."

The DMG MORI Virtual Machine is a 1:1 mirror of the DMC 160 H duoBLOCK® including the actual control unit.

Based in Freiburg, **ZAHORANSKY Formenbau GmbH** (a subsidiary of the Zahoransky Group, which has been successful for over 100 years), together with its **220 employees**, stands for intelligent solutions from mould to process control. Its know-how sets the company apart from its competitors, while its customers from the **medical, packaging, and personal care** industries sustainably optimise their plastic products with the help of the company's high-quality, sophisticated moulds. **Process optimization** is also omnipresent in ZAHORANSKY's production operations, as the acquisition of a **DMC 160 H duoBLOCK®**, including **DMG MORI Process Chain** and **DMG MORI Virtual Machine** demonstrates. "With this software solution, we are able to achieve maximum capacity utilization for the machining centre," explains Matthias Faber, Head of Engineering at ZAHORANSKY. ZAHORANSKY makes full use of the possibilities of the DMG MORI Process Chain. Designers develop the complex tools and moulds in SIEMENS NX CAD. The required NC program is then created in SIEMENS NX CAM. Before production starts on the **DMC 160 H duoBLOCK®**, the **DMG MORI Virtual Machine** is used first. "The virtual machine is a **1:1 mirror image of the milling centre,** including the actual control unit. This enables us to **simulate the NC program under real conditions**," as Dietmar Glockner, Head of CAD / CAM at ZAHORANSKY, explains the process. The design team's work is so reliable that the machining process usually works without a hitch. "And should any issues arise, we can recognise them before production starts." After a year and a half, ZAHORANSKY's trust in **DMG MORI Process Chain** remains unbroken. The data from the simulation are transferred, fully automated, to the **DMC 160 H duoBLOCK®**, where machining starts at a full 100 percent – even at night, in unmanned operation. "The **time savings are up to 30 percent**, because we neither have to start up manually nor carry out any subsequent corrections on the machine," as Dietmar Glockner describes the productivity increase. "The **complete machine operation is done from the programming place.**" Additional security is provided by the **DMG MORI Machine Protection Control**, which permanently monitors vibrations and cutting forces. The investment in the DMG MORI Process Chain rapidly paid off for ZAHORANSKY, as Matthias Faber concludes, "The **spindle turns practically around the clock**, downtimes are a thing of the past. The capacity of the **DMC 160 H duoBLOCK® is utilised in an optimised way.**"

ZAHORANSKY
PERFECTLY DIFFERENT

ZAHORANSKY Formenbau GmbH
Bebelstraße 11a, D-79108 Freiburg
inf@zahoransky.com, www.zahoransky.com

CELOS® AND DMG MORI SOFTWARE SOLUTIONS

Ready for the next Industrial Revolution.

CELOS®, the APP-based control and operating software by DMG MORI, is as easy to operate as a smartphone and networks all machines within your organization.

CELOS® by DMG MORI is a standardised **APP-based control** with a unique **multi-touch screen** for all new DMG MORI high-tech machines. Thanks to its APP-based structure, CELOS® is a**s easy to operate as a smartphone**. Via the multi-touch screen, the CELOS® APPs enable users to **manage, document, and visualise all order, process, and machine data. 16 APPs** support the user in handling the preparation, optimization, and error-free processing of production orders. The CELOS® APP **Condition Analyzer** serves as a platform for visualizing, analyzing, and projecting inter-machine status types.

CELOS® INFO HOTLINE

We'll be happy to answer any questions or assist you with using CELOS®.
E-Mail: celos@dmgmori.com

Scan to watch the video on CELOS®

For more information on CELOS®, visit:
celos.dmgmori.com

Download the CELOS® brochure:
download.dmgmori.com

Scan to watch the video on Industry 4.0

Download the Industry 4.0 product brochure:
download.dmgmori.com

Sensor package i4.0

for optimised **data handling**, improved accuracy, and increased **process safety**, consisting of:

+ **Machine Protection Control (MPC) –** Preventive protection through vibration sensors on the milling spindle.
+ **Spindle Growth Sensor (SGS) –** Sensor for detecting and compensating for spindle displacement.
+ **Tool Dialog System (TDS) –** Tool identification for manual, no-touch reading/writing of tool data.
+ **IKZ Flow Monitor –** IKZ volume flow monitor to ensure the required cooling performance.

NEW: DMG MORI Condition Analyzer – 60 sensors on the machine monitoring the machine status.

CONDITION ANALYZER

From Big DATA to Smart DATA – detecting and analyzing machine data with direct feedback to service team and customers for the **highest machine productivity.**

+ **Detection:** Variable scanning rate, secure data transmission to the cloud (every 10 minutes)
+ **Analysis:** Detects patterns of unusual machine behavior and provides direct feedback to service team and customers.

SCHAEFFLER TECHNOLOGIES

Intelligent machine tools with permanent status monitoring.

Last year, DMG MORI introduced an Industry 4.0 project developed together with technology partners. They presented the DMC 80 FD duoBLOCK®, a machine equipped with over 60 monitoring sensors and the ability to network the digitized components from the sensor to the cloud in order to detect, store, and analyze data. The objective is a permanent monitoring of the machine status. The APP-based control and operating software CELOS® supports the interaction between man and machine.

