

The biannual
magazine from
DMG MORI

19 World Premieres in 2014
2 World Premieres at IMTS –
special preview inside.

DMG MORI as exclusive
Premium Partner of
LMP1 Porsche Racing

DMG MORI Systems
Innovative concepts
through combined
expertise.

DMG MORI

N° 2 – 2014

Journal

Tradition, precision
and innovation



DMG MORI
as exclusive
Premium Partner
of LMP1 Porsche
Racing



WORLD PREMIERES
The 2nd Generation
NHX Series:
NHX 4000 and
NHX 5000.

Impressive performance
with the new **speedMASTER**
spindle: 147.5 ft./lbs.
(40% DC) or 20,000 rpm.

→ More information on **PAGE 8**

CELOS
from DMG MORI

www.dmgmori.com

WELCOME TO IMTS 2014



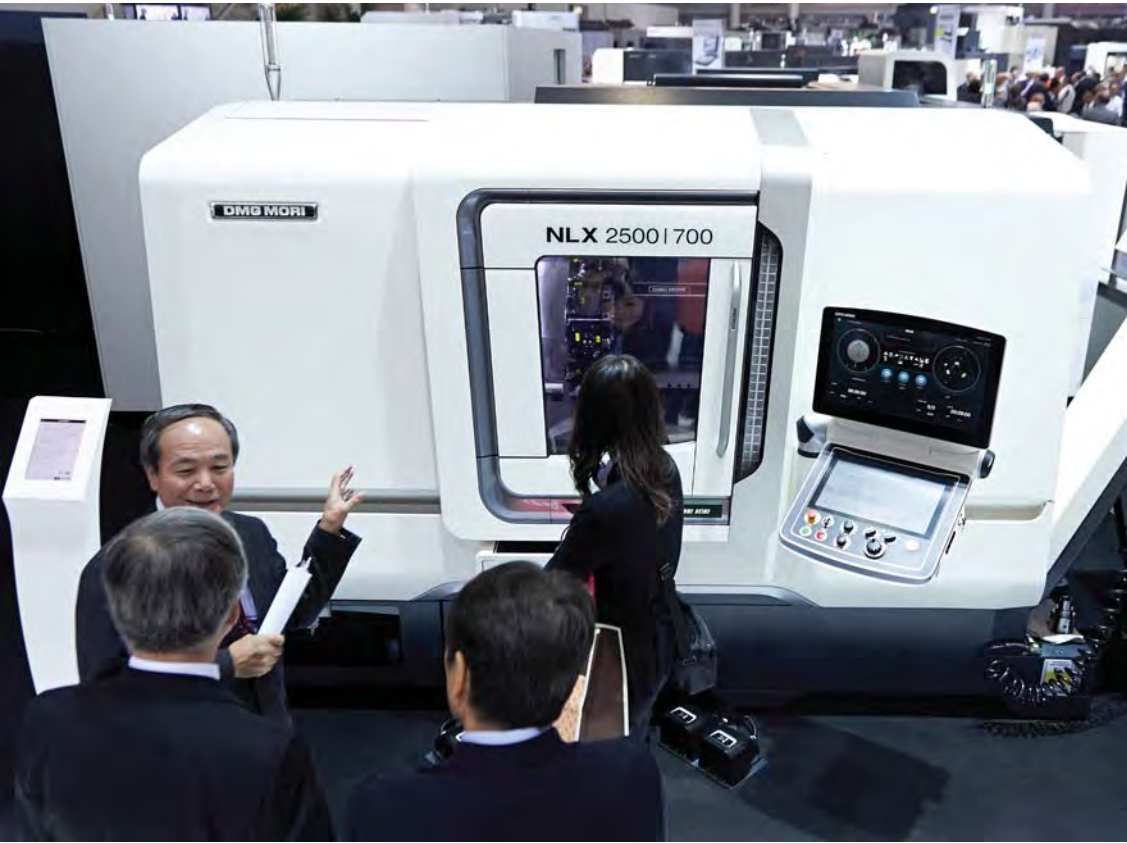
Chicago / USA
September 08 – 13, 2014
South Hall, Booth S-8900

For more information regarding IMTS please visit:
www.dmgmori.com

DMG MORI

40 HIGH-TECH EXHIBITS AND 2 WORLD PREMIERES.

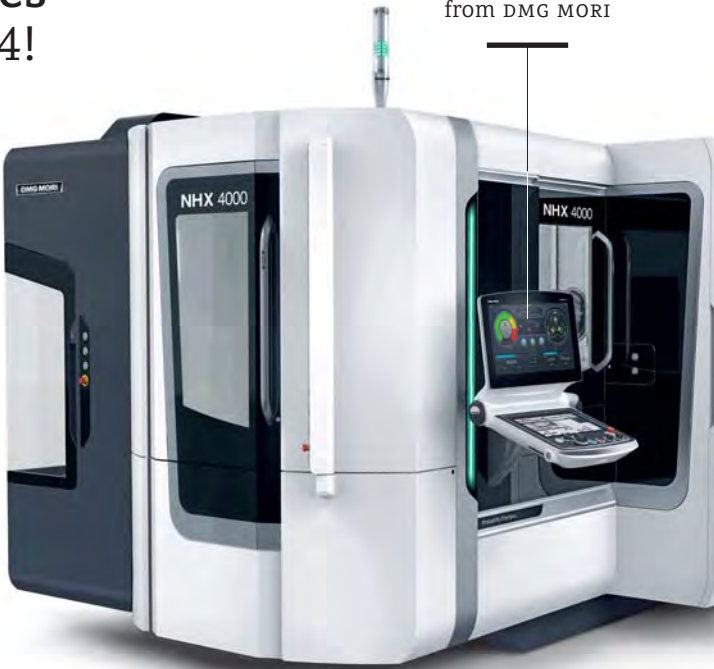
With 19 World Premieres in 2014, DMG MORI is a leading global innovator in the machine tool industry. 2 World Premieres will be on display at IMTS. Additionally, for the first time in company history, our impressive 32,600 ft.² booth will exclusively feature machines in the new DMG MORI design. Experience firsthand 2 World Premieres, 13 US Premieres, revolutionary CELOS control technology, as well as innovative solutions in software, training and service support – live at IMTS 2014.



2 World Premieres –
Live at IMTS 2014!



CELOS
from DMG MORI



NHX 4000 2ND GENERATION

IMTS HIGHLIGHTS

- _ All machines in the new DMG MORI design
- _ 40 high-tech machines in over 32,600 ft.² of exhibition space
- _ 2 World Premieres: NHX 4000 2nd Generation and NHX 5000 2nd Generation
- _ 13 US Premieres, including the LASERTEC 65 3D hybrid machine
- _ DMG MORI machines – made in the USA!
- _ CELOS – from the idea to the finished product
- _ Live additive manufacturing demonstrations
- _ Automation: greater productivity with DMG MORI Systems

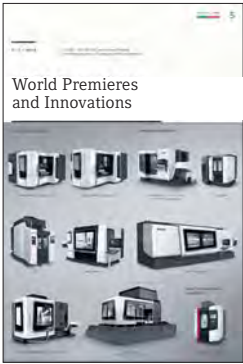
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All of the latest developments and highlights from DMG MORI in 5 themed sections:



PAGES 2–4 — IMTS Highlights

40 high-tech machines in over 32,600 ft.² of exhibition space



PAGES 5–19 — World Premieres and Innovations

CELOS and Industry 4.0 overview with a special preview of 10 World Premieres



DMG MORI MANUFACTURING IN THE USA



The Davis, CA production facility is a highly-automated, modern factory designed for quality and flexible manufacturing.

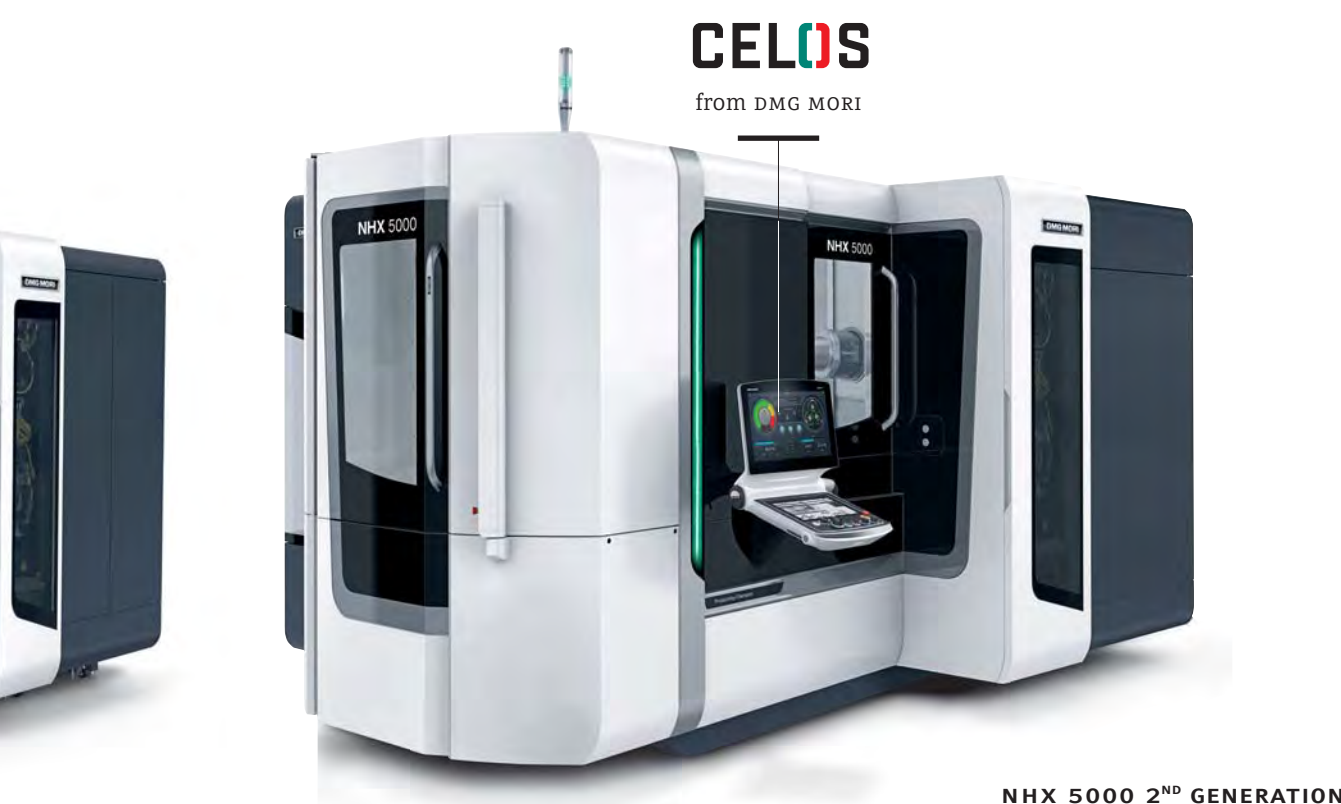


Made in the USA



Davis, California Factory Highlights

- › The horizontal machining centers NHX 4000 and NHX 5000, plus the DMU 50 five-axis universal milling machines are produced here
- › Our flagship system consists of 3 DMG MORI NHX 10000 horizontal machining centers and a robot-loaded linear pallet pool (LPP) with 60 pallets
- › The company's LPS software manages all of the automation cells, programs and production schedules with monitoring and reporting via MT connect
- › The quality control area validates incoming parts on state-of-the-art CMM equipment and conducts 100-hour run tests on all machines built in the factory
- › Our California location offers North American customers numerous benefits:
 - _ Reduced delivery times
 - _ Customized and price-competitive solutions
 - _ Access to engineers and developers
 - _ Direct factory support for machines and software
 - _ Built in the USA
 - _ Efficient logistics and freight



NHX 5000 2ND GENERATION



PAGES 21–36 — Technologies & Success Stories

Innovative technologies, including production turning and large-part machining



PAGES 37–44 — DMG MORI Systems

Solutions for Industry 4.0 production, manufacturing cell automation, and customized unmanned operation



PAGES 45–52 — LifeCycle Services

Software solutions designed to maximize productivity and energy efficiency



J. Lehmann
Jens Lehmann,
Brand ambassador of SCHUNK
German Champion
with Borussia Dortmund 2002
English Champion
with Arsenal London 2004

Held more than 10,000 times under high pressure
Jens Lehmann, German goalkeeper legend

Used in more than **10,000** lathes worldwide
ROTA-S plus 2.0, manual chuck from SCHUNK

Dominic Schneider,
Master Lathe Chuck Technology

© 2014 SCHUNK GmbH & Co. KG

German Meistermacher.

Higher productivity in your machining processes with SCHUNK Champion products.

up to **2,000 Nm**
Torque at Ø 32 mm
SCHUNK TENDO E compact
Hydraulic expansion toolholder

1.200 standard chuck jaws
The world's largest
chuck jaw program for every chuck type

60 seconds jaw change
SCHUNK ROTA-S plus 2.0 lathe chuck



www.us.schunk.com/rota-s-plus

Superior Clamping and Gripping

SCHUNK

'Best in Class Winner'

Jungheinrich EFG S40s: The most efficient electric fork lift truck with the power of a diesel engine. With upto 28 per cent lower consumption than its competitors even under the harshest conditions. The best in its class.

More highlights: www.jungheinrich.com



IFOY AWARD
counter balanced truck
of the year 2014



JUNGHEINRICH
Machines. Ideas. Solutions.





LM Guides



Ball Screws



Cross Roller Rings

Leading Supplier of Linear Technology

As the pioneer of the 'Linear Motion Guide', THK is constantly developing new products in its pursuit of the highest standards in terms of product precision and product rigidity. Both of which are paramount and vital to machine tool manufacturers.

THK products along with Caged Ball/Roller technology maximise machine performance, provide a longer service life and are locally available throughout the world. The benefits of using this technology include: a reduction in the frequency and cost of maintenance works and environment conservation with reduced energy consumption and lower dust emissions.


THK will continue to support machine tool manufacturers to further their success, by not only offering original and established technologies. But also by developing unique and new technologies, all over the world.

THK
The Mark of Linear Motion

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Strong partnership. All you need is yellow.

FANUC offers high-performance CNC systems, unbeatable reliability, and the global support power of dedicated FANUC teams in 210 subsidiaries worldwide. That makes us the partner of choice for the globalized machine tool builder DMG MORI. The most recent result of this partnership: the powerful interplay of DMG MORI's innovative SPRINT 20 | 5 and FANUC's unique 32iB control. **All you need is yellow.**



Powerful combination: DMG MORI SPRINT 20 | 5 controlled by FANUC 32iB

FANUC

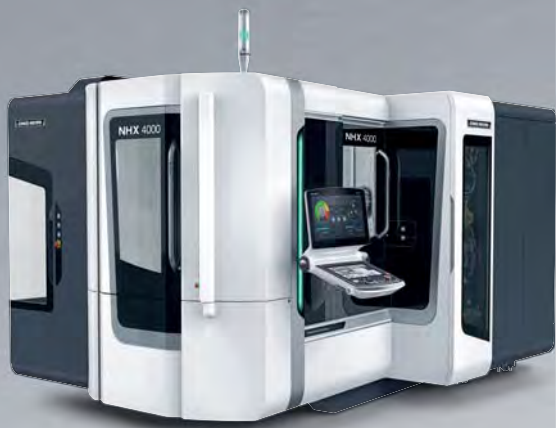

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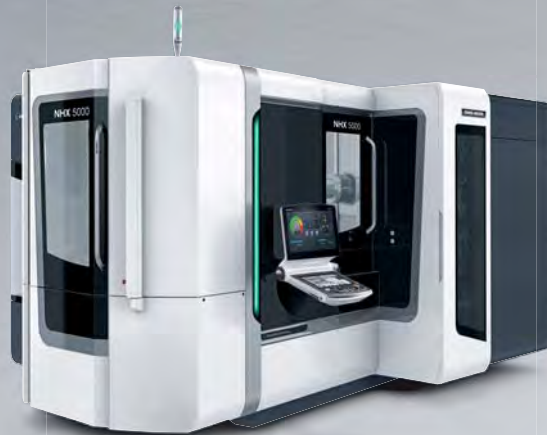
____ CELOS – from the idea to the finished product
____ 10 World Premieres in late 2014

10 World Premieres in late 2014

MILLING TECHNOLOGY



NHX 4000 2ND GENERATION



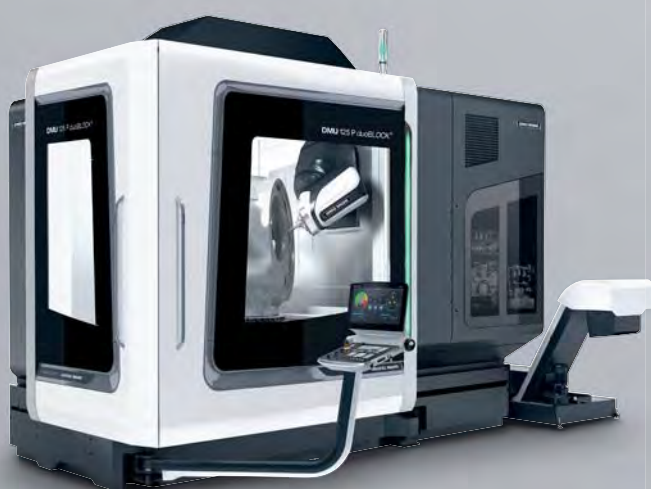
NHX 5000 2ND GENERATION



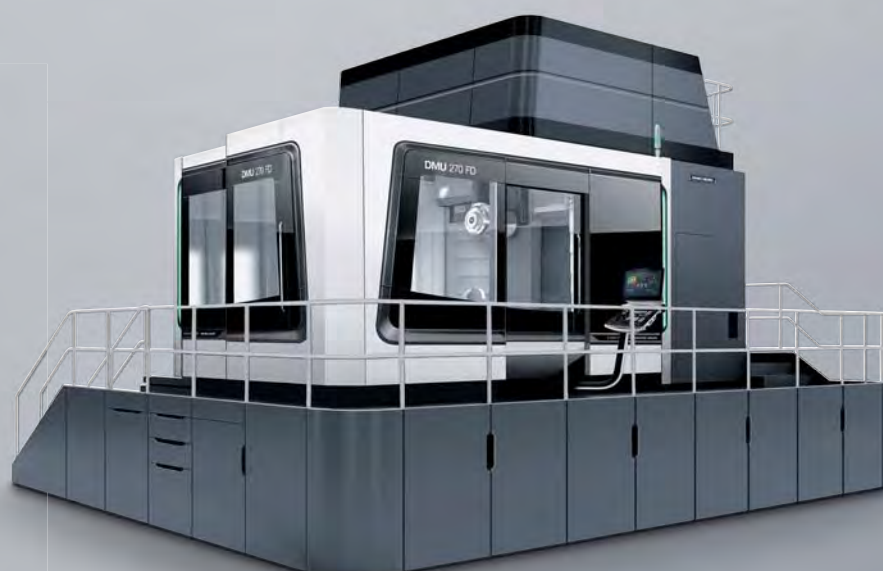
i50



DMC 1450 V



DMU 125 P duoblock® 4TH GENERATION



DMU 270 FD
Mill Turn Technology

TURNING TECHNOLOGY



NTX 1000 2ND GENERATION
Turn Mill Technology



NRX 2000



NZX 4000|3000

NEW TECHNOLOGY / LASERTEC



LASERTEC 45 SHAPE

CELOS

A REVOLUTION IN MACHINE TOOL EFFICIENCY

CELOS

from the idea to the finished product

CELOS from DMG MORI - an easier and quicker way from the idea to the finished product. **CELOS APPs** offer **seamless management, documentation and visualization of jobs, processes and machine data**. Link your shopfloor with higher level company infrastructure for fluid, digitized production. CELOS is also compatible with MRP and ERP systems, CAD/CAM applications and future CELOS APP extensions.