The benefit to the user becomes apparent in two ways. On the one hand, the process parameters are visualised in **CELOS®** with the help of the "**Condition Analyzer,**" so real-time **performance and status analyses** can be performed on the machine. On the other hand, the recorded data is combined in a superordinate cloud architecture, where they are subjected to a dedicated analysis based on special algorithms.

It is then determined by the production engineering team of Schaeffler Technologies in Höchstadt an der Aisch how the data can be transformed into concrete knowledge. A DMG MORI pilot machine has been in permanent operation there since late October 2015. Schaeffler estimated that the possibilities would be numerous. They range from an **improved control method for the machining process**, e.g. in order to allow for better consideration of tool wear, to a **lower energy or lubricant consumption**. The transmitted status data and empirically determined "behavioral patterns" also enable the user to make a **qualified prognoses about potential damage**, e.g. to the spindle.

The first step towards the future of machining production has been taken, and the results are very promising. However, it has been said that it is still too early for a quantifying evaluation, although Schaeffler is expecting validated insights within the current year. "What's important is that we have made a start and can now gradually learn how **Industry 4.0** works in practical applications, based on a real production," emphasises Martin Schreiber, Head of Production Machinery at **Schaeffler Technologies AG & Co. KG.**

DMG MORI PREMIUM PARTNER

SCHAEFFLER
LuK INA FAG

Schaeffler Technologies AG & Co. KG
Georg-Schäfer-Straße 30, D-97421 Schweinfurt
www.schaeffler.de

duoBLOCK® 5-Axis Universal Milling Machines

powerMASTER®
motor spindle
with 737.6 ft./lbs.
torque

ø 15.7 × 13.0 in.
Drill head // Energy
Material: 21CrNiMo2 (1.6523)
Machining time: 18 hrs.

27.6 × 17.7 in.
Tubular mould // Tool
and Mould Making
Material: 21CrNiMo2
Machining time: 8 hrs.

Scan to watch the
video of the
4th Generation duoBLOCK®

For more information on the
duoBLOCK® Series, visit
duoblock.dmgmori.com

Download the duoBLOCK®
Series product brochure at:
download.dmgmori.com

The standard in 5-axis machining.

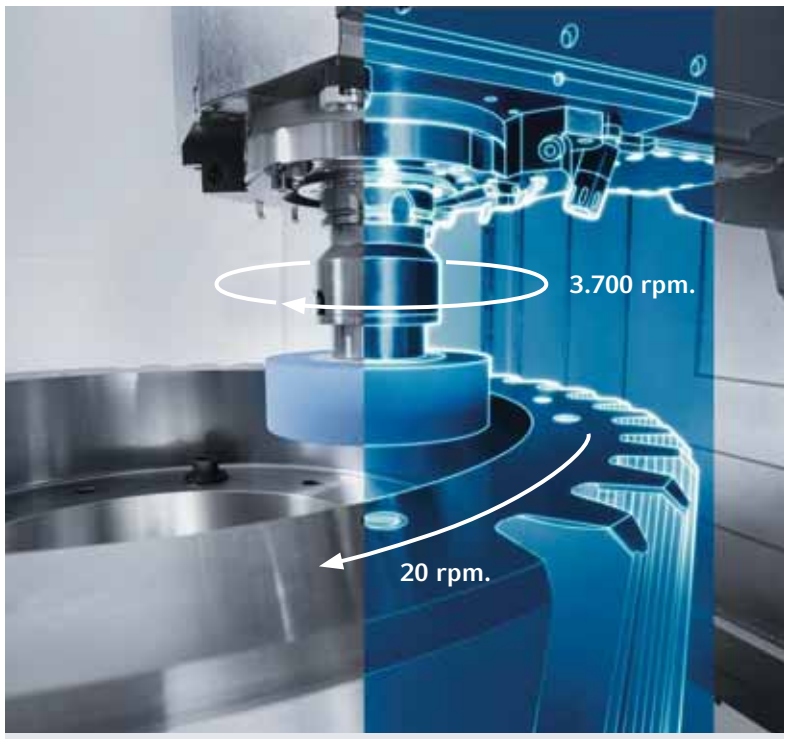
- + **powerMASTER®** – motor spindle with 737.6 ft./lbs. torque, 103.3 hp. performance and Spindle Growth Sensor (SGS) to compensate for spindle growth, for greatest accuracy.
- + **Highest flexibility and shortest machining times** with the **new B-axis** with 20% more stiffness and integrated cable carrier.
- + **Large workpieces** up to max. diameter of 37.4 in. and 57.1 in. height and a max. load of 3,306.9 lbs.
- + **5X torqueMASTER® –** 958.8 ft./lbs., 49.6 hp., SK50 / HSK-A100 and up to 8,000 rpm.
- + **Strong speedMASTER® spindle** standard with 15,000 rpm., 46.9 hp. and 95.9 ft./lbs. (40% DC).
- + **Fast, innovative wheel magazine** with tool change time of 0.5 seconds and up to 453 tools within a small footprint.

DMU 80 P duoBLOCK®
30% less energy consumption.*

* due to the new, efficient, frequency-controlled high-pressure pump up to 1,160.3 psi. as a standard option.

CELOS®
from DMG MORI

DMG MORI TECHNOLOGY CYCLES



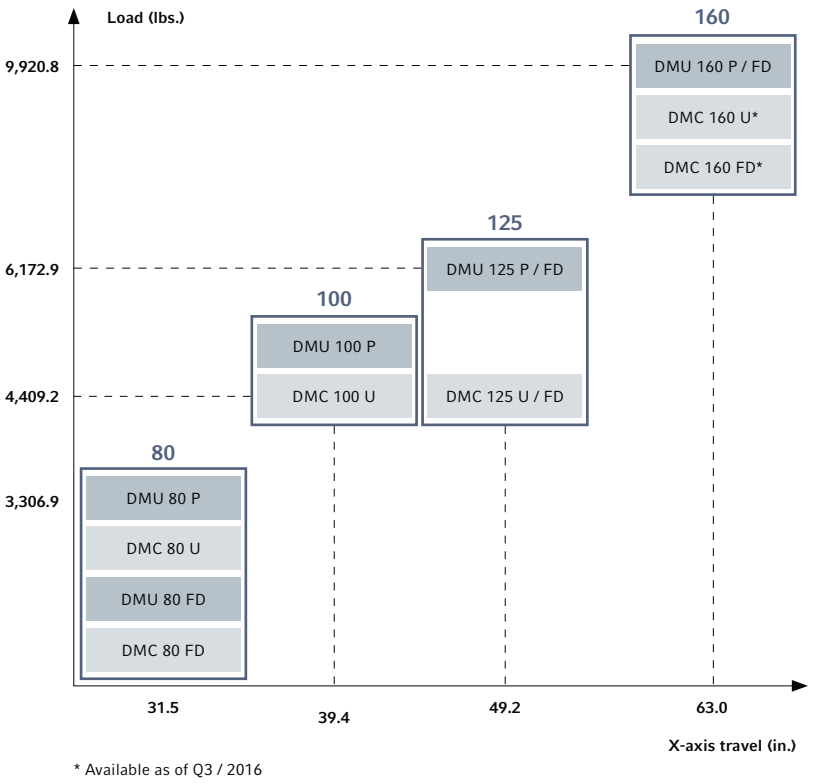
Technology cycle grinding for milling/turning machines.

+ **NEW: A solid borne sound sensor** integrated in the spindle recognizes the initial contact between the grinding wheel and the workpiece.
+ For **internal, external, and face grinding.**
+ **Dressing cycles** for wheel dressing.
+ **Best surface quality,** due to integration of grinding technology.
+ **Optimised profitability** in manufacturing due to the lack of fixture changes.

More on DMG MORI Technology Cycles on page 16

The right solution for every application – duoBLOCK® Series featuring the **World Premiere DMU 160 P duoBLOCK® 4th Generation** for large workpieces up to 63.0 in.

2016 World Premiere DMG MORI



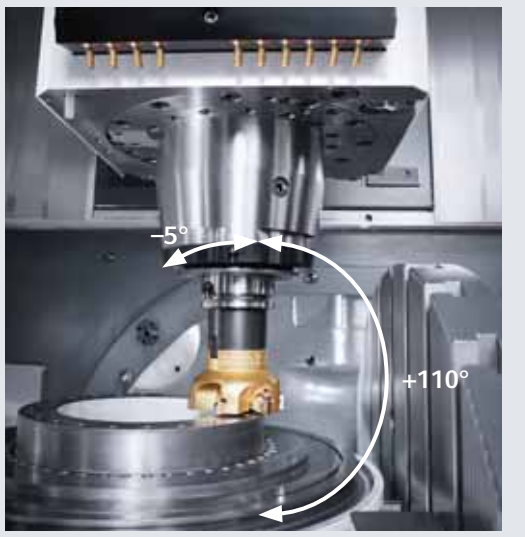
* Available as of Q3 / 2016

DMU 50 – The entry point to 5-axis machining.

GLOBAL PRODUCTION CONCEPT – ON THE MARKET FOR THE MARKET
Direct on-site production ensures short delivery times with a consistently high quality standard.

Davis, USA | Seebach, Germany | Ulyanovsk, Russia | Shanghai, China | Chiba, Japan

+ **High-performance NC swivel rotary table** for simultaneous 5-axis machining with high stiffness.
+ High loading weight of up to 661.4 lbs.
+ **A standard high-performance inline spindle with 14,000 rpm.,** optionally 18,000 rpm.
+ Digital drives with a standard **rapid traverse up to 1,181.1 ipm.**
+ **Tool magazine can be loaded during machining** and has space for up to 60 tools.
+ **CELOS® by DMG MORI** with SIEMENS and 21.5“ ERGO*line*® Control with multi-touch screen.
+ Heidenhain iTNC 530 with 19“ ERGO*line*® control panel.



Swivel range of NC rotary table: –5° to +110°.

PORTAL 5-Axis Universal Milling Machines

BRAD FOOTE
GEAR WORKS INC

DMG MORI 5-Axis Works Faster, Boosts Quality, Helps Grow Product Line at Brad Foote Gear Works

DMU 210 P and gearMILL® Software for complex machining of an AGMA Q11 herringbone.