MULTI-TOUCH
USER INTERFACE

CELOS with MAPPS on a MITSUBISHI control, for exceptional user comfort and unique functionality.

SMARTkey®

Personalized user authorization: custom access privileges to the machine and control. With integrated USB storage.

CELOS HIGHLIGHTS

- Easy and quick **from the idea to the finished product**
- Offers a consistent **user interface** for all new high-tech machines from DMG MORI
- 30% faster to the final product** through **seamlessly linking** the shopfloor with higher level company infrastructure
- Greater profitability** and efficiency in production and throughout the company's entire process chain

NEW: CELOS for PC - create and plan jobs from the office or use as a direct terminal on any machine



Industry 4.0 and CELOS

The networked, value-adding system of the future.

Following the mechanization, electrification and digitization of our industry, comes the next evolutionary step - networked, decentralized, real-time and self-optimizing production and logistics systems. Targeted, competent production refinement means that companies will continue their trend towards lean, decentralized and flexible production planning.

CELOS from DMG MORI is an integral part of the entire process chain.

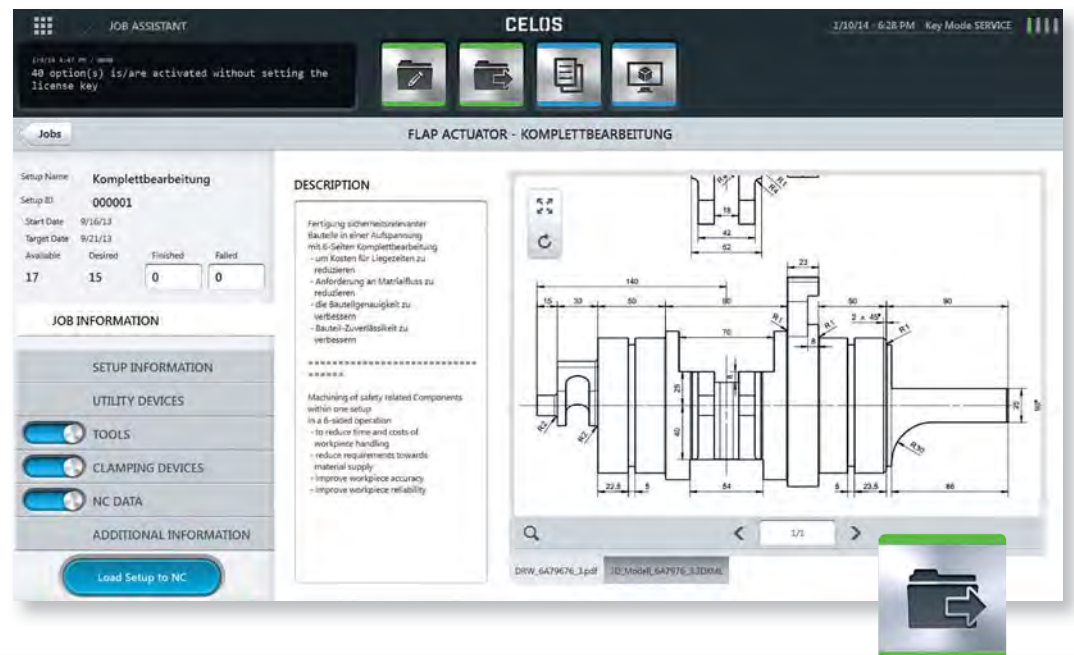
CELOS links, via task-specific software applications, local shopfloor operations expertise with external software solutions (i.e. CAD or CAM) into the broader organization's infrastructure and production systems (ERP/MRP) - including interactive real-time communication for global production.

CELOS APPs – 2 examples » extensive demos and information for all available APPs online: www.dmgmori.com



JOB MANAGER

Systematic planning, management and preparation of jobs.



JOB ASSISTANT

Define and process job orders.

21.5" MULTI-TOUCH DISPLAY

for easy and quick operation

APP MENU

Centralized access to all available applications

Success Story

“CELOS is a big step towards paperless production - all data and documentation is stored and organized digitally. Finally, our machines are fully integrated into the production process so that we can now utilize uniform workflows for every employee across all machines. And thanks to the intuitive CELOS interface, networking compatibility and growing portfolio of APPs, the future uses are limitless.”

Lothar Horn
Managing Director

Hartmetall-Werkzeugfabrik
Paul Horn GmbH
Unter dem Holz 33-35
D-72072 Tübingen
www.phorn.de



NHX

HORIZONTAL MACHINING

NHX 4000, NHX 5000

2nd Generation

Horizontal machining centers

with impressive rigidity,

precision and speed

With the new NHX Series, DMG MORI presents a **compact, dynamic horizontal machining center** for highly efficient serial and mass production in a wide range of industries, including automotive and mechanical engineering. The NHX machines are standard equipped with a **Direct Drive table (DDM® technology)** with up to 100 rpm. and direct measuring systems from

MAGNETSCALE in all axes. In addition, the design has been optimized for shorter tools, with 2.8 in. distance from spindle nose to the pallet center for longer tool service life and **greater process stability**. Of course, the new NHX machines also feature the innovative **DMG MORI design** and **CELOS** operating system.

Unbeatable machining speed, performance and precision with the new 15,000 rpm. speedMASTER spindle.



NHX 4000 / NHX 5000 2ND GENERATION HIGHLIGHTS

- Greater dynamics for shorter chip-to-chip times of 2.2 sec.: 1 / 1 / 1 g (NHX 4000) or 1 / 1 / 0.8 g (NHX 5000); up to 3,779.5 ipm. rapid traverse (2,362.2 ipm. standard); 35% higher dynamic stability
- Maximum performance thanks to the new speedMASTER spindle: 15,000 rpm., 81.9 ft./lbs. / 28.2 hp. (40% DC); optional 15,000 rpm. high-torque version with up to 147.5 ft./lbs. or 20,000 rpm. high-speed version
- Direct Drive Table (DDM®), with up to 100 rpm. for quick 0.8 sec. positioning on the NHX 4000, or 1.38 sec. on the NHX 5000
- Optimal chip flow with steeper covers in the work area and robust lining of the Y-axis in a "pantograph" design
- CELOS with MAPPS panel on a MITSUBISHI control for maximum user comfort and increased productivity

NHX 4000
Unbeatable
performance, speed
and precision

NHX 5000
Exceptional stability
thanks to the robust
bed construction, large
spindle bearings and
powerful table /
pallet clamping

CELOS
from DMG MORI

DMG MORI
world
PREMIERE
2014

TECHNICAL SPECIFICATIONS

Travel (X- / Y- / Z-axis): 22.0 / 22.0 / 26.0 in.;
max. workpiece dimensions: ø 24.8 × 35.4 in.;
max. table load: 881.8 lbs.; pallet size:
15.7 × 15.7 in.; toolholder: ISO40

TECHNICAL SPECIFICATIONS

Travel (X- / Y- / Z-axis): 28.7 / 28.7 / 34.6 in.;
max. workpiece dimensions: ø 31.5 × 39.4 in.;
max. table load: 1,102.3 (1,543.2*) lbs.; pallet size:
19.7 × 19.7 in.; toolholder: ISO40

* Optional



i-SERIES HORIZONTAL MACHINING

i50 – The new revolutionary design concept for flexible and space-saving serial production.

More about i50 Automation with DMG MORI Systems

ON PAGE 42

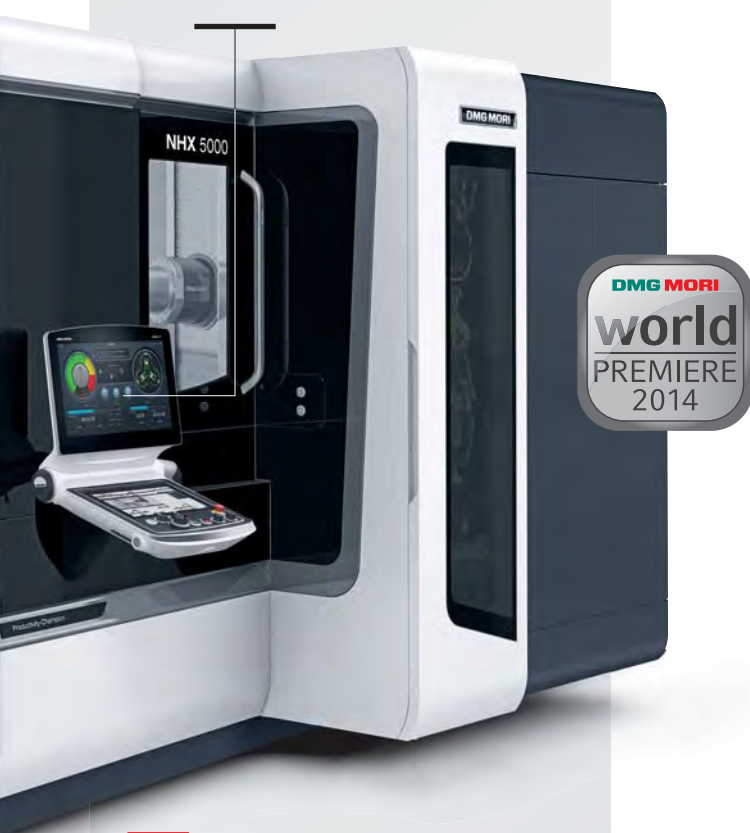


Greatest stability with two, angled guides positioned outside of the chip disposal area.

NEW speedMASTER spindle

- _ 15,000 rpm., 81.9 ft. / lbs. / 28.2 hp. (40 % DC)
 - _ 15,000 rpm. high-torque*, 147.5 ft. / lbs. / 61.7 hp. (40 % DC)
 - _ 20,000 rpm. high-speed*, 88.5 ft. / lbs. / 46.9 hp. (40 % DC)
- *Optional

CELOS
from DMG MORI



DMG MORI
world
PREMIERE
2014

Magnescale
SPEED X PRECISION

FROM DMG MORI

More about Magnescale

ON PAGE 31

i50 High-productivity horizontal machining center

Automotive



Workpiece: Cylinder block
Material: Aluminum die cast
Size: 13.8 × 16.1 × 9.1 in.
Machining time: 1 min. 25 sec.

Automotive



Workpiece: Cylinder head
Material: Aluminum die cast
Size: 16.1 × 7.1 × 4.7 in.
Machining time: 4 min. 59 sec.

i50 HIGHLIGHTS

- _ **Patented (registered) Z-axis kinematics of the spindle:** greatest stability with 2 angled guides; positioned outside of the chip disposal area
- _ **Minimal moving masses through X / Y / Z travel for the spindle:** high machine dynamics for short chip-to-chip times; optimal chip disposal through the machine bed with steep work area covers
- _ **All feed drives are positioned outside of the work area:** no temperature impact for unparalleled precision.
- _ **Low machine height** for fast workpiece loading
- _ Table versions with A- and B-kinematics



TECHNICAL SPECIFICATIONS

Travel (X / Y / Z-axis): 19.7 / 21.7 / 19.7 in.; clamping surface: 25.2 × 19.7 in. (A-axis version); 19.7 × 19.7 in. (B-axis version); max. spindle speed: 12,000 rpm. rapid traverse (X / Y / Z-axis): 2,440.9 / 2,440.9 / 2,440.9 ipm. number of tools: 20; footprint: 72.1 ft.²

DMC V VERTICAL MACHINING

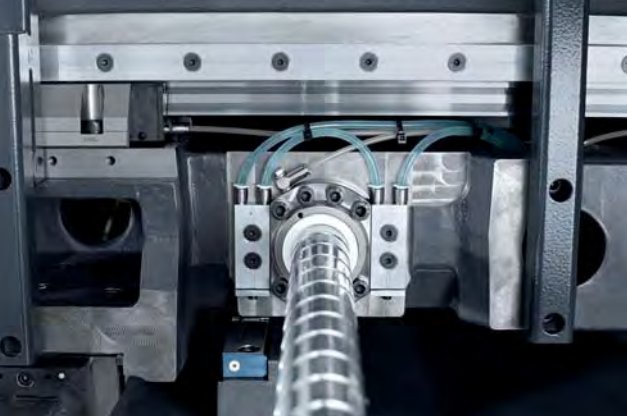
DMC V Series
Now available
in 4 versions.

With the **World Premiere** of the **DMC 1450 V**, DMG MORI presents a new size in their vertical machining center product portfolio. Travels of 57.1 × 27.6 × 21.7 in., the large, rigid table with a 66.7 × 29.5 in. clamping area and **4,409.2 lbs. load capacity** offer a wide range of diverse machining possibilities. The DMC 1450 V also comes **standard equipped with a 14,000 rpm. spindle (89.2 ft. / lbs. of torque)**, up to 1,417.3 ipm. rapid traverses and a 20-station tool magazine. The DMC V can be customized with a 223.5 ft. / lbs. SK50 spindle or a 120-station tool magazine. This innovative machine concept also features **cooling measures for the drives and guides** to ensure maximum stability and **reliable accuracy**.

Large work area for powerful machining of workpieces up to 4,409.2 lbs. with an optional SK50 spindle and 223.5 ft. / lbs.



Innovative cooling concept



Cooling of the ball screw nuts and guides in all three axes (X / Y / Z).

DMC 650 V
The new vertical machining center with a unique design for greater performance and precision

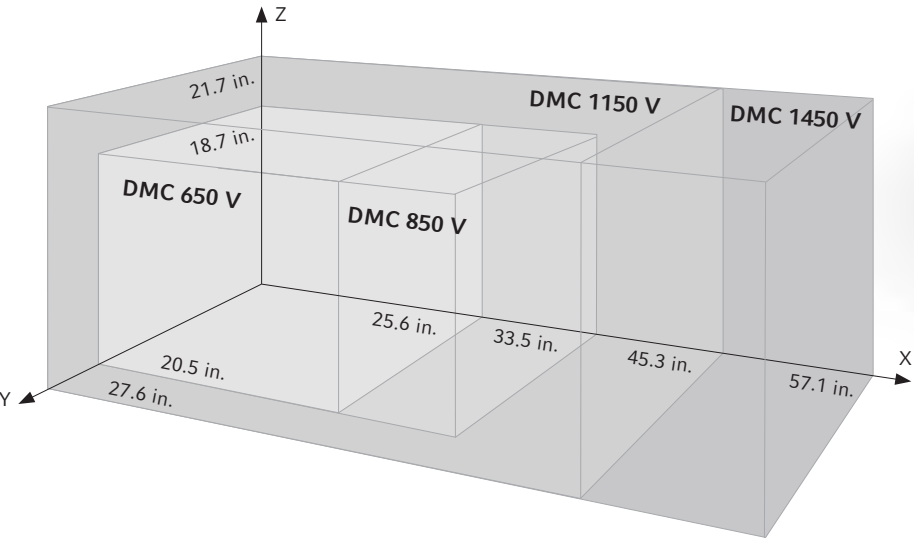
CELOS
from DMG MORI



THE NEW DMC V SERIES HIGHLIGHTS

- Equipped with powerful standard features – spindle with 14,000 rpm. / 89.2 ft. / lbs., 1,417.3 ipm. rapid traverse
- SK50 spindle with 223.5 ft./ lbs. (optional)
- Tool magazine with up to 120 stations
- Workpiece weights up to 4,409.2 lbs.
- 30% greater precision through cooling of the guides and drives
- Unmatched expertise with over 10,000 machines delivered worldwide

The new DMC V Series with 4 available versions:

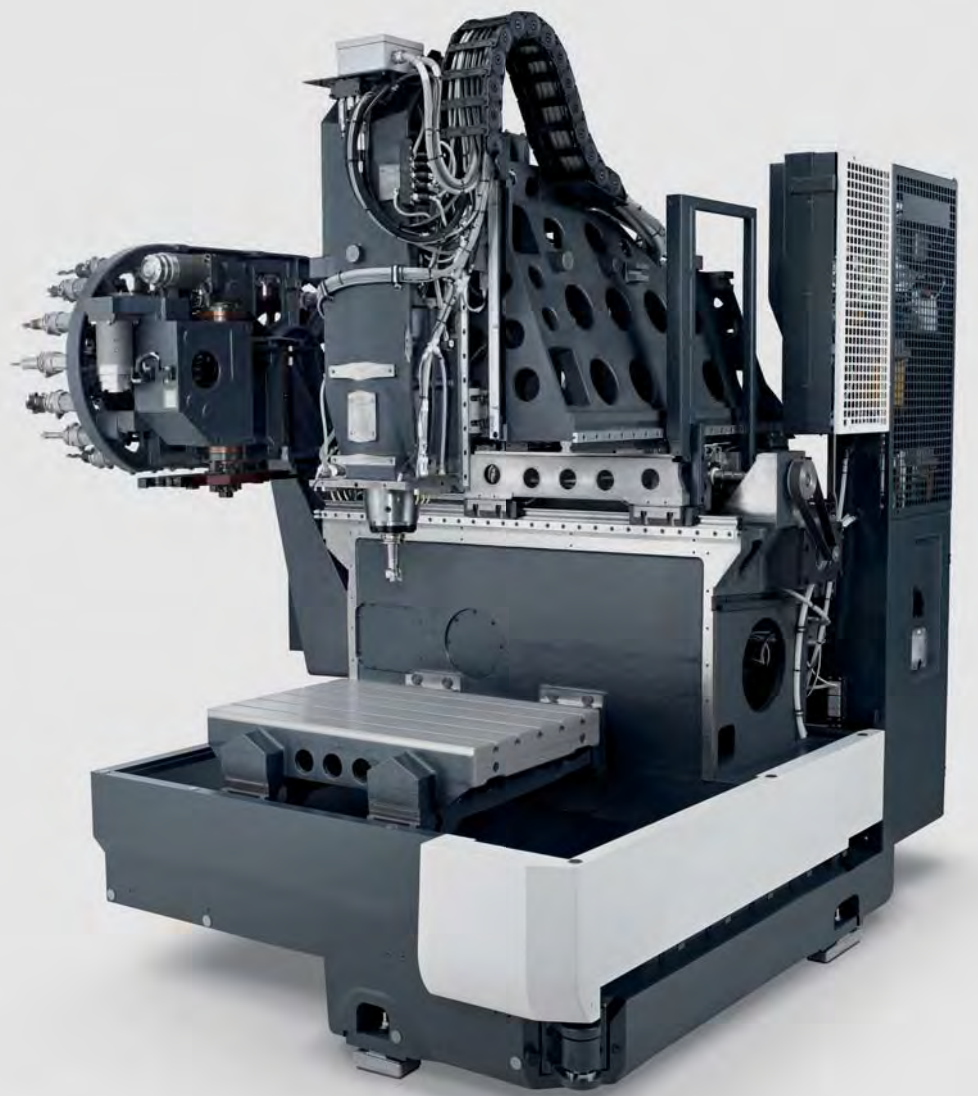


TECHNICAL SPECIFICATIONS
Travel in X / Y / Z: 25.6 / 20.5 / 18.7 in.; rapid traverse: 1,417.3 (1,653.5) ipm.; spindle speed: 14,000 rpm.; power: 19.4 hp.; torque: 89.2 ft. / lbs.; table size: 35.4 × 22.4 in.; workpiece weight: 1,763.7 lbs.; tool magazine: 20 (30 / 60 / 120) stations



3rd Generation DMC V with a new design concept

- Stable construction with overhead slide
- Rigid table for workpieces weighing up to 4,409.2 lbs.
- 28% larger linear guides
- 25% larger ball screws
- Thermal control: innovative cooling concept to ensure highest precision



DMG MORI MICROSET – MEASURING AND TESTING

DMC 1450 V
Large work area with 27.6 in. Y-travel for max. 4,409.2 lbs. parts



CELOS
from DMG MORI



SANDVIK COROMANT
Tool kits for milling, drilling and tapping

TECHNICAL SPECIFICATIONS

Travel in X / Y / Z: 57.1 / 27.6 / 21.7 in.; rapid traverse: 1,417.3 (1,653.5) ipm.; spindle speed: 14,000 rpm.; power: 19.4 hp.; torque: 89.2 ft. / lbs.; table size: 66.9 x 29.5 in.; workpiece weight: 4,409.2 lbs.; tool magazine: 20 (30 / 60 / 120) stations

UNO
Tool presetter

NEW:
Automatic drive
for fully automatic,
unmanned tool
presetting and
measuring

- CNC controlled, 3-axis tool presetter
- Continuous fine adjustments
- 24" color display
- SK 50 precision spindle
- Pneumatic spindle brake
- Spindle indexing (4 x 90 degrees)
- Easily accessible control cabinet

Options:

- Second camera
- Thermal label printer
- ISS spindle with powerful clamping
- Manual RFID system (e.g. Balluff)
- Adapter tray
- Data output via post processors
- Bi-directional interface compatible with most tool management systems

**Innovation
2014**

More about
DMG MORI Microset

ON PAGE 48 →



TECHNICAL SPECIFICATIONS

Measuring range:
X = +7.9 to -2.0 in.
Z = 15.7

DMU P 5-AXIS MILLING

4th Generation
DMU 125 P duoBLOCK® –
30% greater workpiece precision through
intelligent temperature management

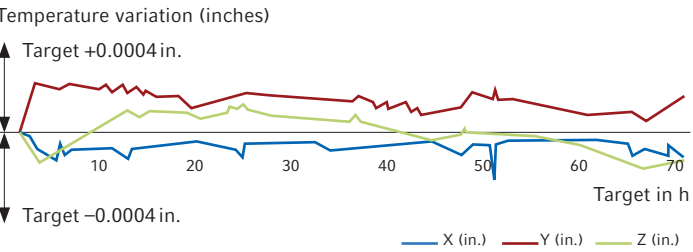
Introducing the new benchmark in 5-axis machining - **30% greater precision, performance and efficiency.** The highly stable duoBLOCK® design delivers unprecedented precision and performance with exceptional dynamics. It is equipped to handle the most challenging materials (i.e. titanium) and the highest surface quality standards. **The 4th Generation duoBLOCK®** is optimally suited for aerospace as well as tool and mold making applications. **Comprehensive cooling measures** and the improved rigidity are the foundation of this machine's industry-leading **accuracy and machining performance** characteristics.

From mold making to component production – introducing the new 15,000 rpm. motor spindle.

- **Powerful:** HSK-A100, 295.0 ft. / lbs. / 69.7 hp. (40% DC)
- **Reliable:** Spindle growth sensor (SGS) detects axial displacement of the rotor in relation to the stator (comes standard/ compensation via the control)
- **Service friendly:** fast rotor replacement with a cartridge-style design
- Optionally available for 4th Generation duoBLOCK®, portal and DIXI machines



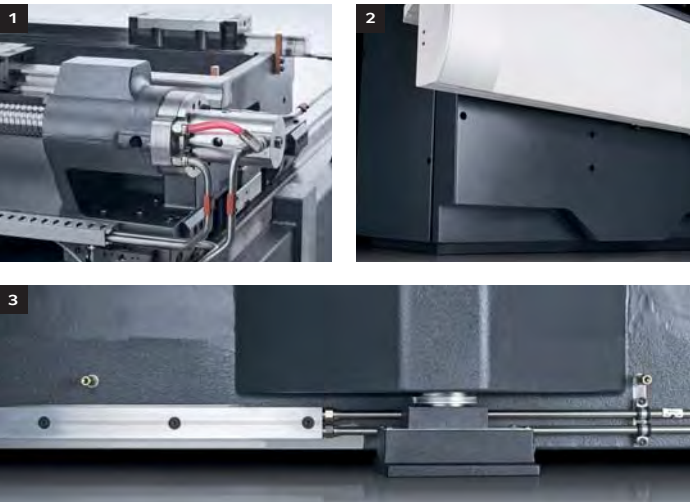
Unmatched temperature stability
(comes standard)



In a 70-hour stress test, temperature variation on the standard model (without accuracy package) is + 0.0003 in. and -0.0003 in.

Example: DMU 80 P duoBLOCK®

30% greater workpiece accuracy
with the accuracy package



In addition to B- and C-axis motors, motor spindle and spindle-head housing, the 4th generation duoBLOCK® offers an accuracy package including the following cooling measures:

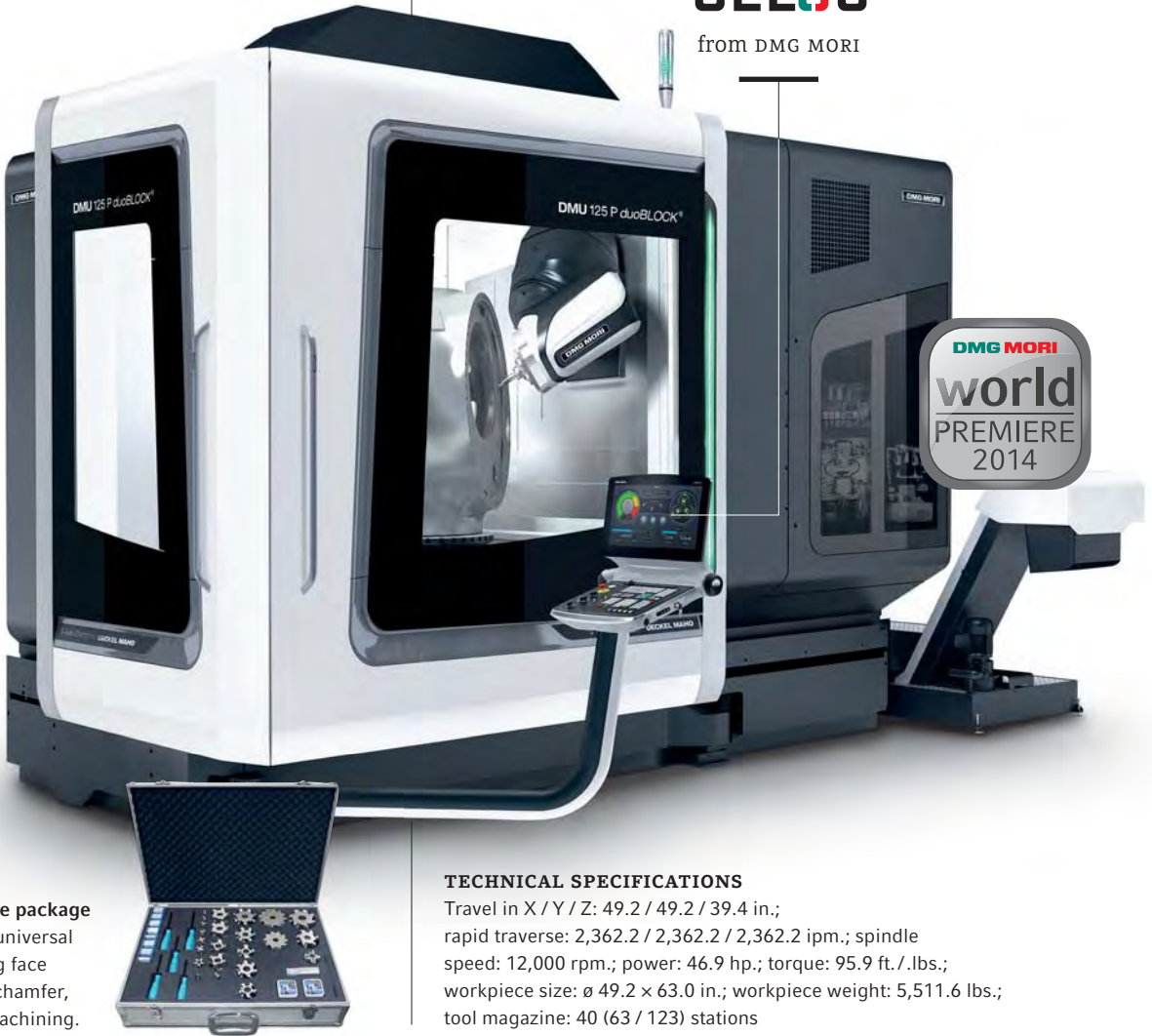
1. **For the first time, cooling of the entire feed drive:** all drive motors, linear guides, ball screw bearings and nuts in X, Y and Z
2. **ThermoShield:** air draft prevention
3. **Bed cooling:** cooling strips on the machine bed and column

DMU 125 P duoBLOCK®
Up to 30% greater
workpiece precision

DMU 125 P duoBLOCK® HIGHLIGHTS

- **Performance:** up to 30% greater rigidity for maximum cutting performance
- **Efficient:** up to 30% reduced energy use through intelligent needs-based components
- **Greatest flexibility** and faster machining with the **new B-axis** featuring 20% greater rigidity and an integrated cable carrier
- Fast and intelligent wheel magazine with **0.5 second tool change time** and up to 453 tools on a compact footprint

CELOS
from DMG MORI



Ingersoll performance package
with milling tools for universal applications, including face milling, corner, trim, chamfer, groove and circular machining.

TECHNICAL SPECIFICATIONS

Travel in X / Y / Z: 49.2 / 49.2 / 39.4 in.;
rapid traverse: 2,362.2 / 2,362.2 / 2,362.2 ipm.; spindle speed: 12,000 rpm.; power: 46.9 hp.; torque: 95.9 ft. / lbs.; workpiece size: ø 49.2 x 63.0 in.; workpiece weight: 5,511.6 lbs.; tool magazine: 40 (63 / 123) stations

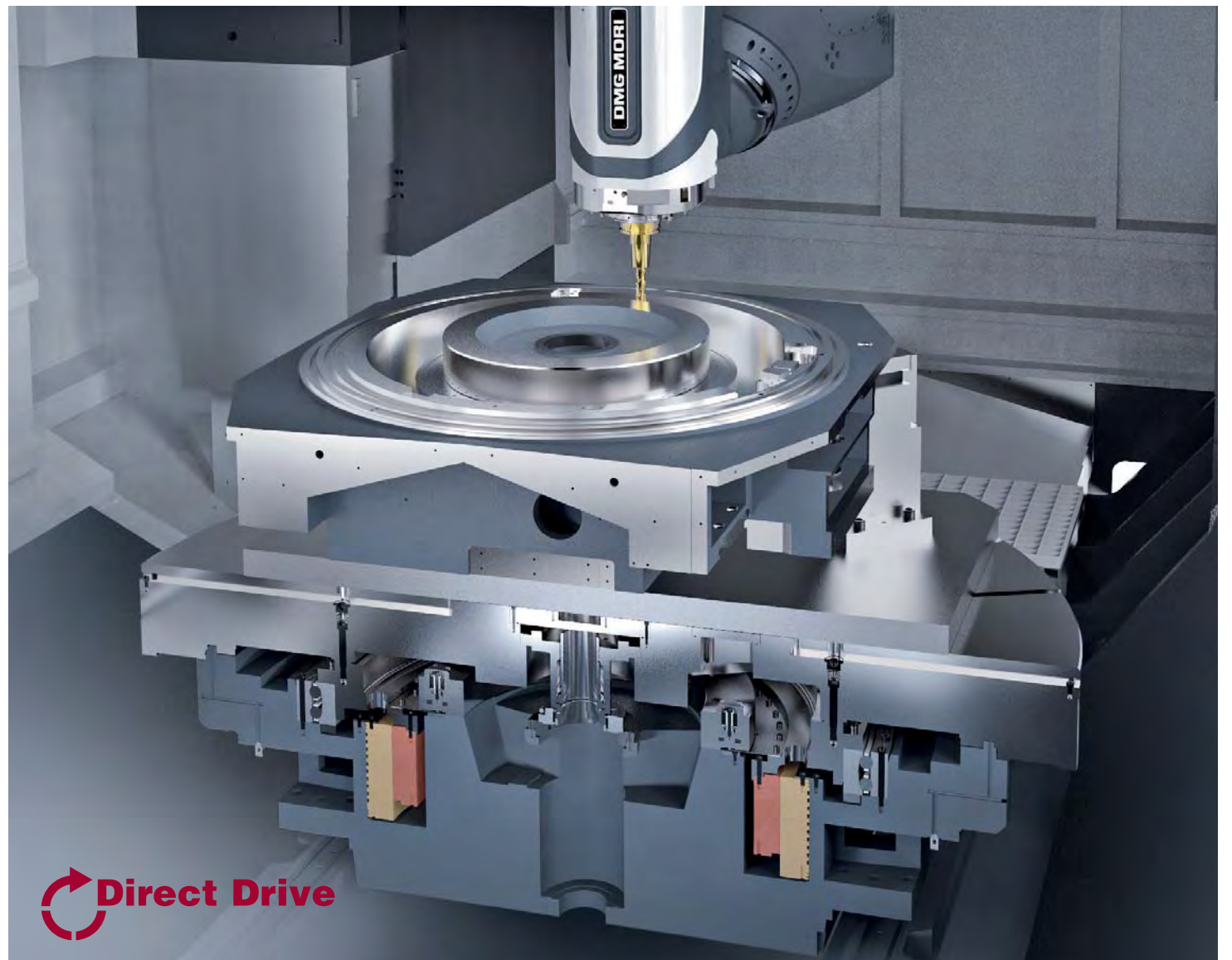
DMU FD 5-AXIS MILLING/TURNING

Simple immersion into deep forms through optimized interference contour of the cutter head.

DMU 270 FD

Unparalleled complete machining – high-precision milling and turning up to 7.7 t.

— This 5-axis machine with a highly stable gantry design offers impressive precision with unbeatable dynamics. In addition to drilling and milling, turning operations can also be performed in the same setup thanks to advanced milling/turning technology. Large travel paths up to 8.9 ft. and heavy table loads up to 7.7 t provide the foundation for this unparalleled machining flexibility. The best milling/turning table on the market is highly stable thanks to large bearings and comprehensive cooling measures ensure unmatched precision. The almost wear-free **8,113.2 ft./lbs. and 91.2 hp. Direct Drive technology** enable highly accurate turning operations with the best machining results.

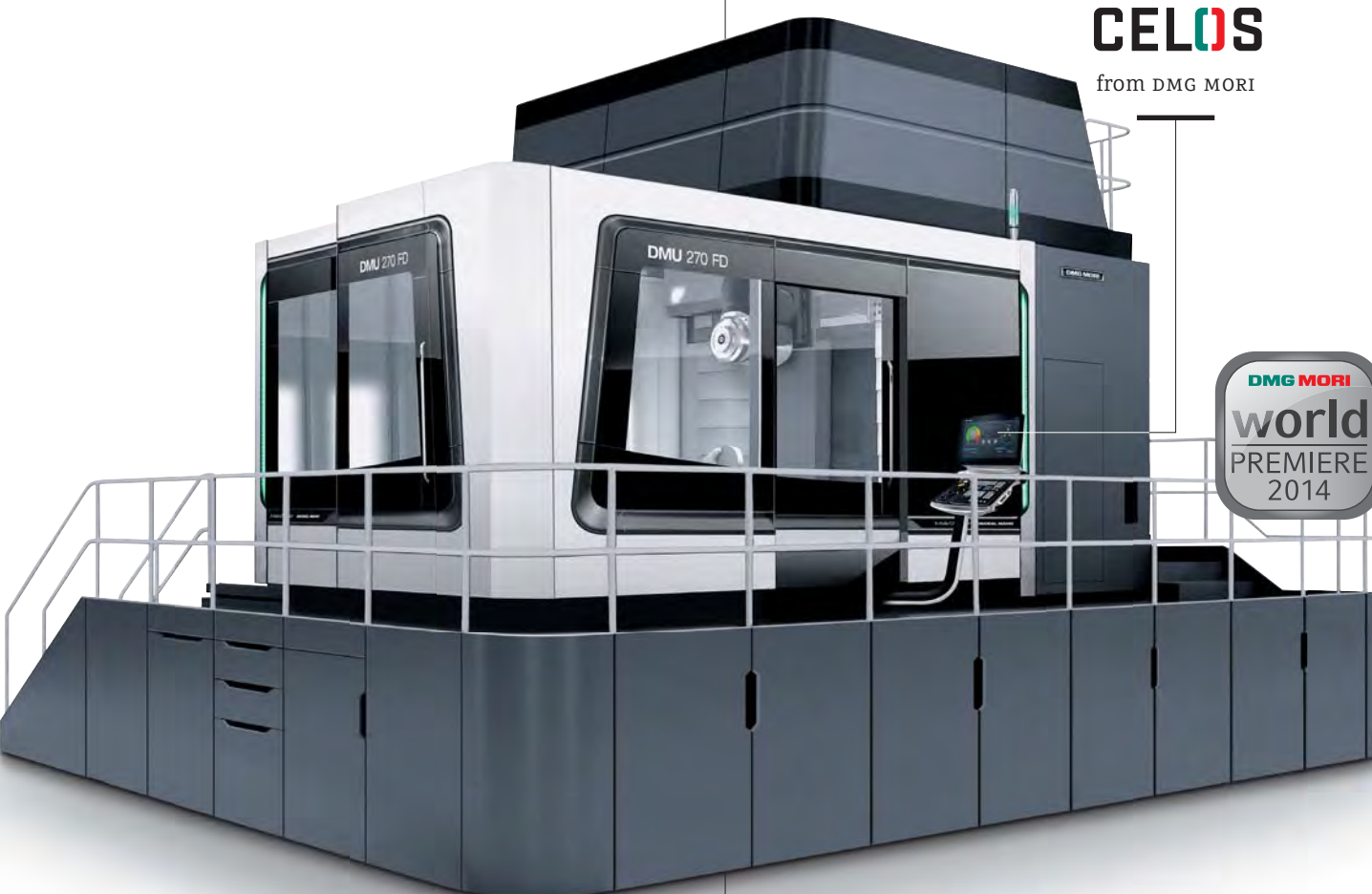


DMU 270 FD
Sophisticated technology
based on more than
15 years of milling and
turning experience

DMU 270 FD HIGHLIGHTS

- **Large work area** for workpieces up to $\varnothing 118.1 \times 63.0$ in. and 15,432.4 lbs.
- **Milling and turning in one setup** with a Direct Drive table featuring up to **200 rpm**.
- **10% smaller footprint** thanks to the standard-equipped wheel magazine (63 tools)
- **B-axis** with improved interference contour and internal cable carrier, swivel range of 210°
- **More precise** through **optimized temperature stability**
- **3-point support**

CELOS
from DMG MORI



DMG MORI
world
PREMIERE
2014

TECHNICAL SPECIFICATIONS

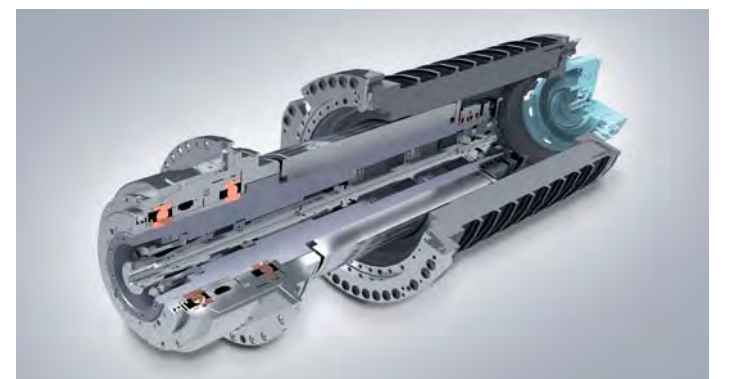
Travel in X/Y/Z: 106.3 / 106.3 / 63.0 in.;
rapid traverse: 2,362.2 / 1,181.1 / 1,574.8 ipm.; spindle
speed: 12,000 rpm.; power: 59.0 hp.; torque: 212.4 ft./lbs.;
workpiece size: $\varnothing 118.1 \times 63.0$ in.; workpiece weight: 15,432.4 lbs.;
tool magazine: 63 (123 / 183) stations

Intelligent software cycles –
up to 80% faster measuring



L-measuring probe packages offer significantly increased process reliability and efficiency by measuring even challenging points during the machining process. In addition to ridge and groove measurements, single points and diameters can also be determined.

powerMASTER 1000 from DMG MORI



- **Motor spindle with 103.3 hp. power and 737.6 ft. / lbs. of torque**
- **Cartridge design for easy maintenance and fast exchanges**
- **Spindle Growth Sensor (SGS) for spindle growth compensation**
- **Optionally available for 4th Generation duoBLOCK®, portal and DIXI machines as well as the NHX 6300, NHX 8000, NHX 10000 and NVX 7000**



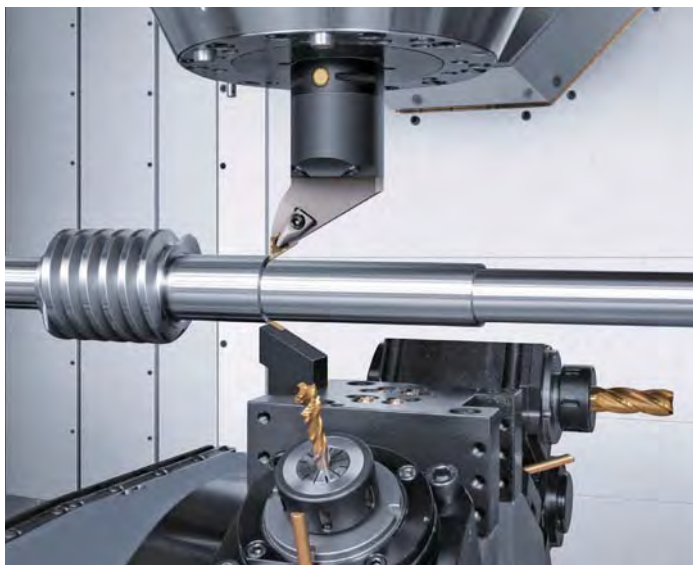
NTX

TURN MILL COMPLETE MACHINING

NTX 1000 – 2nd Generation

Highly efficient turn & mill machining center with impressive stability and volumetric precision

The NTX 1000 2nd Generation is a highly efficient **turn & mill machining center** with the **smallest footprint** in its class and is ideal for medical technology, aerospace, watch or electronics applications. Technologies, including **DDM®** and **BMT®**, ensure highly accurate and efficient production. The NTX 1000 2nd Generation is now available in the new DMG MORI design with **CELOS**. Another special feature is the **lengthened 31.5 in. Z-axis** and **8.3 in. Y-axis** for eccentric machining. In addition, the Direct Drive B-axis (DDM®) has a **240° swivel range**, making complex **5-axis simultaneous machining** possible. For even greater production flexibility, the optional 10-station lower turret enables synchronous and simultaneous machining on the main and counter spindle.