DMG MORI 5 Axis milling experts Michael and Bartosz of Brad Foote Gearing are proud of their DMU 210 P, increasing productivity around 50%.

"We're really happy with our **DMG MORI DMU 210 P** 5-Axis Machining Centre," says Michael Nowak, Supervisor of Manufacturing Operations at Chicago's **Brad Foote Gear Works**. Brad Foote engineers, designs, manufactures and rebuilds **complex gearing** for the booming **wind energy market**. Brad Foote supplies parts to other industries such as **oil, gas, mining, heavy construction, marine**, and many more.

In 2013, Brad Foote purchased the DMU 210 P. "We utilize it for 99 percent of what we do," says Nowak. "For bevel gears, we **increased productivity around 50 percent** vs. our older machines." The DMU 210 P Five-Axis Machining Centre has **three linear axes** and t**wo rotary axes**. The unique B-axis kinematics within the head is a great advantage to any other 5-axis machining centre on the market. According to Nowak, this is better for complex 3D shapes and 3D coordinate conversion.

Nowak concludes, "**We now can make a herringbone gear with the DMU 210 P**, a part that was impossible for us before. Our oil industry customers just love this new product. **We think it will take us into new markets.**"

Brad Foote Gear Works Inc
3250 S Central Ave, Cicero, IL 60804
bfgw.isales@bwen.com
www.bradfoote.com

World Premiere DMU 210 P: 2nd Generation with 5X torqueMASTER® for maximum chipping performance.

2016 World Premiere DMG MORI

+ **Extended swivel range of 250°** and optimised interference contour of the milling head.
+ **Highest long-term precision,** due to cooled linear guides and **active spindle displacement compensation.**
+ 80% more torque at 1,327.6 ft./lbs. thanks to the 5X torqueMASTER®.
+ **Innovative wheel magazine** for up to 243 tools (SK50 / HSK-A100) with minimum space requirement.
+ **Greatest spindle variety** on the market.

THERMAL CONTROL

+ Cooled drive motors
+ Cooled ball screws
+ Cooled linear guides
+ Cooled drive of rotational axes
+ Sensor-based spindle compensation
+ Cooled machine bed
+ Optional: Tempered machine bed

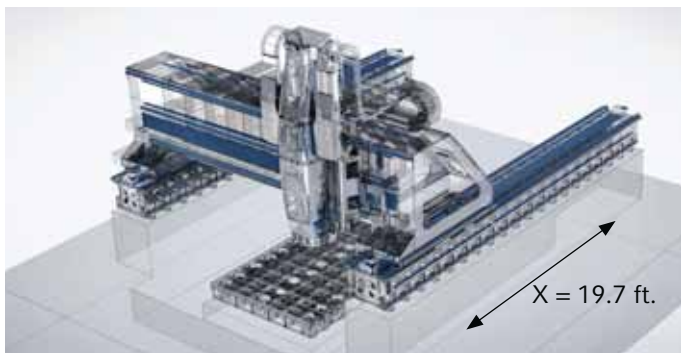
CELOS® from DMG MORI

DMU G *linear* 5-Axis XXL Machining Centres

XXL

165.3 ton
Table load

Above: DMU 600 G *linear* being set up at the XXL-Centre of DECKEL MAHO in Pfronten, the world's most modern large machine production facility. Below: Consistently high precision due to temperature stability of machine structure.



World Premiere DMU 600 G *linear*: The new high gantry large-scale machine with up to 150 ton table load.

2016 World Premiere DMG MORI

- \+ High gantry design with a **table load of up to 165.3 tons.**
- \+ **Direct Drive technology in all axes** for optimum surface quality and the highest dynamics (linear motors: X-, Y-, Z-axis; torque motors: A-, C-rotational axes).
- \+ **Temperature control –** Extensive cooling measures ensure highest temperature stability for consistently high precision.
- \+ **Highest rigidity –** due to FEM-optimised machine structure components and EN-GJS-600-3 (GGG60).

Scan to watch the video of the XXL Centre

linear DRIVE 5-year warranty

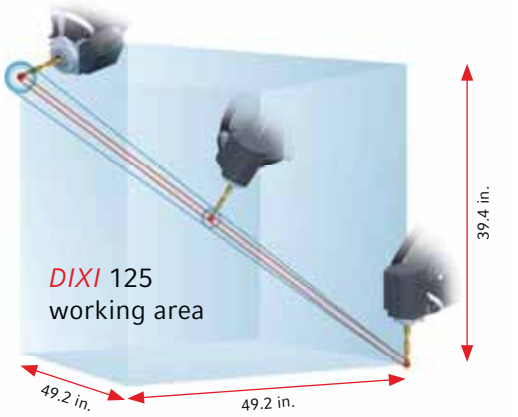
CELOS® from DMG MORI

165.3 ton
Table load

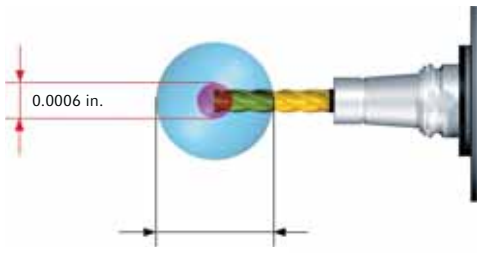
9.8 ft./s²
Acceleration

DIXI

3 TIMES MORE PRECISION!



Minimum 3 times more precision in the entire machining area.