4-axis machining with B-axis and lower turret.



5-axis simultaneous machining with a Direct Drive B-axis (DDM®).

Medical



Workpiece: hip cup
Material: titanium
Dimensions: ø 2.4 in.
Machining time: 7 min. 30 sec.

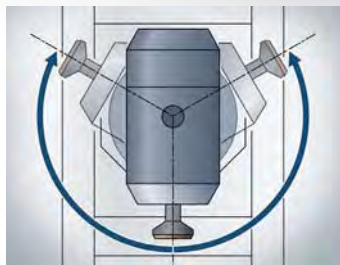
Aerospace



Workpiece: blade
Material: Inconel 600
Dimensions: ø 1.6 x 4.7 in.
Machining time: approx. 3 hours

NTX 1000 – 2nd Generation

Large work area for parts
up to 31.5 in. long with
16.9 in. diameters



CELOS
from DMG MORI

TECHNICAL SPECIFICATIONS

Travel (X / Y / Z): 17.9 / ±4.1 / 31.5 in.;
max. turning length: 31.5 in.; bar capacity: ø 2.0 in. (ø 2.6 in.*);
B-axis spindle speed: 12,000 rpm. (20,000 rpm.*);
tool magazine capacity: 38 (76*);
number of tool stations (lower turret): 10

* Optional



NLX UNIVERSAL TURNING

NLX 2000 | 500 – in the new DMG MORI design with CELOS.

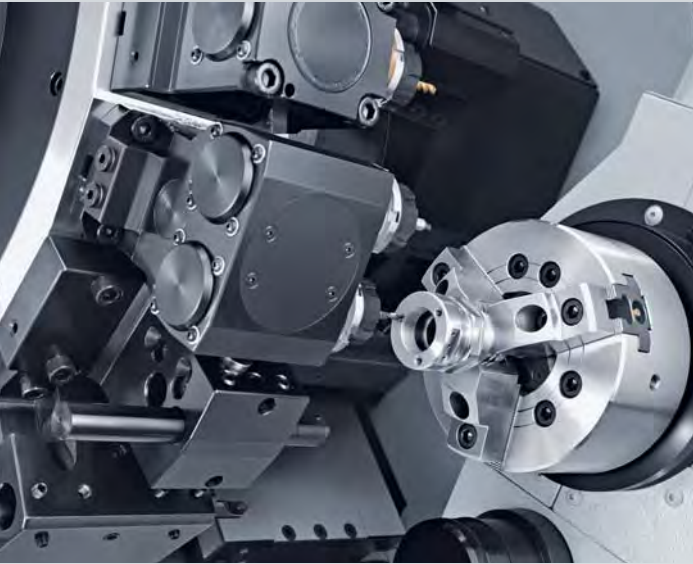
The NLX Series offers users unmatched performance, flexibility and reliability. The machine bed-integrated coolant circulation ensures greater thermal stability. Flat guides in all axes provide an optimal foundation for high-performance turning.

Immediately available with MAPPS IV
and a 10.4" TFT display.****

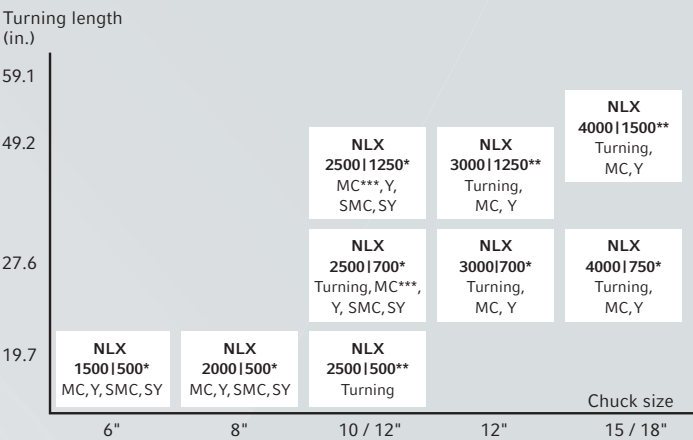
* Available in the new design with CELOS
** Exclusively available in the new design with CELOS
*** Currently: NLX 2500|700MC, NLX 2500|1250MC
are not available in the new design with CELOS
**** 19" for the NLX 4000

Turning = fixed tools, MC = driven tools, Y = driven tools and a Y-axis,
SMC = driven tools and a counter spindle, SY = driven tools, a Y-axis
and counter spindle

Machining of complex geometries with a multi-spindle toolholder.



9 machine models and 30 versions.



NLX 2500SY|700 manufactured in Bergamo, Italy for the European market.

NTX 1000 2ND GENERATION HIGHLIGHTS

- 5-axis simultaneous machining of complex workpieces (example: medical, aerospace and automotive) thanks to the Direct Drive B-axis (DDM®)
- Optimized work area with a 78% larger Z-travel for workpieces up to 31.5 in. length and ø 16.9 in.: machining of large workpieces with minimal interference contours on the compact milling spindle and the optional lower turret; up to 10 directly driven tools with 10,000 rpm.
- More machining flexibility with the X-travel path up to 4.1 in. under the spindle center
- Greatest consistent precision without compensation through thermal control and roller guides for 50% less backlash: patented (pending) heat-symmetrical spindle headstock cooling structure; cooling of all ball screws and ball screw nuts, turning and milling spindles incl. the B-axis and the BMT-turret; highest precision (example: 0.00008 in. straightness in the Y-axis)
- Operate 4.5 panel with a Siemens control, available with the FANUC 31iB control at the end of 2014

"Smallest footprint in its
class with 106.6 ft.²"

NLX Series Highly efficient universal turning machines

Bestseller!
The best-selling
machine from
DMG MORI



CELOS
from DMG MORI

NLX 1500 | 500, NLX 2000 | 500 HIGHLIGHTS

- Flat guides in all axes
- Coolant circulation integrated into the machine bed for improved thermal stability
- BMT® turret (Built-in Motor Turret) for milling performance that is comparable with a machining center
- Y-axis: ±2.0 in. (Y version)
- Digital tailstock for easy setup (comes standard)
- Various automation options including bar feeders or gantry loaders
- Counter spindle with max. 6,000 rpm. (SMC and SY version)
- New DMG MORI design

TECHNICAL SPECIFICATIONS

Max. diameter: 15.2 / 14.4 in.; max. turning length: 20.3 / 20.1 in.; max. bar capacity: 2.0 / 2.6 in.; max. speed main spindle: 6,000 (optional: 8,000) / 5,000 rpm.; max. performance main spindle: 14.8 / 20.1 hp.; number of tool stations: 12 (optional: 10*, 16, 20)

* only available for the NLX 2000

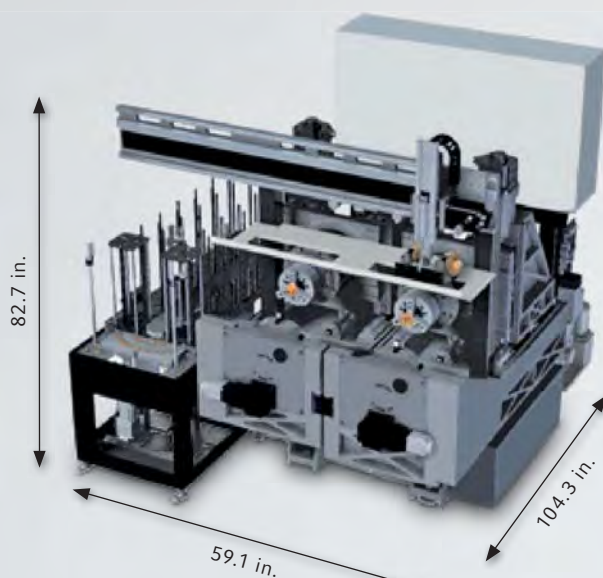
NRX

PRODUCTION TURNING

NRX 2000

High-speed turning center with two spindles for serial production.

At JIMTOF 2014 in Tokyo, DMG MORI will debut the NRX 2000 - a **completely new two-spindle turning center**. The NRX 2000 is the ideal solution for efficient mass production of chuck parts (e.g. for the automotive industry). Equipped with the **world's fastest loading system**, the NRX 2000 achieves exceptionally fast cycle times for maximum productivity in an automated production environment. The machine also features a one-piece integrated chip chute for optimal chip disposal. This ensures optimal automated workflow reliability over long production runs. With its compact design, unbeatable price, large work area and great transfer system accessibility, the NRX 2000 is the best production solution for serial manufacturing.



Compact footprint, 4.9 ft. machine width incl. automation.

NRX 2000 HIGHLIGHTS

NRX 2000 –
World's fastest workpiece loading at 5.8 sec. (4.2 sec. with collet chucks)

- **Greatest productivity with high-speed workpiece loading:** 4.2 seconds for loading and unloading through the X-axis and the gantry loader (5.8 seconds for chuck parts); second spindle continues operating during loading of the other spindle
- **Perfect solution for serial production** of chuck parts for the automotive industry: **40,000 parts per month**; optimal for workpieces up to \varnothing 4.7 in. and 3.1 in. long, optional up to \varnothing 6.3 in. and 3.9 in. long
- **Significantly better chip removal:** workpiece movement in X and Z (spindle) and a fixed turret for optimal chip disposal directly to the rear
- Control: COMPACTline with MAPPS

Automotive



Workpiece: transmission component
Material: SCM420H
Dimensions: \varnothing 3.1 \times 1.6 in.
Machining time: 80 sec.

Automotive



Workpiece: stator shaft
Material: SCr420H
Dimensions: \varnothing 3.9 \times 2.8 in.
Machining time: 120 sec.



TECHNICAL SPECIFICATIONS

Travel (X- / Z-axis): 4.7 / 7.9 in.; rapid traverse (X- / Z-axis): 1,181.1 / 1,181.1 ipm.; max. speed: 5,000 rpm.; chuck size: 8"; max. workpiece size: \varnothing 6.3 \times 3.9 in.; loading time: 5.8 sec.

NZX

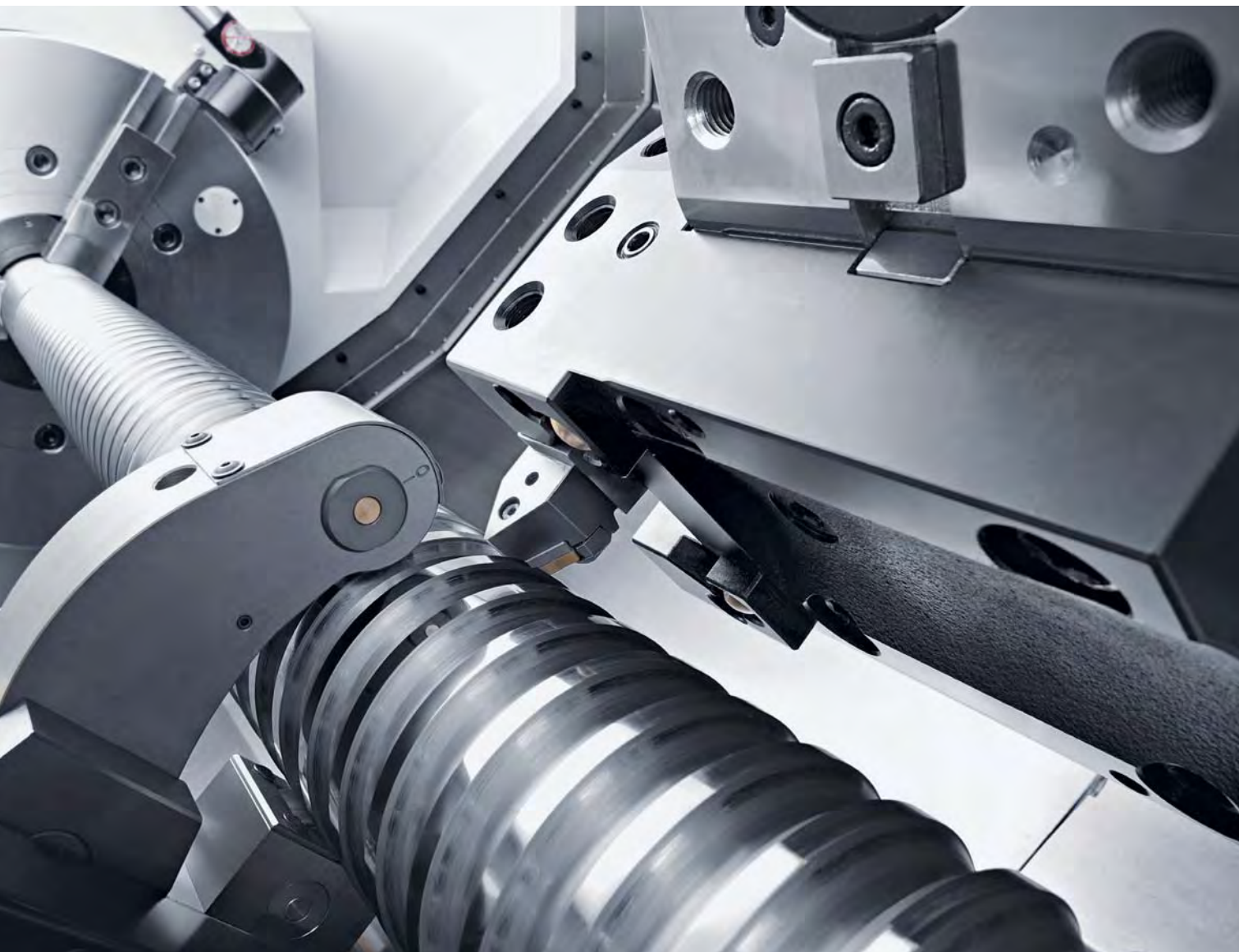
PRODUCTION TURNING

NZX 4000 | 3000

Highly productive shaft machining with two turrets.

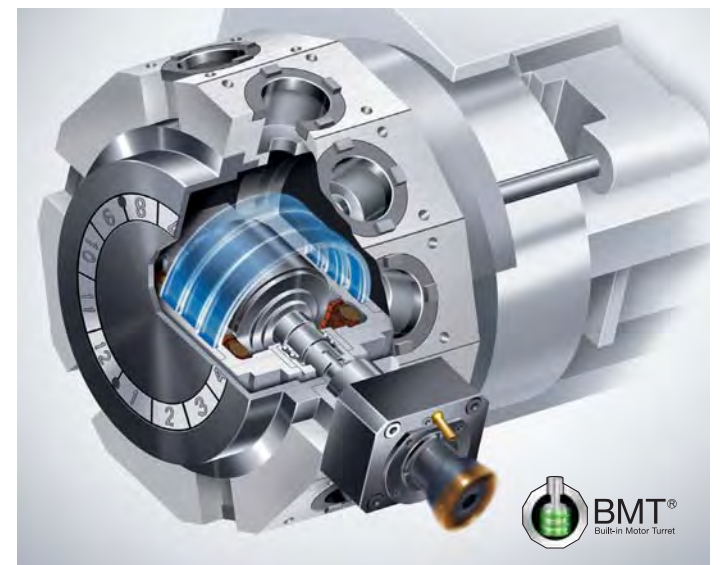
Long shaft parts with large diameters (e.g. for oil or gas pipelines) are indispensable in the energy industry. The NZX 4000 features two turrets that make it perfect for demanding manufacturing and **high-performance machining**. Thanks to the extreme rigidity of the machine, the full benefits of the impressive upper turret and BMT® (**Built-in Motor Turret**) technology can be fully realized. The milling performance of the BMT® turret is comparable to that of an SK40 class machining center. With a wide range of through-spindle bore options, the operator can process countless jobs on this machine – **the NZX is the ultimate productivity tool for the machining of large parts.**





The NZX 4000/3000 makes efficient heavy machining of large workpieces up to ø 26.0 in. and 118.1 in. possible.

Big through-spindle bores up to ø 11.2 in..



BMT® turret (Built-in Motor Turret) with up to 86.3 ft. / lbs. of torque.

NZX 4000/3000 –
Highly efficient 4-axis
turning center for
productive machining
of long, large
diameter workpieces

NZX 4000 | 3000 HIGHLIGHTS

- Rigid and stable heavy clamping thanks to wide flat guides
- 4-axis machining of longer shaft parts with large diameters: turret 1, Y-axis, milling; turret 2, turning; number of tool stations: 12 (turret 1) and 8 (turret 2)
- Turret 1, milling performance is comparable to an SK40 machining center: 14.8 / 10.1 hp. thanks to BMT® technology
- 3 through-spindle bore options: ø 5.7 / ø 7.3 / ø 11.2 in. (A / B / C)
- Use of long boring bars for ID boring*
- Use of up to 2 NC steady rests*

* Optional

CELOS
from DMG MORI



TECHNICAL SPECIFICATIONS

Max. turning diameter: ø 26.0 in.; max. turning length: 118.1 in.; max. main spindle: 2,000 / 1,500 / 1,000 rpm. (A / B / C); chuck size: 15~24"; number of turrets: 2 (Y-axis only available for turret 1); max. speed of driven tools (turret 1): 3,500 rpm.

Spindle

The NZX 4000/3000 has three different through-spindle bore options for varying workpiece diameters. Thanks to its gear construction, all spindle versions offer high performance in a compact design.

Type A: 2,000 rpm., max. 4,941.7 ft. / lbs. and 60.3 hp.
Type B: 1,500 rpm., max. 5,177.7 ft. / lbs. or 100.6 hp.
Type C: 1,000 rpm., max. 8,902.4 ft. / lbs. or 100.6 hp.