World Premiere *DIXI* 125: < 0.0006 in. volumetric precision on the component.

- \+ Highest positioning accuracy in the linear axes of up **to 0.0001 in.**
- \+ Highest precision, due to component selection and **scraped contact surfaces** of all geometrically relevant components.
- \+ **Temperature control** for all heat-generating machine components.
- \+ Highest stiffness for maximum milling performance (GGG60 cast components).

Scan to watch the video of the *DIXI* ultra-precision machine

For more information on the complete *DIXI* Series, visit:
dixi.dmgmori.com

2016 World Premiere DMG MORI

CELOS® from DMG MORI

DMG MORI LIFECYCLE SERVICES

Dr. Maurice Eschweiler
Head of Industrial Services
DMG MORI
AKTIENGESELLSCHAFT

DMG MORI Service – The key advantage!

DMG MORI OEM Service offers you flexible and high-quality service that covers all your requirements with great precision. From prevention to customised service products.

"With the service offered by DMG MORI, you're always on the safe side! Today and tomorrow."

KRONES AG

High machine availability due to integrated service.

Left to right: Thomas Gruber, Head of Machines, Georg Hofmeister, Head of Blowmoulds Management, Timo Potratz, Production Technology.

Exacting demands, **Krones AG** follows the highest standard of manufacturing. The company maintains a **long-term cooperation on service** with DMG MORI. Thomas Gruber, Head of Machines, emphasises the cooperative nature of the partnership: "It's built on very transparent interaction. Our primary focus is **solution-oriented action**." Their priority is a minimum machine availability of 95%.

Krones minimises the risk of downtime by performing **regular maintenance** work. When purchasing new machines, Krones also makes sure its **own maintenance team is trained by DMG MORI**. If downtime occurs anyway, the production team benefits from the short response time of DMG MORI Service Technicians and the quick delivery of replacement parts. "Our employees are also supported by the toll-free DMG MORI Service Hotline," says Timo Potratz, who is responsible for production technology.

KRONES

Krones AG, Böhmerwaldstraße 5
D-93073 Neutraubling, www.krones.com

24/7 SERVICE HOTLINE
DMG MORI

24/7

DMG MORI 24/7 Service Hotline – support around the clock!

Canada : (905) 795-2891

2,500

More than 2,50
service experts
fastest custome
300,000 installe

10 Years

On average, DMG MORI service technicians have 10 years experience with DMG MORI machines.

INSPECTION – THE FIRST STEP TOWARDS TOP PERFORMANCE

With our manufacturer's inspection, you always know where things are at. After the inspection, you'll receive a detailed status report from our service experts.

HIGHLIGHTS

+ Inspection of media supply, including pneumatics, hydraulics, cooling and ventilation units, and central lubrication.
+ Depending on the machine, inspection of covers and panels, main drive and axle drives, tool change units and magazines, etc.
+ Optional: Replacement/installation of selected wear parts at a fixed price.

Detailed information is available from your local service team: **www.dmgmori.com**

MAINTENANCE – MANUFACTURER MAINTENANCE FOR HIGHEST AVAILABILITY

The manufacturer maintenance that will help you increase your productivity and reduce your operating costs. Our experts carry out the maintenance based on the machine condition and a checklist.

HIGHLIGHTS

+ Comprehensive maintenance from our service experts.
+ Replacement/installation of necessary wear parts at a fixed price.
+ Extent of maintenance is adjusted based on machine operating time, as needed.

Detailed information is available from your local service team: **www.dmgmori.com**

MAINTENANCE KITS – AFFORDABLE ORIGINAL REPLACEMENT PARTS, IN A FULL PACKAGE

Safe DIY maintenance. Put together by our experts, perfectly customised for the individual machine types! Your advantage – everything in one package, at a reduced price.

HIGHLIGHTS

+ More than 200 different maintenance kits available, all perfectly customised for each machine type.
+ Ensures machine availability.
+ All important wear parts in one kit.
+ Protection from expensive subsequent damage.
+ Save up to 25% with our attractive package rate.

More information, descriptions and prices for our maintenance kits are available from your local service team: **www.dmgmori.com**

Technicians

0 certified DMG MORI
worldwide to ensure the
r support on more than
ed machines.

Top Equipment

Your DMG MORI advantage: Inspection and maintenance with manufacturer know-how, high-tech measurement devices and highly accurate instruments.

SPINDLE SERVICE –
SPINDLE MAINTENANCE KIT

Take preventive steps and maintain the spindle yourself: Our Spindle Maintenance Kit contains everything you need.

HIGHLIGHTS

+ Perfectly matched to the relevant tool clamping system.
+ Select your own contents from the following components: Mechanical or digitally variable pull-in force gauge, concentricity mandrel, dial gauge with magnetic support, depth gauge.
+ Professional support during motor spindle maintenance.
+ All components in one system.
+ Ensures machine availability and productivity.
+ System customised for your needs.

Detailed information is available from your local service team: **www.dmgmori.com**

TRAINING –
YOUR KEY KNOW-HOW ADVANTAGE

Application training helps your productivity really take off, e.g. with reduced programming and set-up times.

HIGHLIGHTS

+ Modular and practical training in programming, setting up and operating your DMG MORI machines.
+ Innovative courses, cutting-edge training equipment.
+ Training in small groups directly on the machine.
+ Highly qualified trainers with certified training methods.
+ Training specially tailored to your needs at our modern training centres or on-site at your facility.
+ Online training to consolidate knowledge.

Scan to watch the video on DMG MORI Spare Parts

For the DMG MORI Academy course programme, visit:

training.dmgmori.com

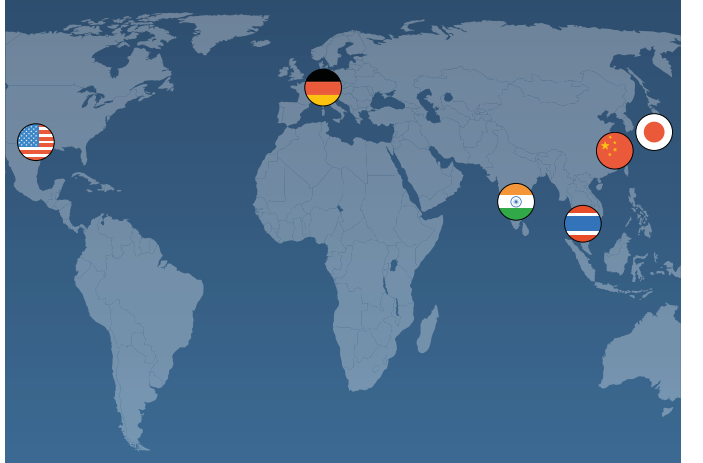
For more information on LifeCycle Services, visit:

lifecycle-services.dmgmori.com

SPARE PARTS

Spare parts service – The highest availability, due to our global presence.

We take action fast: All orders are processed centrally and spare parts are shipped from the nearest Spare Parts Centre. We use the global network of all DMG MORI warehouses – for the shortest delivery times.

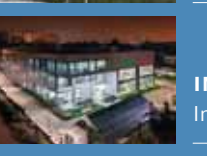


6 LARGE SPARE PARTS WAREHOUSES –
FOR TOP SPARE PARTS SERVICE

USA
American Parts Centre, Dallas

GERMANY
Global Parts Centre, Geretsried

JAPAN
Global Parts Centre, Nara



INDIA
India Parts Centre, Chennai

THAILAND
Thailand Parts Centre, Ayutthaya

CHINA
China Parts Centre, Shanghai

HIGHLIGHTS

+ **Global logistics network** for fast worldwide delivery.
+ Over CAD 295 million worth of inventory in stock.
+ **More than 275,000 unique spare parts** in stock.
+ **Original spare parts direct from the manufacturer**.
+ **Spare parts availability for many early models** (machine model year 1970 or later).
+ **Global ordering** via our **24/7 Service Hotline**.
+ **New parts and replacement parts available**.

DMG MORI TOOL PRESETTING

VAN AARSEN MACHINEFABRIEK B.V.

Scan to watch the DMG MORI Microset Video

To learn more about DMG MORI Microset, visit:
microset.dmgmori.com

Download the tool presetting product brochure at:
download.dmgmori.com

Productivity plus in tool presetting.

Whether hammer mill, pelleting machine, or mixer – when it comes to feed production systems for the agricultural industry, Van Aarsen, based in Panheel in the Netherlands, has been the leading global supplier since 1949. Having had good experiences with **DMG MORI** machine tools, the company decided to use one of the leading innovator's products for tool presetting, as well: "Compared to the models of other suppliers and judging by its wealth of features, the **UNO 20|70 autofocus** is the most attractive option in terms of price," Procurement Manager Jack Coumans justifies the purchase. "Its 15.7 in. diameter and its measuring length of 27.6 in. are ideally suited to cover our range of tools." **Its FEM-optimised and thermally stable construction** also ensure high-quality measurement results.

One highlight of the DMG MORI Microset entry-level device is its autofocus. It reliably ensures that the setting for the cutting edges is sharp, precise, and automatic. Van Aarsen benefits from this function especially with complex tools, since the automatic focus is also capable of **automatically calibrating** multiple edges in succession. Considering Van Aarsen's quality requirements and the large number of tools used, Jack Coumans reaches a clear conclusion, "Overall, the **UNO 20|70 autofocus** ensures **maximum precision** and a **significant increase** in productivity when it comes to tool presetting."

VanAarsen

Van Aarsen International B.V.
Heelderweg 11, NL-6097 EW PANHEEL
www.aarsen.com

UNO 20|40 autofocus – Precise and quick.

UNO is extremely accurate and offers the perfect results for tool dimensions with a diameter of up to 15.7 in. and measuring lengths of up to 15.7 in. (optional: 27.6 in.).

HIGHLIGHTS OF THE UNO AUTOFOCUS

+ Automatic focusing on the cutting edge to be measured.
+ Best suited for tools with multiple cutting edges.
+ Spindle SK50 with automatic focus.
+ Can be operated manually.