BMT® turret (Built-in Motor Turret)

Thanks to the built-in turret drive, heat and vibrations are minimized and the efficiency of power transmission is significantly increased for greater speed, precision and overall performance.

Advantages of BMT® technology

- › Maximum milling performance with up to 86.3 ft. / lbs. and 14.8 hp.
- › Improved machining precision
- › Reduced heating and vibration
- › Greater efficiency
- › Highest surface finishes
- › Longer tool life

Magnescale

SPEED X PRECISION

FROM DMG MORI

Impressive precision through
direct measuring systems from
Magnescale with 0.0000004 in.
resolution (standard).

More about Magnescale

ON PAGE 31



LASERTEC

LASERTEC 45 Shape

A new dimension in high-precision, 3D laser ablation and texturing.



Work area of the LASERTEC 45 with an integrated swivel / rotary table (5-axis version), Laser head with a precision scanner, CCD camera and retractable measuring probe.

LASERTEC 45 SHAPE HIGHLIGHTS

- **80% larger work area** on the same size footprint with 3x greater dynamics and 2,362.2 ipm. rapid traverse (vs. LASERTEC 40)
- **5-axis simultaneous machining** with the integrated swivel/rotary axis and torque motors (optional)
- **Siemens 840D sl** with a 15" touch screen: direct programming on the control

* Machine only without any accessories

LASERTEC 45 Shape
5-axis precision laser machining up to \varnothing 11.8 in. on a < 43.1 ft.² footprint*



Laser ablation: intricate cavities for miniature molds



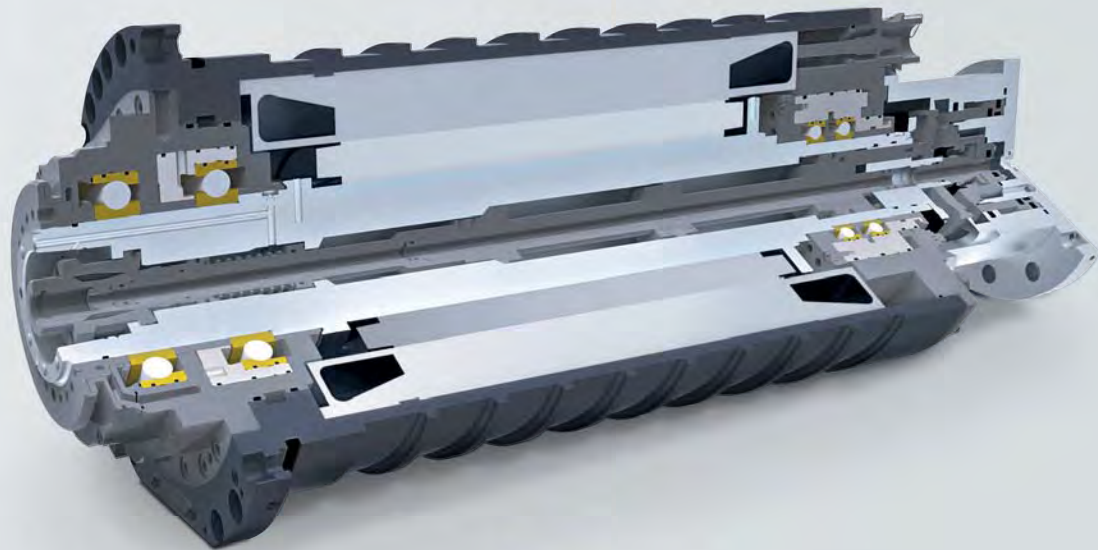
TECHNICAL SPECIFICATIONS

Travel in X / Y / Z: 27.6 / 16.5 / 18.9 in.;
max. acceleration in X / Y / Z: 32.8 / 32.8 / 59.1 ft./s²;
swivel range (A-axis): -100° to +120°; max. workpiece weight (3-axis / 5-axis): 881.8 / 220.5 lbs.; max. workpiece size: \varnothing 11.8 x 7.9 in.; control: SIEMENS 840D solutionline with a 15" touch screen

DMG MORI HIGH-TECH COMPONENTS

Milling spindle – speedMASTER

NEW: speedMASTER from DMG MORI – #40 universal milling spindle with 10,000-hour warranty*



Impressive machining performance in the standard model

- 15,000 rpm., 81.9 ft./lbs. and 28.2 hp. (40% DC)

Optional

- **High-torque:** 15,000 rpm., 147.5 ft./lbs. and 61.7 hp. (40% DC)
- **High-speed:** 20,000 rpm., 88.5 ft./lbs. and 46.9 hp. (40% DC)

*Warranty: 10,000 hours or 18 months.

Maximum service life and precision

- Large spindle bearings for longer service life
- Optimal sealing, no cooling lubricant contamination
- Durable toolholder for exceptional consistent precision

Standard equipment on the NHX Series 2nd Generation; starting in 2015 for monoBLOCK®, NVX, DMC V, DMU.

Additional spindles from DMG MORI: **powerMASTER, torqueMASTER, compactMASTER®**

Tool magazine



Intelligent wheel magazine – patented technology

- Retooling during operation (starting with two wheels)
- The most compact magazine on the market (41% narrower machine width with 123 tool stations)
- Up to 453 tool stations, max. 5.6 second setup
- Quick tool change of 0.5 seconds (0.8 seconds on the HSK-A100)
- Protected intake via the tube slot
- No disassembly required for transport of up to 123 (SK50) / 183 (SK40) tools

Standard equipment for the 4th Generation duoBLOCK®, DMU 270 P/FD and the DMC H linear Series.

To watch the Additive Manufacturing video:
www.3D.dmgmori.com

Please scan the QR code or visit our website



Turret

BMT® Built-in Motor Turret – with an integrated drive motor

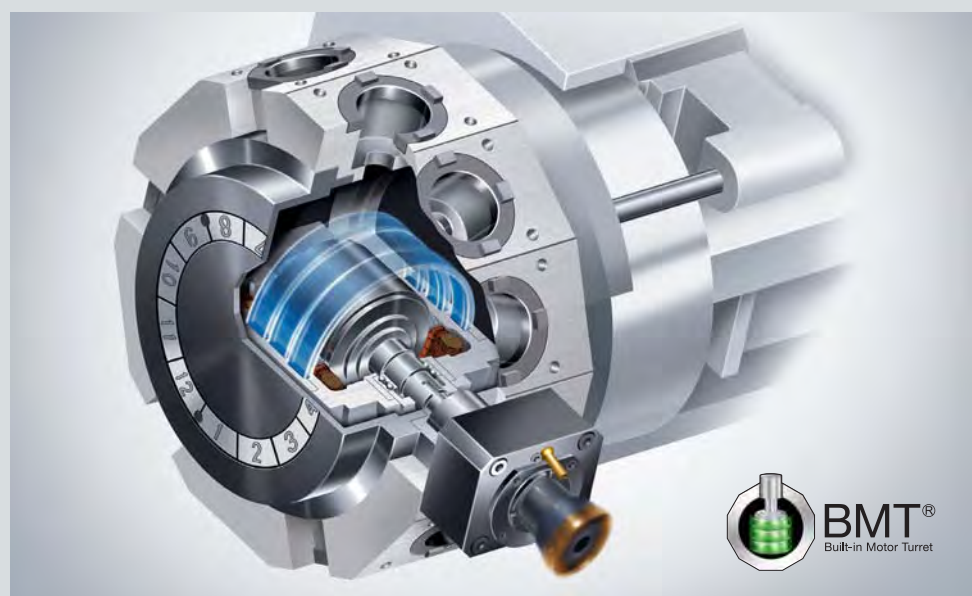
Cutting performance comparable to a milling machine

– Up to 12,000 rpm. or max. 147.5 ft./lbs. of torque

The BMT® effect

- Improved milling performance and milling precision through the built-in drive directly in the turret for optimal transfer efficiency
- Minimized heating and vibration of the turret, temperature variation < 0.00002 in.

Available for the NL, NLX, NZX, NT, NTX and DuraTurn Series.

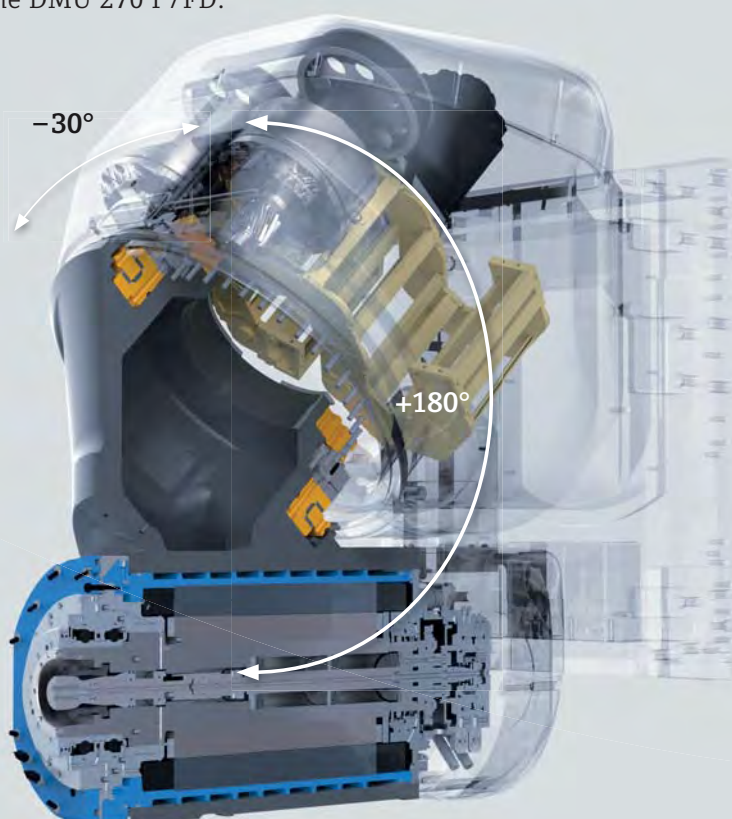


B-axis

Additive manufacturing – laser deposition welding and integrated milling.

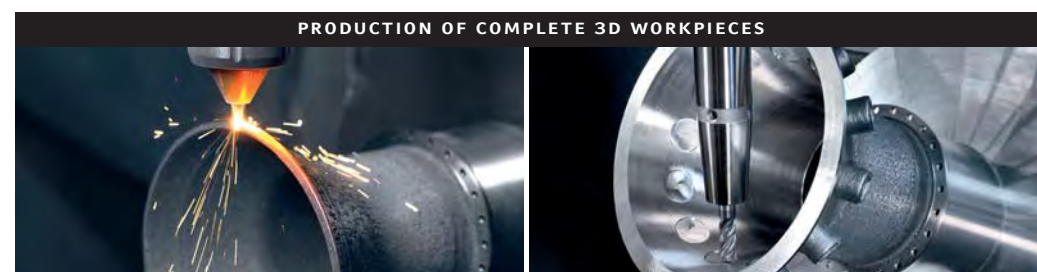
- 20% greater rigidity through the large YRT bearing and an improved, highly rigid B-axis design concept with a 45° swivel range
- Built-in trailing cable - improved interfering contour, higher quality through better enclosure sealing, longer service life with force-guided cables

Standard equipment for the 4th Generation duoBLOCK® and the DMU 270 P/FD.

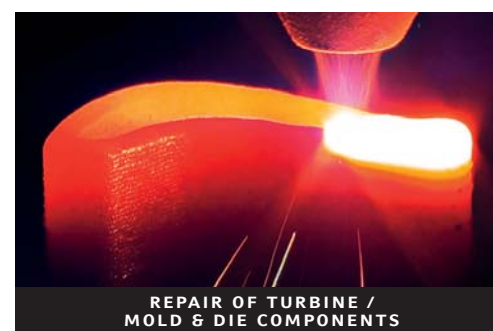


LASERTEC 65 3D

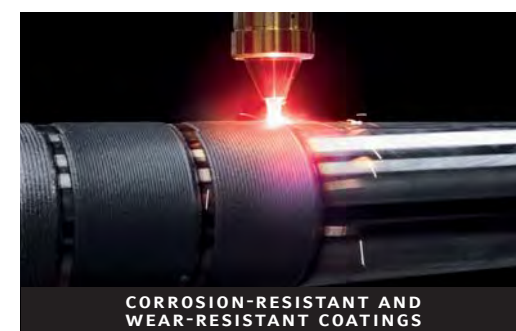
Additive manufacturing – laser deposition welding and integrated milling.



PRODUCTION OF COMPLETE 3D WORKPIECES
LASER DEPOSITION WELDING + MILLING ON ONE MACHINE



REPAIR OF TURBINE / MOLD & DIE COMPONENTS



CORROSION-RESISTANT AND WEAR-RESISTANT COATINGS

Target market: tool making / mold & die, aerospace, automotive, medical technology, oil & energy, machine construction

Source: ISW Fraunhofer

LASERTEC 65 3D HIGHLIGHTS

LASERTEC 65 3D
Additive manufacturing of 3D components with finished-parts quality



Laser deposition welding and milling of turbine blades

- Intelligent combination of laser deposition welding and 5-axis milling for **best surfaces** component precision
- Laser deposition welding with a powder nozzle: up to **10× faster** vs. powder bed method
- **Complete 3D parts production** up to ø 19.7 in., including overhanging contours without support geometries
- **Direct machining of areas** that would otherwise not be accessible on a finished part



CELOS
from DMG MORI

TECHNICAL SPECIFICATIONS

Travel in X / Y / Z: 25.6 / 25.6 / 22.0 in.; max. workpiece dimensions (5-axis): ø 19.7 × 13.8 in.; max. loading weight (5-axis): 1,322.8 lbs.; Footprint (machine only): ca. 129.2 ft.²; control: CELOS from DMG MORI featuring a 21.5" ERGOline® panel with the Operate 4.5 panel on a SIEMENS 840D solutionline control



New GC4325 for steel turning

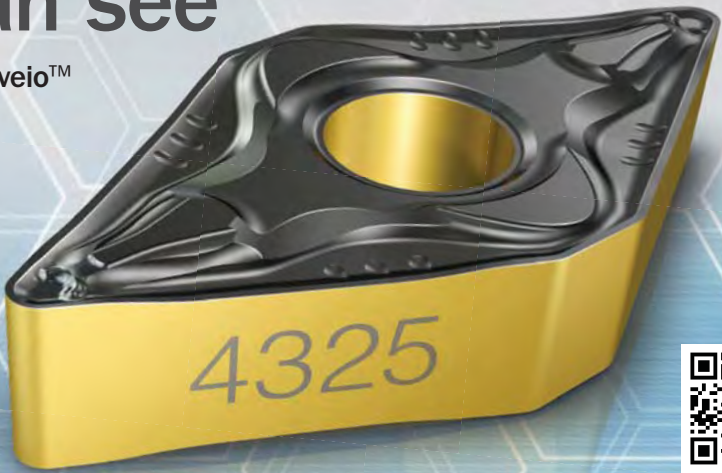
Performance beyond what the eye can see

The first insert grade featuring Inveio™



An innovation at the atomic level has changed the face of metal cutting. The finely controlled structure of its coating guarantees that GC4325 shows longer tool life and more reliable wear in the widest range of steel turning applications.

It redefines the performance possibilities of ISO P25 and is everything you ever needed in one single insert.



See the whole story at: www.sandvik.coromant.com/gc4325



REDEX - The Machine Tool Drive Company

Hi-tech reducers for rack & pinion machine axes and milling spindles.

Leader in machine tool gearboxes and racks, REDEX has developed a product range with optimized stiffness, high accuracy and a modular design, which are all essential features for modern and dynamic machine tool.

The patented design using unique integral pinion with high-capacity taper roller bearings allows the highest "stiffness to the rack" on the market.

Through its worldwide sales network, with 7 subsidiaries and 2 research centers, REDEX provides full support for product sizing, integration and commissioning.



ANDANTEX USA Inc. - 1705 Valley Road - Wanamassa, NJ 07712
Ph. 1 732 493 2812 | F. 1 732 493 2949 | info@andantex.com | www.machine-tool-drives.com



KESSLER

Highest precision from components to service.

With over 90 years of expertise as a partner of the machine tool industry KESSLER assists its customers with a comprehensive range of high-tech spindles and spindle systems, for example the 1000 Nm spindle, high speed motor spindles with integrated regreasing – including motors and assemblies such as rotary / tilt-rotary tables and spindle swivel heads for 5-axis machining that is both efficient and precise.

We provide detailed process and fault analysis for each repaired spindle. As well as, providing replacement spindles and spare part deliveries as required. In any case you will benefit from fast reaction times, fast delivery times and maximum quality standards with regard to products and services.

Kessler Portfolio

High-tech spindles

- Externally driven spindles
 - Milling
 - Drilling
 - Turning
- Direct driven spindles
 - Milling
 - Drilling
 - Turning
 - Grinding
 - Special solutions



Motor Technology

Motors

- Asynchronous motors
 - air-cooled, water-cooled
- Synchronous motors
 - air-cooled, water-cooled
- Torque motors
 - Internal rotor, external rotor

Motor kits

- Rotary current
 - asynchronous
- Rotary current
 - synchronous



System Engineering

Spindle heads

- 1-axis spindle heads
- 2-axis spindle heads
- Special solutions

Tables/Component axis

- 1-axis
- 2-axis
- Multi-axial



Service Solutions

- Individual service-packages
 - Basic
 - Comfort
 - Premium
- Spare Part Management
 - with maximum availability
- Field Service
 - quickly and efficiently on site
- Academy
 - Know-how for your employees

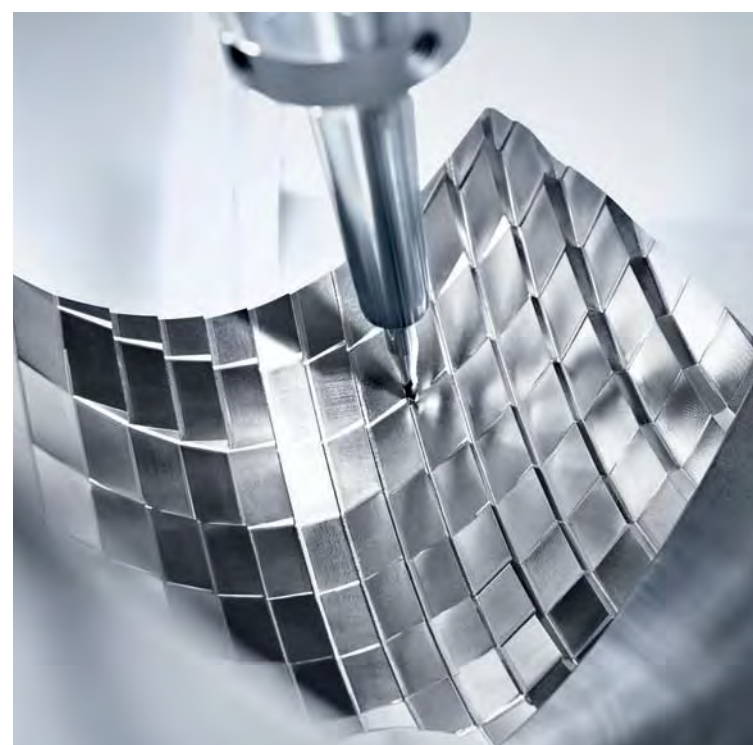
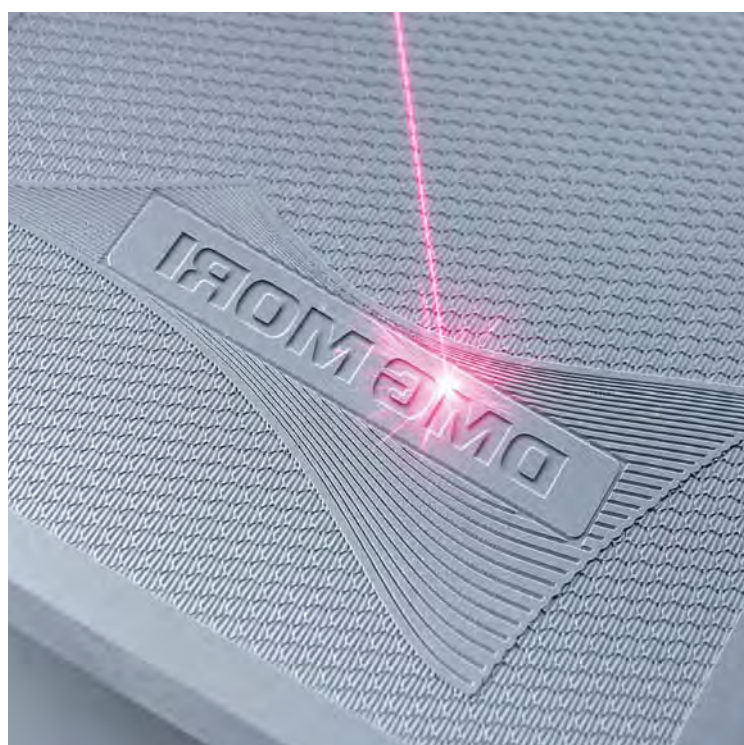


www.franz-kessler.com

N° 2 – 2014

- DMG MORI – exclusive Premium Partner of LMP1 Porsche Racing
- Linear drive technology: maximum precision and productivity
- New Center of Excellence for production turning machines
- Innovative technologies for tool and mold making
- ECOLINE – impressive functionality, unbeatable price

Technologies and success stories



CHOPARD

Superfast Chrono Porsche 919 Edition.

Chopard of Geneva, Switzerland was founded in 1860 by Louis-Ulysse Chopard to make premium watches and jewelry. In 1996, the company opened a facility in Fleurier, where it produces Haute Horlogerie watches. It further expanded into industrial production of clockwork mechanisms in 2008 at Fleurier Ebauches. Chopard employs a DMU 60 monoBLOCK® from DMG MORI for much of their precision work.



The Fleurier Ebauches factory: high-precision manufacturing with state-of-the-art machinery.



Chopard is also partnering with the LMP1 Porsche Racing Team for their long-awaited return to the WEC as the "Official Timing Partner" of Porsche with a limited edition Porsche 919 watch. The design is based on the Superfast Chrono watches and incorporates elements of the Porsche 919 Hybrid. A 919 logo is embossed at the 9th hour position of the watch faceplate, the silver finish evokes the noble history of Porsche and the black/red accents adhere to the Porsche 919 Hybrid's racing livery.

Limited Edition Chopard 919

CHF 11,450.00

EXCL. VAT

Only 919 of these very unique COSC-certified watches have been produced.

DMG MORI has reserved a limited supply of these watches for our customers. By ordering through DMG MORI, the watch will be invoiced directly by Chopard and delivered free of charge directly from Switzerland.

Submit your order to:
laura.keller@dmgmori.com

REFERENCE NUMBER:
168535-3002

FEATURE(S):
Chronograph, Flyback function

DISPLAY(S):
Hours and minutes, small seconds, date,
chronograph seconds hand, 30-minute timer,
12-hour timer

www.chopard.com



DMG MORI & PORSCHE

DMG MORI & Porsche – Tradition, precision and technology leadership with global presence.

After a 16-year absence, Porsche returns in 2014 to the LMP1-class FIA World Endurance Championship (WEC) with its 919 Hybrid. DMG MORI is an exclusive premium partner of the Porsche Racing Team in their return to the top-level of world championship racing. The WEC encompasses eight races on three continents, culminating with the 24-hour Le Mans race in France. DMG MORI has a long tradition of excellence in the automotive and racing industries. Porsche returns to long-distance racing poised to reaffirm its status as a leader in high-performance sports car manufacturing with the most advanced automotive technology. DMG MORI supports this effort by providing technology and supplier expertise. The partnership between DMG MORI and Porsche highlights the shared values of tradition, precision and technology leadership on a global scale while further establishing DMG MORI's proficiency in high-performance technology.

"I have always had a passion for Porsche. That's why it is a great honor to be working with the Porsche LMP1 Team at the top level of motor sport racing!"

Mark Webber



DMG MORI



World premiere of the Porsche 919 Hybrid in March 2014 in Geneva, Switzerland; from left to right: Dr. Eng. Masahiko Mori (President, DMG MORI SEIKI CO., LTD), Matthias Müller (Chief Executive Officer, PORSCHE AG) and Dr. Rüdiger Kapitza (Chief Executive Officer, DMG MORI SEIKI AG)



919 HYBRID

MAXIMUM EFFICIENCY CARS OF THE FUTURE.



Le Mans 2014 – the dawn of a new, more technology-driven motorsport age.

—The Porsche **919 Hybrid** is built upon an energy-saving design concept for a (super) racecar, thanks to trailblazing hybrid technology. The new **efficiency-based rules of the WEC** require pioneering hybrid strategies, which continues the tradition of prototype race cars as endurance innovators. Advanced technologies of tomorrow are subject to the **toughest conditions in motorsports** today. Never before have racecars been so technologically complex. The LMP1 vehicles are required to adhere to strict energy consumption parameters and must use a hybrid powertrain. The rest is up to the engineers! **Energy efficiency and conservation** also play a central role for DMG MORI, which is exemplified in Porsche's prototypes. Dr. Kapitza emphasizes: "Porsche has incorporated many **innovative ideas** into this car, thereby tackling some

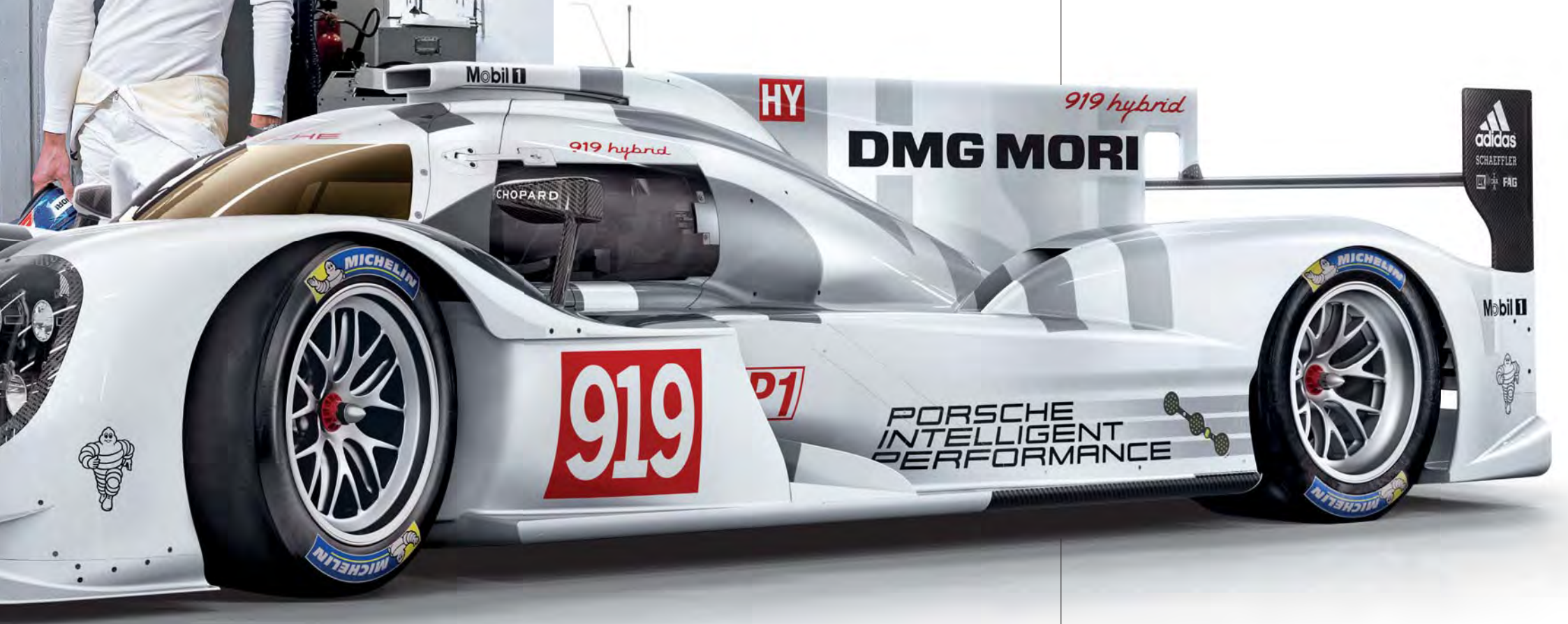
very difficult challenges – this parallels our focus on staying ahead of the curve to successfully cope with the challenges facing our industry as well." The WEC race is not about a few fast laps. It is about endurance – **a test of human will** as well as the **mechanical integrity of the machine and its components**. Along with a focus on efficiency, DMG MORI also strives to **develop innovative materials and components**, which plays a central role in the cooperation with Porsche. WEC regulations and Porsche demand that DMG MORI meet strict standards of **efficiency, safety** and **sustainability**.



Porsche 919 Hybrid

The Porsche 919 Hybrid is designed in the tradition of the Porsche 917 Le Mans championship car, but also calls upon the future of hybrid racing with accents of the Porsche 918 Spyder.

- 917:** first Porsche overall winner at Le Mans, France
- 918:** fastest street vehicle on the Nürburgring in Germany
- 919:** return to the top-level of the autoracing world championship



Mark Webber reached the podium in his first race driving the Porsche 919 Hybrid together with Timo Bernhard and Brendon Hartley. He was thrilled with the good start into the season and impressed with the speed of the 919 Hybrid.

The 919 Hybrid features a recuperation system on the front axle, which stores braking energy. In addition, it has a second system that uses the excess pressure from the exhaust system to produce energy. The 919 Hybrid is now the only racecar that recovers energy even during acceleration.

LINEAR DRIVE

AVAILABLE IN 46 MACHINES ACROSS 12 SERIES

CTX *linear* – turning with 1 g acceleration through a linear drive with a 5-year warranty.

Advancement through linear technology has been the way forward for DMG MORI over the past 15 years. Linear drives produce greater **machine dynamics, accuracy**, and robustness compared to conventional feed drives. Also, in combination with digital controls, the linear drives can achieve a **higher Cv factor**. This ensures minimal lag and **excellent positioning accuracy**, even at **high speeds**. Backlash and drive train elasticity is also eliminated for quick acceleration as well as **exceptional static and dynamic rigidity** in the linear drives. All of this comes with contact-free power transmission, which ensures that your linear direct drives remain free of wear. DMG MORI **linear drives come with a 5-year warranty**.

LINEAR DRIVE HIGHLIGHTS

- Minimal downtime with high jolt and 1 g acceleration: **fast positioning**, even for short travels - **ideal for grooves and recesses**
- Highest rigidity = maximum continuous accuracy** and surface quality: constant positioning by eliminating drive train elasticity - **ideal for hard turning**
- Low maintenance, minimal service life costs:** no mechanical transmission components, **wear is eliminated**, and a **5-year warranty** - **ideal for continuous production**

15 years of linear drive technology expertise

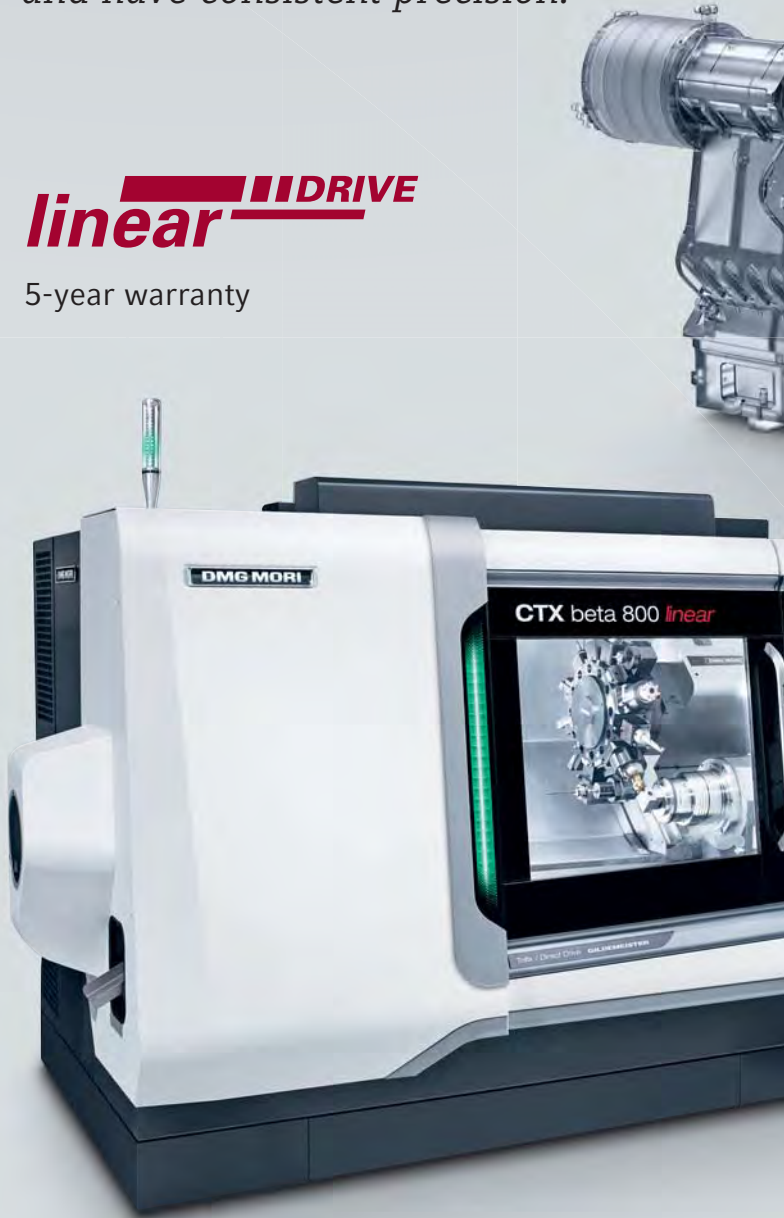
Over 15,000 linear drives successfully installed since 1999. Linear drives are available in **46 machines** across 12 series.

Turning technology	Milling technology	New technology
CTX beta <i>linear</i>	DMC H <i>linear</i>	ULTRASONIC <i>linear</i>
CTX gamma <i>linear</i>	DMU eVo <i>linear</i>	LASERTEC <i>linear</i>
CTX beta TC <i>linear</i>	DMF <i>linear</i>	
CTX gamma TC <i>linear</i>	HSC <i>linear</i>	
CTV <i>linear</i>		
SPRINT <i>linear</i>		

“With linear drive technology, we produce almost 30% faster and have consistent precision.”

linear **II DRIVE**

5-year warranty



DMU eVo *linear*

Success Story

DMF *linear*



The DMU 60 eVo *linear* is a flexible yet compact machine that effectively meets Martinic’s requirements.



MARTINIC ENGINEERING – A DMU 60 eVo *linear* with automation takes Martinic to the next level!

In search of a new 5-axis milling solution, Martinic Engineering, a Stanton, CA-based manufacturer of precision-machined parts for the commercial and military aerospace industries, wanted “**productivity, flexibility and unmanned operation capabilities**,” according to David Adler of Martinic, a TriMas Corporation business. The company found the combination that it was looking for in a **DMU 60 eVo *linear*** and PH15018 pallet handling system from DMG MORI. Manufacturing benefits were quickly evident - an immediate **30% productivity boost**.

“Space was also a key consideration,” says Adler. The DMU 60 eVo *linear* is a flexible yet compact machine that effectively meets Martinic’s requirements and is backed by **DMG MORI’s fast, reliable service and support**. User-friendly control features also deliver a seamless production experience for operators with differing skill levels. “We can **run six parts unmanned for two hours**, which is important for a company with a diverse job portfolio that produces over 400 different workpieces of varying quantities,” Adler explains. With **productivity up and lead times down**, the **DMU 60 eVo *linear*** and combined pallet changer took Martinic Engineering to the next level!

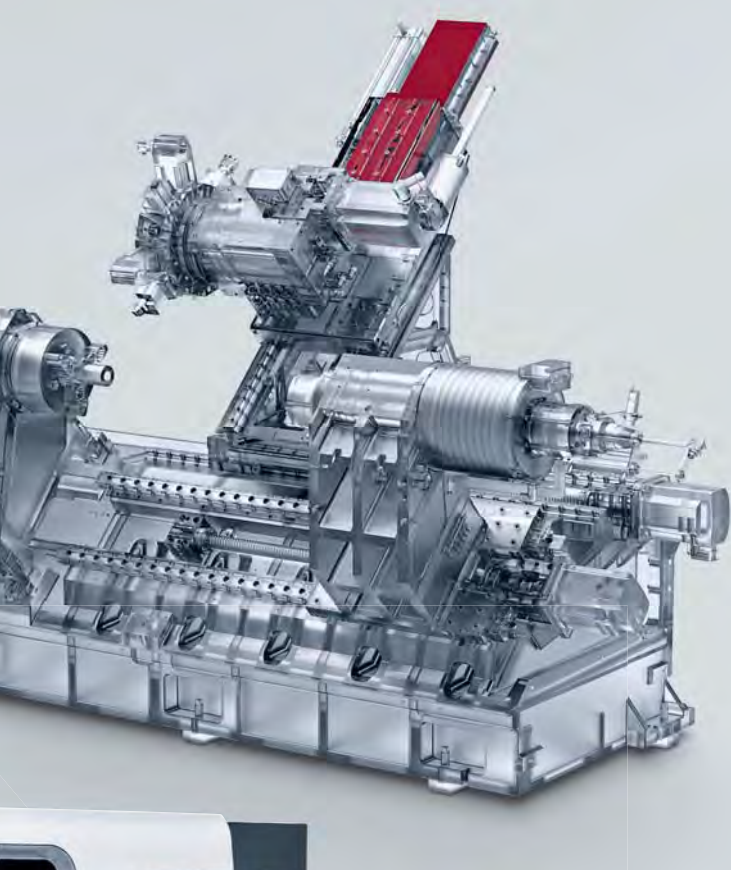
UKB – UWE KRUMM BURBACH GMBH – dynamic machining with a linear drive in the X-axis

Uwe Krumm Burbach GmbH has grown over 23 years to become a **European leader** in the development and production of **complex press brake tools**. Their comprehensive range of services include a CNC milling shop that, since 2006, employs **DMF traveling column machines** from DMG MORI. Company founder Uwe Krumm is extremely satisfied: “These machines are **robust, precise, and thanks to the linear drives, very dynamic**.” The company had acquired eight models: one **DMF 360 *linear***, four **DMF 220 *linear***, one **DMF 500 *linear***, and two **DMF 180**, making the decision to invest in a ninth machine in 2014 an easy one. “With the **DMF 600|11 *linear*** and its 236.2 in. X-axis travel, we now have the ability to handle larger machining jobs”, says Uwe Krumm. This ensures that Uwe Krumm Burbach GmbH is well positioned to compete in the growing CNC subcontracting market.



Martinic Eng., Inc.
10932 Chestnut Ave., Stanton, CA 90680
tomaepelbacher@trimascorp.com





CELOS
from DMG MORI

CTX beta 800 *linear*
A linear drive in the X-axis with 1g acceleration for the greatest consistent precision.

Success Story



Uwe Krumm (right): "Dynamics and consistent precision make the DMF 600|11 *linear* stand out".



Even fully extended – in the Y-direction with 43.3 in. – the milling head with B-axis works without vibration.

UKB – Uwe Krumm Burbach GmbH
Carl-Benz-Str. 49, 57299 Burbach, Germany
Tel.: +49 (0) 2736 / 4442 – 0
post@ukb-gmbh.de, www.ukb-gmbh.de



CTX TC TURN MILL COMPLETE MACHINING

CTX beta 800 TC –
Turn mill complete machining with the new compactMASTER® turning/milling spindle.