UNO 20|40 **autofocus**

Quality made in Germany – 100% designed and made by HAIMER

HAIMER, world market leader in tool shrinking and balancing technology, is a family run, medium sized company located in Igenhausen, Bavaria near Augsburg, Germany. HAIMER has designed, produced and sold innovative, high precision products for the metal cutting industry for nearly 40 years.

More than 350 of the 500 employees worldwide are working at HAIMER's sole production facility in Igenhausen in combination with the most modern of machines that utilize a high level of automation.

As the European market leader in the area of tool holding technology, with a daily capacity of approx. 2,000 tool holders, keeping the technological edge of the products is very important. Because of this, every year between 8 to 10% of the revenue is invested into research and development. The daily drive to be better perfectly fits with the corporate philosophy: **Quality Wins**.

HAIMER's product offering includes tool holders, balancing machines, shrink fit machines, 3D measuring devices and most recently also solid carbide end mills – all made in Igenhausen.

In order to make intensive tests on the HAIMER cutting tools and to develop the right milling strategy with the customers, HAIMER invested into a new Applications Center with three new DMG MORI machining centers. On a HSC 70 *linear*, a DMU 80 P duoBLOCK and a DMC 1150 V, customer requirements out of various industries can be simulated and training as well as test-cuts can be carried out. With this investment the location Igenhausen has been extended to a Center of Excellence for Tool Holding & Milling.

Managing Director and President of the Haimer Group, Andreas Haimer, is excited about the partnership with DMG MORI: "It is a perfect synergy for the customer! High performance machine tools require high precision tool holding technology, in order to transfer precision and power from the spindle to the cutting edge. The partnership is absolutely profitable for all parties."

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Villa Park IL 60181 | USA
Phone: +1-630-833-1500
Fax: +1-630-833-1507
haimer@haimer-usa.com
ww.haimer.com

HAIMER
Quality Wins.

Tooling Technology

Shrinking Technology

Balancing Technology

Measuring Instruments

Tool Management

100% Made by HAIMER Made in Germany

DMG MORI USED MACHINES

Immediately available – more than 700 machines.

DMG MORI Used Machines is the world's largest dealer of used CNC machines. We offer certified DMG MORI used machines for all needs and budgets. For you, that means a large selection, short delivery times, and comprehensive all-round service.

QUICK OFFER

Whether a used or showroom machine, DMG MORI Used Machines offers you an unrivaled variety of machines. Use our convenient online marketplace for used machines: **www.cnc-scout.dmgmori.com**

CERTIFIED TOP QUALITY

Before a DMG MORI used machine is put into operation at your facility, it is subjected to a stringent and comprehensive testing program.

View all available offers:

cnc-scout.dmgmori.com

HIGHLIGHTS

+ More than 700 current used and in-stock machines.
+ Each machine is available immediately.
+ All machines are certified top quality.
+ Technologies for every requirement.
+ Machines in every price category.
+ Convenient search functions by type, year of manufacture, etc. in our online portal: **www.cnc-scout.dmgmori.com**

Let us prepare a customised offer for you at:

usedmachines.dmgmori.com

ANFOTEC ANTRIEBSTECHNOLOGIE GMBH

Above all other things, Director Christian Hast has been convinced by the high quality.

Four of nine high-tech machines are already by DMG MORI.

"Since the used machines are available immediately, we were able to expand our production capacities within a very short time."

Founded in 2000, **ANFOTEC** Antriebstechnologie GmbH has become established in the areas of machine tool construction, measurement technology, and semiconductor processing as a quality-conscious manufacturer of body maker machines including drive technology. ANFOTEC uses **CNC technology by DMG MORI** to meet the high manufacturing standards. Four of its nine models – including a DMU 200 P and a DMF 260 – are from the DMG MORI Used Machines range. Christian Hast, Director of ANFOTEC, says, "**We're familiar with the long service life of these machines**. That's why **used models are an attractive option** when it comes to expanding our production capacities. New machining centres by DMG MORI feature a **future-proof design**. Used models benefit from that too." As a result, the performance capacity meets the quality requirements of ANFOTEC – the company is ISO DIN EN 9001-certified. Another great advantage, in the Director's opinion, is the **quick delivery**. "The selection of DMG MORI Used Machines usually includes suitable solutions ex-works that – unlike new orders – can be **installed within a very short time.**"

ANFOTEC
Antriebstechnologie GmbH

ANFOTEC Antriebstechnologie GmbH
Landwehr 17, D-59964 Medebach
www.anfotec.de

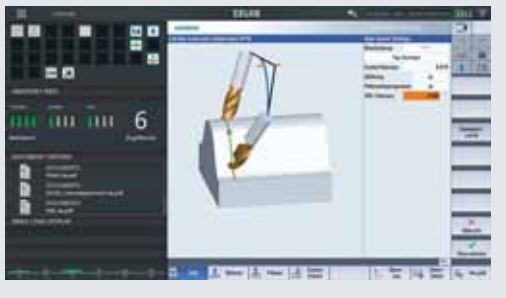
FIT FOR THE FUTURE WITH SINUMERIK

SIEMENS
www.siemens.com/sinumerik

NEW: starting at Operate 4.7 as standard

Top Surface – Perfect Workpiece Surfaces in Tool and Mould Making.