Machining of workpieces up to $\varnothing 19.7$ in. and 31.5 in. in length with the ultra-compact turning/milling spindle.
Use of steady rests* with up to 7.9 in. diameters and clamping chucks* up to 15.7 in.
*Optional

CTX beta 800 TC HIGHLIGHTS

- **compactMASTER®**: ultra-compact turning/milling spindle for greater space efficiency in the work area and **20% more torque: HSK-A63**
- **6.7 in. of additional space** through the new B-axis: **5.9 in. long workpieces for horizontal drilling and boring**
- Workpieces with up to $\varnothing 19.7$ in. and 31.5 in. turning lengths on **91.5 ft.² footprint**
- **6-sided complete machining** through the main and optional counter spindle
- Eccentric machining **on the 7.9 in. Y-stroke**
- **HORN / LMT / SCHUNK** tool package for turning, milling and drilling.



CELOS
from DMG MORI

TECHNICAL DATA

Max. turning length: 31.5 in., max. tool diameter: 19.7 in.;
Y-stroke: ± 3.9 in.; ISM 76 main spindle with 5,000 rpm.,
280.3 ft. / lbs., 45.6 hp.; HSK-A63 turning/milling spindle with
12,000 rpm., 88.5 ft. / lbs., 29.5 hp.; tool disc magazine with
24 stations, optional chain magazine with max. 80 stations

PRODUCTION TURNING

GILDEMEISTER Italiana – DMG MORI Center of Excellence for production turning machines.

GILDEMEISTER Italiana SpA, in Italian Brembate di Sopra near Bergamo, is the DMG MORI Center of Excellence for the economical machining of **high-volume or mass-production** turning parts. The company has over 45 years of automatic turning experience with more than 4,500 **multi-spindle automatic turning** machine installations and 4,000 automatic turning machine installations worldwide. **Production turning machines** with up to three turrets as well as single spindle automatic turning machines for short/fixed headstock and long/sliding headstock turning are as much part of the service portfolio as the company's premier class of mechanical and CNC multi-spindle automatic turning machines. At this facility, the NLX 2500SY | 700 is also built for the European market in the new DMG MORI design with CELOS and MAPPS on a MITSUBISHI control.

Over 20 million dollars invested in the Center of Excellence for production turning machines

- › **New, 13,000 ft.² state-of-the-art assembly hall** for the **SPRINT Series**, GM and GMC multi-spindle automatic turning machines, as well as the **NLX 2500SY|700**
- › **New technology center** for the development of client-specific solutions as well as demonstrations
- › **50 application engineers** deliver technology consulting, time studies and additional support
- › **25% greater productivity** and 20% smaller footprint for the **new mechanical production facility** through use of modern, automated machines
- › **Climate controlled mechanical production** within $\pm 2^\circ \text{F}$ for manufacturing of high-precision parts, including machine beds for multi-spindle automatic turning machines

The 20 million dollars renovated GILDEMEISTER Italiana S.p.A. in Italian Brembate di Sopra near Bergamo.



The new technology center with 10,800 ft.² for the development of client-specific solutions.

SPRINT 20|5 *linear* Short and swisstype turning of workpieces up to $\varnothing 0.8 \times 23.6$ in.

SPRINT 20|5 HIGHLIGHTS

- _ **SWISSTYPEkit*** for switching from short /fixed headstock turning to long /sliding headstock turning in < 30 min.
- _ 23 tool stations on 2 independent linear carriers, up to 6 driven tools, 4 come standard
- _ MITSUBISHI M70 or FANUC 32iB with a 10.4" color display

* Optional

SPRINT 20|5
"Large work area
with a space-saving
footprint"



< 21.1 ft.² footprint

SPRINT



The Advance CNC Machining team discusses parts production.

Success Story



Automatic turning of ultra-precise parts on the SPRINT 2018 *linear* automated with a bar loader.

Advance CNC Machining – SPRINT machines deliver 70% faster production!

When sales are booming and customers need shorter lead times, automation becomes a necessity. Because **DMG MORI offers unbeatable automation expertise**, **Advance CNC Machining in Grove City, OH** purchased its first **SPRINT 2018 linear** automatic turning machine in 2012 and a second SPRINT 2018 *linear* ten months later. "We chose to pursue automation to improve quality and repeatability. Ultimately, both allow us to be more competitive in the marketplace," says Jeremy Hamilton, Owner and President of Advance CNC Machining. Greater accessibility has been helpful with tool changeover operations as well. "In one case, it **used to take us 20 minutes** and two machines to make

a part. **On the SPRINT, we can now do it complete in less than 7 minutes** with greater tool life, better accuracy and next to no handling." proclaims Hamilton. These machines have helped fuel Advance CNC Machining's growth. Today, it conducts business in 22 states as well as Canada and Mexico, **producing parts** and materials for the medical, aerospace, electronics, optics, and defense industries - **faster and better than ever before!**



Advance CNC Machining
2375 Harrisburg Pike, Grove City, OH 43123
www.advanceCNCmachining.com



LARGE MACHINES

XXL-Center – the most modern large machine production facility in the world!

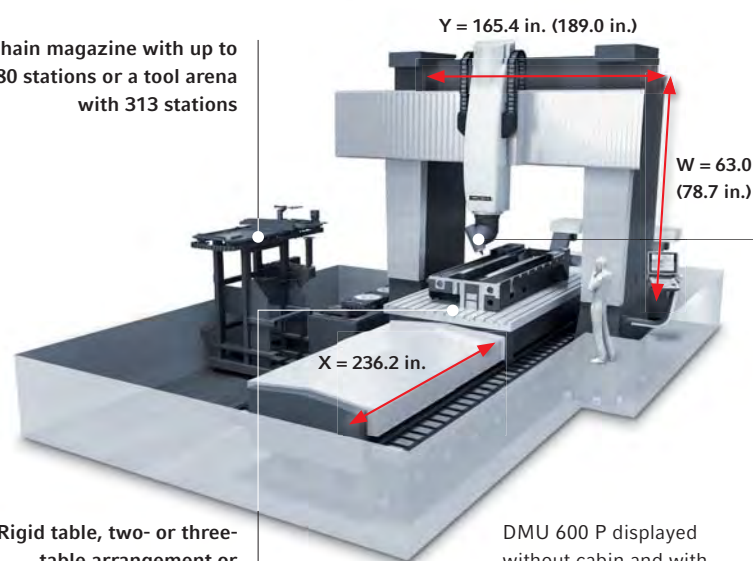
Perfect conditions

For over a decade, DMU 340 P large machines of the highest quality, stability and precision have been **made in Pfronten, Germany** and sold all over the world. With the new XXL Center, DECKEL MAHO has set a new milestone by **doubling production capacity** for the **DMU 600 P**. Two foundations, elaborate structural analysis and extensive crane infrastructure offer the **perfect conditions** for XXL machine production up to customer acceptance at the factory. In a fully air-conditioned environment with $\pm 2^\circ \text{F}$ temperature regulation, unrivalled machine precision on a massive production scale is achieved.

The new XXL Center doubles our production capacity for DMU 600 P machines.



Chain magazine with up to
180 stations or a tool arena
with 313 stations



Rigid table, two- or three-
table arrangement or
milling/turning table (FD)

DMU 600 P displayed
without cabin and with
lowered foundation



Flexibly changeable milling heads
with C-/A- and C-/B-kinematics

DMU 600 P

Success Story



The machining of the cable twist grooves for cable drums was reduced from two to three days down to three hours thanks to the DMU 600 P.



"We are thrilled with the results of our good relationship with DMG MORI," says Urs Morgenthaler, Managing Director, BUNORM AG.

BUNORM AG – DMU 600 P: XXL machining of workpieces up to 59.1 ft. and 82.7 t

Complexity is no barrier for BUNORM, a Swiss machine manufacturer. Whether a single part or a complete system - **BUNORM AG** can handle almost any **large-part manufacturing** task, while their ever-expanding customer base appreciates the precision, punctuality and innovative spirit of the 65-employee strong company. With a comprehensive production facility, BUNORM today specializes

in large machine components and is well served by the **DMU 600 P** from DMG MORI. With a total length of **134.5 ft.**, workpieces up to **59.1 ft. × 9.8 ft. × 11.5 ft.** that weigh up to **82.7 tons** can be **simultaneously and completely machined** via three tables with five axes. Each of the three tables also allows the separate processing of "smaller" parts that are up to 19.7 ft. long. "The **machining of workpieces up to 59.1 ft. in length on three tables** as well as the flexibility to set up smaller parts during machining make the **DMU 600 P** a very unique machine tool - and a vital component to the future success of our family business," says Managing Director Urs Morgenthaler. The configuration options with **various milling heads**, give BUNORM a **broad production spectrum** to work with, which is unique in Switzerland, according to Morgenthaler.



Linked or individually traversable – three tables allow maximum machining lengths of 59.1 ft. as well as setup during machining.



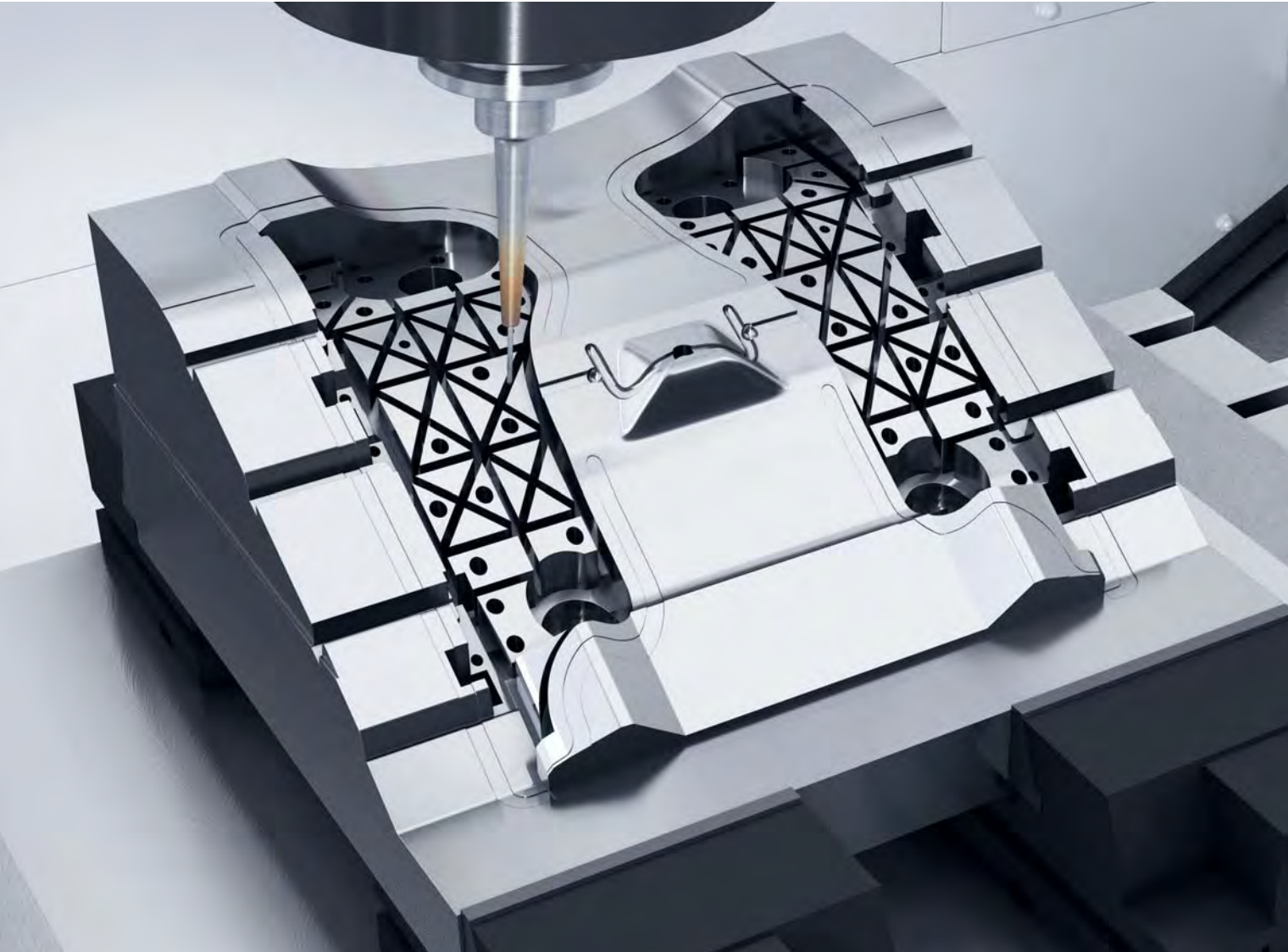
HSC HIGH-SPEED CUTTING

DMG MORI expertise in tool and mold making

Tool and mold making is one of the most innovative industries. The requirements for accuracy and surface quality could hardly be more different - simple molds, polished tools for transparent plastic parts as well as structured surfaces.

HSC technology has become one of the major trends in machining for tool and mold making. As a leader in HSC technology, DMG MORI offers customers an innovative high-speed solutions portfolio for an unparalleled range of materials, workpiece dimensions and machining tasks - including challenging 5-axis simultaneous milling of complex parts geometries.

Deep groove milling on a vertical machining center; fast and economical with HSC milling.



Best solutions for tool and mold making

HSC 30 *linear*
HSC 70 *linear*
A new benchmark in precision

Thermo symmetrical design for best workpiece precision: < 0.0002 in. linear drives in X, Y, Z with 1,968.5 ipm. rapid traverse and 1.2 g acceleration (3,149.6 ipm. on the HSC 70 *linear*). HSC spindles up to 40,000 rpm. with shaft, flange and jacket cooling (standard)

CELOS
from DMG MORI



Headlight injection mold
Material: 1.2312
Dimensions: 26.8 x 15.7 x 13.8 in.
Ra < 0.000006 in.
Machine: HSC 70 *linear*

linear **DRIVE**

TECHNICAL SPECIFICATIONS
Travel in X / Y / Z: 25.6 / 23.6 / 15.0 in.; rapid traverse: 3,149.6 ipm.; spindle speed: 18,000 rpm. (28,000 / 40,000); workpiece weight: 1,543.2 lbs.; tool magazine: 30 (60 / 120) stations

NMV 5000
High-precision 5-axis machining center

5-axis machining with DCG technology, highly dynamic direct drives and new MAPPS IV interactive control (standard).



Engine mold
Material: SKD61
Dimensions: 13.0 x 7.9 x 7.9 in.
Machining time: 9 Std. 20 Min.
Machine: NMV 5000

TECHNICAL SPECIFICATIONS
Travel in X / Y / Z: 12.6 / 11.8 / 11.0 in.; rapid traverse: 1,968.5 ipm.; spindle speed: 40,000 rpm.; workpiece weight: 440.9 lbs.; tool magazine: 30 (60) stations

HSC Center in Geretsried near Munich, Germany

Mold Laboratory, Nara in Japan

State-the-art features - high removal rates, long tool life and maximum process reliability as well as optimal dimensional and contour accuracy and **surface quality** on the workpiece up to **Ra 0.0000078 in.**

Our **Centers of Excellence in Geretsried and Nara** are staffed with tool and mold making industry experts. **Experienced application technicians** perform **test runs** and offer programming and tool selection support to help you **develop milling strategies designed to address future trends.** In cooperation with our **technology partners** we offer comprehensive solutions for tool and mold making. The **Mold Laboratory in Nara** even has eroding and injection molding machines for **full process demonstrations.**

HSC Center, Geretsried near Munich, Germany.



Mold Laboratory, Nara in Japan



We also offer comprehensive seminar programs at both Centers of Excellence.

Our expert teams would be happy to demonstrate the **innovative product** offerings for tool and mold making available **from DMG MORI.** We look forward to scheduling an appointment with you!



Experience the entire process chain of HSC technology live in one of our Center of Excellence locations.

NVD 5000

Vertical machining center for mold making

High speed, accuracy, precision, stability and easy operation. We have developed the ideal vertical machining center that incorporates all of these advantages - the NVD Series.



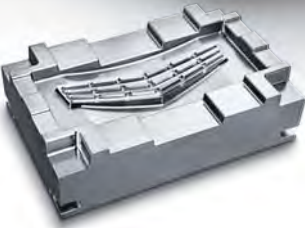
Segment of a wheel mold
Material: SKD61
Dimensions: 7.5 × 6.7 × 2.8 in.
Machining time: 14 Std. 21 Min.
Machine: NVD

TECHNICAL SPECIFICATIONS
Travel in X / Y / Z: 25.6 / 23.6 / 15.0 in.; rapid traverse: 3,149.6 ipm.; spindle speed: 18,000 rpm. (28,000 / 40,000); workpiece weight: 1,543.2 lbs.; tool magazine: 30 (60 / 120) stations

NVX 5100

Machining of mold parts up to 2,645.5 lbs.

The NVX 5000 Series offers increased machining efficiency thanks to higher spindle speeds. Impressive stability and dampening is also made possible through use of sliding guides in all axes.



Front grill mold
Material: SKD61
Dimensions: 27.6 × 17.7 × 5.9 in.
Machining time: 33 Std.
Machine: NVX

TECHNICAL SPECIFICATIONS
Travel in X / Y / Z: 41.3 / 20.8 / 20.1 in.; rapid traverse: 1,181.1 ipm.; spindle speed: 13,000 rpm. (12,000); workpiece weight: 2,645.5 lbs.; tool magazine: 30 (60 / 90) stations

CELOS
from DMG MORI

HSC / LASERTEC Shape

Success Story

DIE-TECH & ENGINEERING

High-speed cutting technology revolutionizes DTE's productivity!

Over an 18-month period, **Die-Tech & Engineering (DTE)** of Grand Rapids, MI replaced five conventional CNC machines with two **HSC 105 linear** 5-axis high-speed cutting machines, one **HSC 75 linear** 5-axis machine, and one **HSC 75 linear** 3-axis machine. As sales volume grew by 30%, labor costs remained competitive – DMG MORI helped DTE modernize their operations. The company was founded in 1984 and today builds plastic molds, die castings dies, prototypes and many other parts that require 5-axis machining. Exploring the marketplace for high-performance machine tools was not an overnight project for DTE. After a long search, William Berry, President of DTE, chose the HSC Series saying, “**We realized how much more productive we could be with this new technology.**”

DMG MORI machine tools have really given DTE the advantage and growth potential that they were looking for. “Our **HSC Series machines** have **higher feed rates** and deliver **better surface finishes** thanks to the **linear drives and high-speed spindles**. We have also increased our spindle on time to almost 70% of available hours,” says Berry. With roughing and finishing operations on the same machine in one setup, unmanned production has dramatically increased, allowing polishing and EDM to be reduced, while improving deliveries to customers. For Berry, “**HSC machines** allow us to perform at a level that we did not anticipate. **It’s game-changing technology.**”



Die-Tech & Engineering (DTE)
4620 Herman Ave SW
Wyoming, Michigan 49509

DTE
Die-Tech and Engineering, Inc.



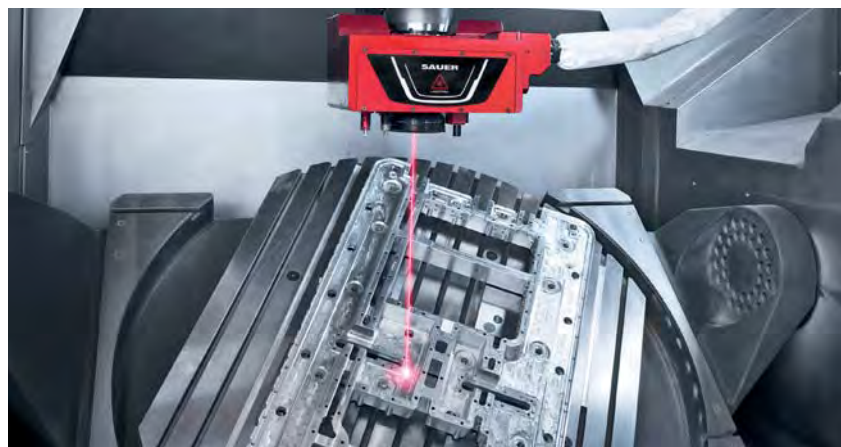
President William Berry and son Chris reviewing setup information for a HSC 75 linear 5-axis machining project.