+ Smart motion control
+ Optimal surface quality
+ Highest milling precision
+ Simplest handling

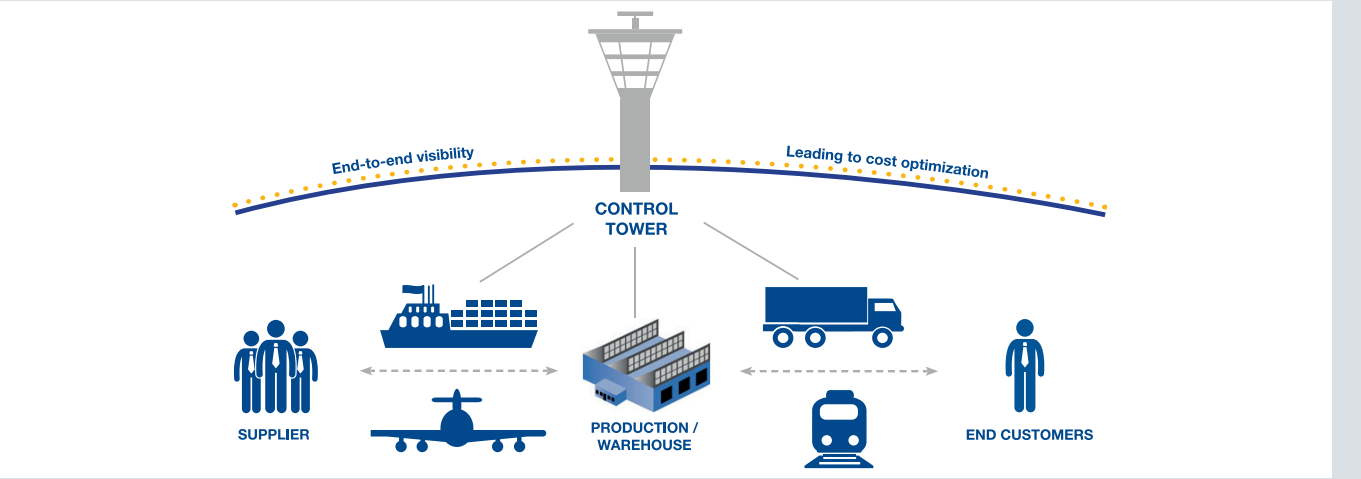


smartOperate – SINUMERIK Operate optimised for multi-touch operation.

+ Quicker interaction
+ Smart zooming and scrolling functions
+ Full control through gesture commands with reliable SINUMERIK Operate user interface

CONTROL TOWER FOR INCREASED SUPPLY CHAIN TRANSPARENCY

Control towers are a much discussed topic in the logistics industry. Essentially, their purpose is to increase the transparency of complex supply chains in all business areas.



Complex supply chains require quick, fact-based communication. This level of complexity exists with **intercontinental or global supply chains,** great dependencies, a high degree of outsourcing for **supply chain activities**, and complex requirements on the customer's part. The more complex the supply chain, the greater the **added value** can get for the customer. If all relevant data can be bundled and analysed at a central **information hub**, especially companies with fragmented supply chains benefit from the concept of a Control Tower. The Control Tower provides insights into key information such as **delivery information and status, consumption** cycles, or **production supply**, to name just a few.

Modular and Scalable Design

A **Control Tower** can be scaled based on your requirements. However, an overall alignment focusing on a **Control Tower** only becomes useful in the areas of **3PL and 4PL** (Third Party Logistics Provider with its own assets, or Fourth Party Logistics Provider without its own assets), especially if multiple **supply chains** with different shipping routes and requirements have to be coordinated. A **Control Tower** can also feature a **modular design** which allows it to be used – for example – for auditing purposes, but also for supplier evaluations. In order to allow daily business to proceed as usual, a **Control Tower** should be implemented in multiple stages and have a balanced focus. The scope ranges from basic services provided by a logistics supplier and v**alue-added services of a 3PL to the services of an LLP** (Lead Logistics Providers, a combination of 3PL and 4PL competences, such as own truck and warehouses plus the necessary know-how for controlling complex supply chains), and eventually to the **4PL**, which **coordinated a company's logistical** processes without contributing any of its own assets. Whether a company is a medium-sized enterprise or a group, if the **outsourcing of logistical** processes is a relevant subject, it may be useful to set up a **Control Tower**. In **DMG MORI's** case, **Gondrand | ATEGE** already uses Control Tower solutions for **procurement and distribution logistics** at the **Seebach location**, and for the **distribution logistics** at the **Bielefeld location**. Our focus is to align our processes using a single **full-service logistics provider**. Streamlined management structures are to be preferred with Control Tower solutions as well. Currently, additional Control Tower concepts for **DMG MORI** are in the development stage in order to continue to effectively drive **optimisation in the supply chain**. Especially in the areas of **production efficiency, supply chain transparency, logistical service** monitoring, and **transport cost** control, we seek to locate the greatest potential for improvement. An **optimization of the logistical processes** and bundling of the logistical activities between **DMG MORI** and **Gondrand | ATEGE** holds an e**normous win-win** potential for all parties involved, from the supplier to the end customer.

DMG MORI PREMIUM PARTNER

GONDRAND GLOBAL TRANSPORT & LOGISTICS

www.gondrand-logistics.com

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