RC 50 Die-Var cavity insert showing high finish and detail attainable with HSC Technology.



Complex die-cast cavity block machined to a level of finish requiring significantly less polishing time than in the past.



Direct 5-axis laser texturing of mold tools on the LASERTEC 125 Shape eliminates expensive and environmentally unfriendly etching processes.



Steering wheel foam tool made of aluminum and a foam pattern with varying surface structures (i.e. honeycomb, mesh grid, plaid texture).



Owner Thorsten Michel in front of his company in Lautert: T. MICHEL Formenbau was awarded on October 29, 2013 in Berlin the “ARPRO Adventure 2013 Award” for the most innovative technical mold part – produced on a LASERTEC 65 Shape.

T. MICHEL Formenbau GmbH & Co. KG –
“Always one step ahead!
LASERTEC Shape technology makes it possible!”

For more than 10 years, family-owned T. MICHEL Formenbau's 40 employees have been producing **tools and molds for the plastics industry**. Their services range from product development, 3D design, 3D digitization and prototyping to tool maintenance and serial mechanical processing of particle foam, injections and thermoforming molds. The **automotive, packaging & toy** as well as **construction** industries are among their most important clients. To keep production on the cutting edge, T. MICHEL Formenbau recently invested in **state-of-the-art SHAPE technology** from DMG MORI.

The new **LASERTEC 125 Shape** was installed in April. “The **LASERTEC Shape** is **unique world-wide.**”, says owner Thorsten Michel. “This

innovative hybrid machine **combines milling of the mold** with repeat **surface texturing via a laser!** And, this is all done in **just one setup**, delivering not only great precision, but also significant time savings.” Customer demand is growing rapidly. “We will need additional, even larger LASERTEC machines in the near future,” anticipates Thorsten Michel. “These new production processes give us unlimited design possibilities!”



T. MICHEL Formenbau GmbH & Co. KG
In der Zeil 10, D-56355 Lautert
info@michel-form.de, www.michel-form.de



MAGNESCALE – A DMG MORI COMPANY

Magnescale

SPEED X PRECISION

Exceptional precision with magnetic measuring systems with 0.0000004 in. resolution

More than 45 years of experience in the development and production of high precision linear and rotary encoders for machine tool and semiconductor applications.

_____ Magnescale Co. Ltd., established in 2010, is a leading global manufacturer of precision technology with headquarters in Isehara, Japan, and subsidiaries in Cypress, USA, Iga, Japan and Wernau, Germany. The company develops, designs and manufactures Magnescale, Laserscale and Digital Gauge products. The measuring capabilities **range from micrometers to even picometers**. Locations include Isehara and Iga, Japan with a new facility being built in Wernau, Germany to strengthen European operations.

_____ Magnescale product development began with tape recorder magnetic storage technology and has advanced machine tool development through **high resistance to environmental stresses as well as exceptional precision and high resolution**. In

addition to stability under severe operating conditions, including humidity or oil, Magnescale encoders have the **same thermal expansion coefficient as the steel** used in our cast iron machine beds. All these properties guarantee highly accurate positioning and measuring, even during the most challenging conditions.

www.magnescale.com

CONTACT

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EUROPE: Martin Gass
mgass@magnescale.com



Magnescale Headquarters in Isehara, Japan



Magnescale in Wernau, Germany and Cypress, CA.

SR27A / SR67A Series*



Magnetic linear encoder with a slim (SR27A) or robust design (SR67A).

RS97 Series*



Magnetic angle encoder with an open design for limited installation space.

RU97 Series*



Magnetic angle encoder with an integrated bearing. Perfect for high-precision rotary tables.

DK800S Series



For automated quality control in production and assembly lines. Measuring range: 0.2 - 8.1 in. Precision: +/- 0.0002 in. Service life: 90 million strokes achieved

Laserscale



For applications in the semiconductor industry and for ultra-precision machining. Resolution: up to 17 picometers



No contamination of the measuring system due to oil or water condensation.

- Protective structure
- Resistance to condensation and oil
- Impact resistance of 1,476.4 ft./s²
- Vibration resistance of 820.2 ft./s²
- Thermal expansion coefficient same as steel

DRIVE-CLiQ

* Magnescale encoders with Siemens DRIVE-CLiQ interface for greater reliability.

ecoTurn

HIGHEST FUNCTIONALITY, BEST PRICE

ECOLINE turning technology: *ecoTurn*

Turning machines featuring dynamic turrets and 3D controls at an **unbeatable price**.

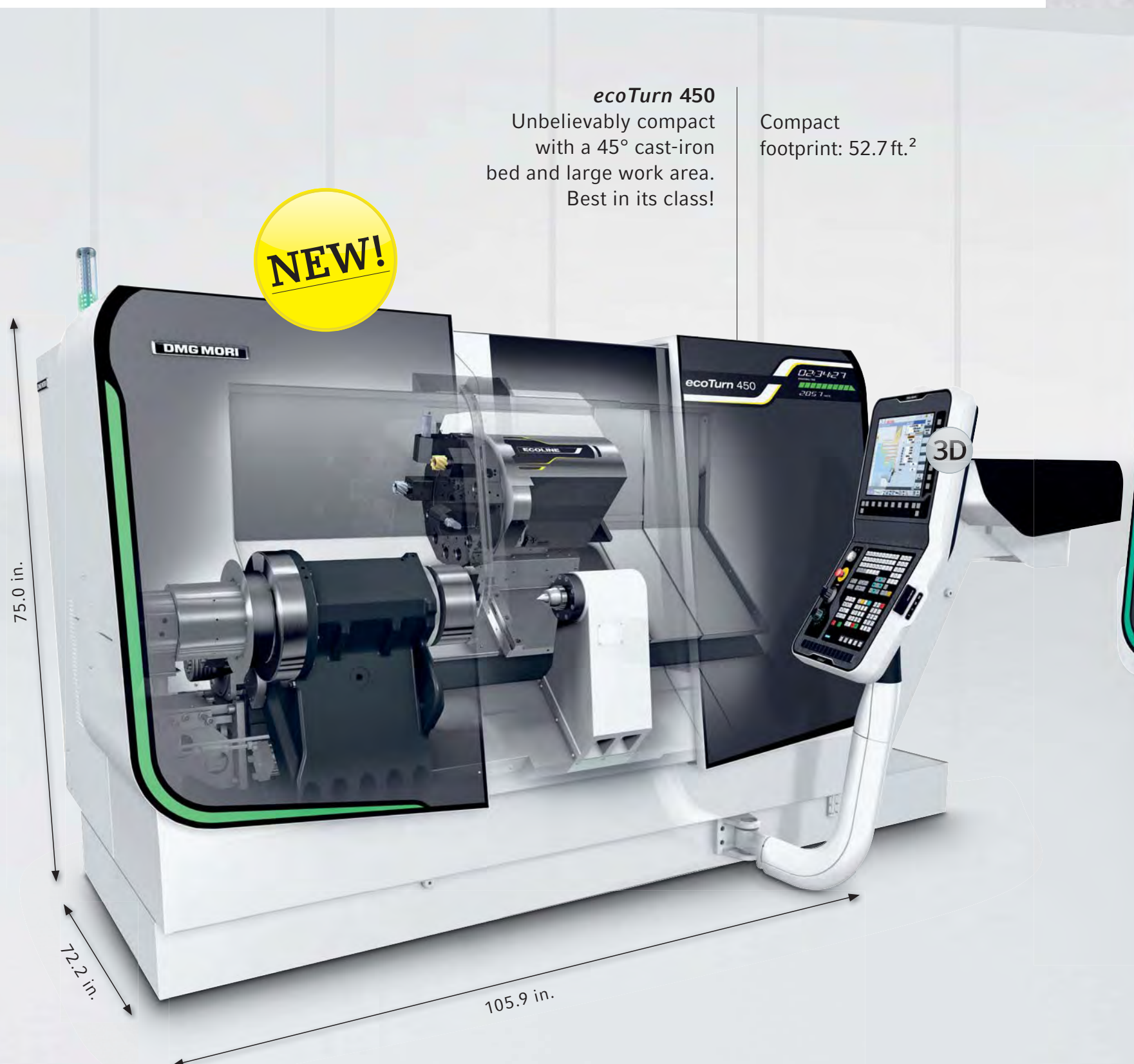
Take advantage of **impressive functionality** and **unbeatable prices** with our 2014 ECOLINE Series. For even greater turning production flexibility, we have supplemented our successful *ecoTurn* 310 and *ecoTurn* 510 machines with two new offerings: the *ecoTurn* 450 and *ecoTurn* 650. These new additions are the perfect complement to this already impressive product series: **for turning diameters from ø 7.9–23.6 in., we offer a competitive hard turning solution that will ensure maximum production efficiency.** All ECOLINE turning machines come standard equipped with a **fast 3D control** and 15" TFT display. Optionally, a C-axis, driven tools

and fast servo turrets are also available. With the stick-slip-free linear guides, these machines are capable of unmatched precision and surface quality. This series also employs task-specific component utilization to ensure that machine performance is in-line with the selected application, for maximum energy efficiency. Overall, the ECOLINE Series sacrifices the least amount of workshop space for the greatest level of productivity. **When it comes to maximum machine work area and minimal footprint, the *ecoTurn* 450 leads the way!**

NEW: *ecoTurn* 450 / *ecoTurn* 650 – our newest machines for chuck sizes ø 9.8 in. and ø 15.7 in.**

- VDI 40/50** turret with 12 tool stations (standard)
- Optional quick servo turret with 12 driven tool stations and 6 block tools
- Rear-side chip conveyor, 30% narrower footprint (optional for the *ecoTurn* 450)

**Value for the *ecoTurn* 650



***ecoTurn* 450**
Unbelievably compact
with a 45° cast-iron
bed and large work area.
Best in its class!

Compact
footprint: 52.7 ft.²



*Optional

Machine images shown may vary from the standard model.



D & A Fernandes
Germany
Managing Directors
Domingos and Artur Fernandes

» The ECOLINE Series consistently provides an established high level of quality, which is also what our customers expect from us. And, DMG MORI offers them at an attractive price. «

D & A Fernandes owns two ecoTurn, three ecoMill and three ecoMill V machines.



Pacific International University
Russia
Department Head, Machine Tools
Prof. Vladimir Davydov

» Of course we did our homework by looking at other machine tool manufacturers in the USA, Czech Republic and other countries, but the ECOLINE machines from DMG MORI are simply the most reliable on the market. «

Pacific International University uses one ecoTurn 310, one ecoMill 50 and one ecoMill 635 V machine.



MART-KAC S.C.
Poland
Chief Executive Officer
Marek Grzelak

» We manufacture over 1,500 different parts throughout the year, including small batches of complex workpieces for special projects or custom designs. Our ecoTurn 310 is the right choice for this diverse range of work. «

MART-KAC owns one ecoTurn, two ecoMill V and two ecoMill.



— Customize your production capabilities for exceptional machining flexibility: ECOLINE options kits give you the ability to produce small, sophisticated batches or large batches quickly. Diameter extensions and bar machining automation as well as a **Y-axis for demanding complete machining with the ecoTurn 510** are some of the many benefits available. Steady rests for shaft machining and automation cell interfaces are also available for all ECOLINE machines.



Your ECOLINE expert:
Petr Vladik
Tel.: +1 (224) 360-7918
E-Mail: petr.vladik@dmgmori.com

3rd Generation SLIMline®
The ergonomic control panel for exceptional user comfort

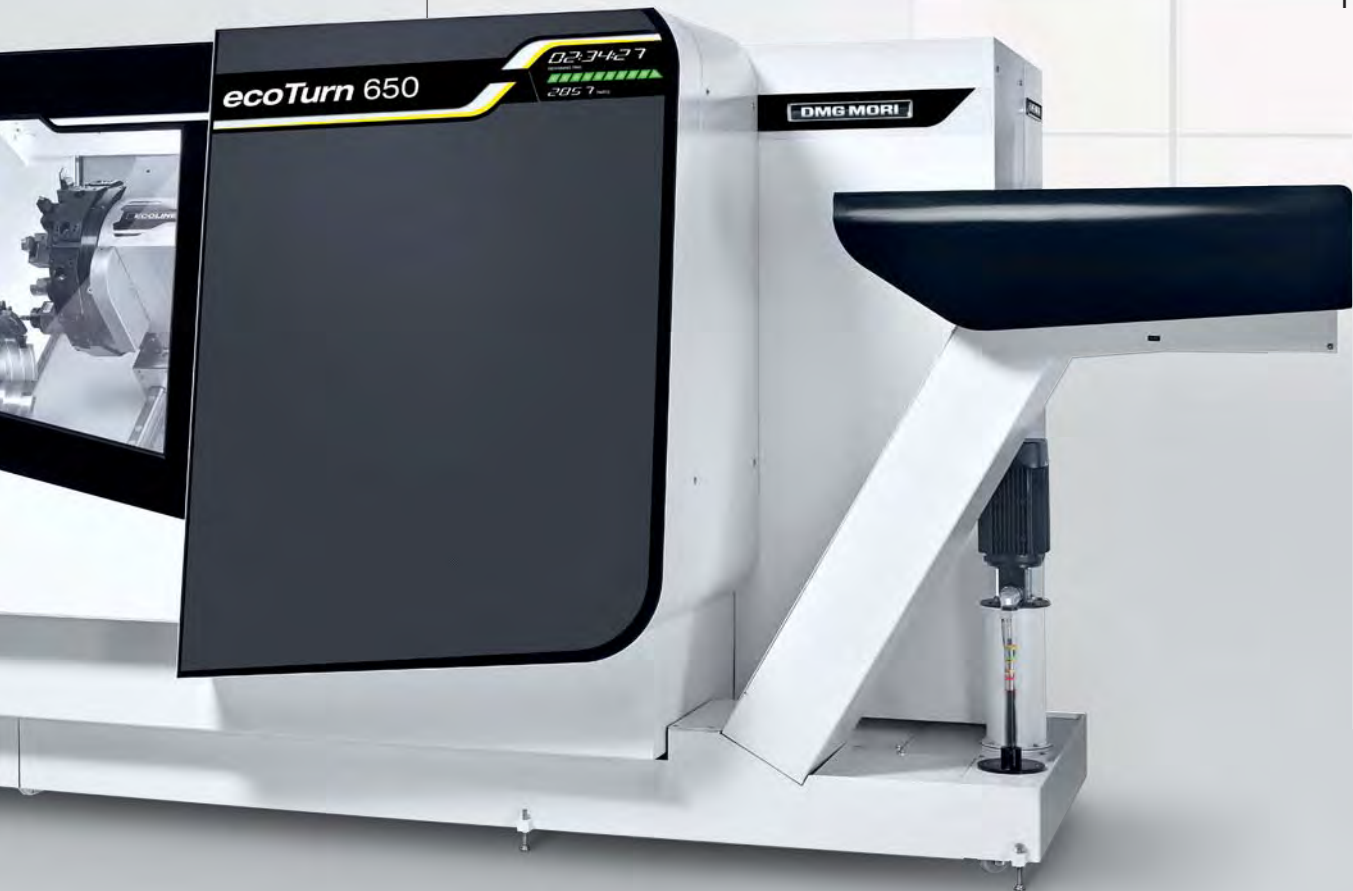


ecoTurn 650
Highest torque (without gears) and a precise C-axis

Compact footprint: 105.5 ft.²

ecoTurn 310
Unrivalled flexibility for chuck machining up to ø 7.9 in. and ø 2.6 in.* for bar machining

ecoTurn 510
Extremely powerful with a Y-axis* and VDI 40 turret



Get the most out of your ECOLINE machine by maximizing precision with a tool kit from our exclusive partner, SANDVIK Coromant.

Technical specifications

		ecoTurn 310	ecoTurn 450	ecoTurn 510	ecoTurn 650
Swing diameter over the bed	in.	ø 13.0	ø 25.6	ø 26.8	ø 33.9
Turning diameter, max.	in.	ø 7.9	ø 5.7	ø 18.3	ø 23.6
Longitudinal travel (Z)	in.	17.9	23.6	41.3	45.3
Bar capacity	in.	ø 2.0 (2.6*)	ø 2.6 (3.0*)	ø 3.0 (3.5*)	ø 4.0 (4.3*)
Drive power (40 / 100 % DC)	hp.	22.1 / 14.8	23.5 / 16.8	44.3 / 29.5	64.4 / 55.0
Speed, max.	rpm.	5,000	4,000	3,250	2,250
Torque (40 / 100 % DC)	ft. / lbs.	122.8 / 82.6	272.9 / 206.5	464.7 / 309.8	1,475.1 / 1,253.9
Chuck diameter	in.	ø 8.3*	ø 9.8* / ø 12.4*	ø 9.8* / 12.4*	ø 12.4* / ø 15.7* / ø 19.7*

* Optional

SANDVIK COROMANT TOOL KIT for ecoTurn

with six tools for turning, drilling, piercing and threading, as well as six VDI 30 / 40 / 50 toolholders and 70 replacement inserts.

ecoMill

IMPRESSIVE FUNCTIONALITY, UNBEATABLE PRICE

ECOLINE milling technology: *ecoMill* and MILLTAP

Versatile milling machines for up to 5-sided production and 3D control technology at an **unbeatable price**.

ECOLINE offers unparalleled milling versatility for serial and individual parts production. Advanced 3D controls and a 15" TFT display come standard. From 3-axis milling to 5-sided machining for 19.7 – 40.7 in. X-travel, we provide the right milling solution for any challenge. Energy-efficient operation and stick-slip-free linear guides ensure the best milling results with minimal energy use. Optional linear measuring systems also ensure the greatest consistent precision and, with the comprehensive options kits, you can tailor your ECOLINE milling machine to your needs. The latest and most advanced ECOLINE milling machine is our *ecoMill* 70. With its large work

area, 12,000 rpm. spindle and 32-station tool changer, the *ecoMill* 70 is the best 3+2 axes machine in its class. For demanding small parts machining, the *ecoMill* 50 is also available with the same impressive features.

With a space-saving C-frame design, the progressive *ecoMill* 635 V / *ecoMill* 1035 V vertical machining centers offer a wide range of options and functionality for every industry. A 12,000 rpm. DMG MORI motor spindle, gives these machines impressive cutting speeds to deliver exceptional surface quality.

NEW: *ecoMill* 70

Entry-level 5-sided machining with an NC swivel rotary table

- Load capacity: 771.6 lbs.
- Clamping area: \varnothing 31.5 × 24.4 in.
- Swivel range: -10° to $+95^{\circ}$
- Hydraulic table clamping / automatic incl. electronic angle indicator and level transfer

5-sided
machining

B-axis
 $-10^{\circ} / +95^{\circ}$

C-axis
360°

ecoMill 50 *ecoMill* 70

Best in class: flexible and precise thanks to a patented 2-axis table



Get the most out of your ECOLINE machine by maximizing precision with a tool kit from our exclusive partner, SANDVIK Coromant.

SANDVIK COROMANT TOOL KIT FOR *ecoMILL*

with three high quality milling tools from the CoroMill® Series and a toolholder – optionally ISO 40, BT 40, CAT 40 – as well as 30 high performance milling inserts.



Machine images shown may vary from the standard model.



Siemens AG
Germany
Training Manager, Ruhstorf plant
Josef Wenig

» The ecoMill 50 machines are great for training, because they demonstrate almost every vital aspect of today's production environment. Thanks to its B-axis, the machine's advanced design virtually eliminates collisions – which is particularly important in a training environment. «

Siemens AG uses two ecoMill 50 machines in their training facility.



Active Company Ltd.
Japan
President
Tetsuya Nishiyama

» The ecoMill 635 V meets the extremely high accuracy requirements of the racing industry. It was unquestionably the best choice, not only for its high rapid traverse speeds and fast spindle capabilities, but also because it can efficiently handle intricate drilling operations. «

Active Company produces their motor sports products on an ecoMill 635 V.



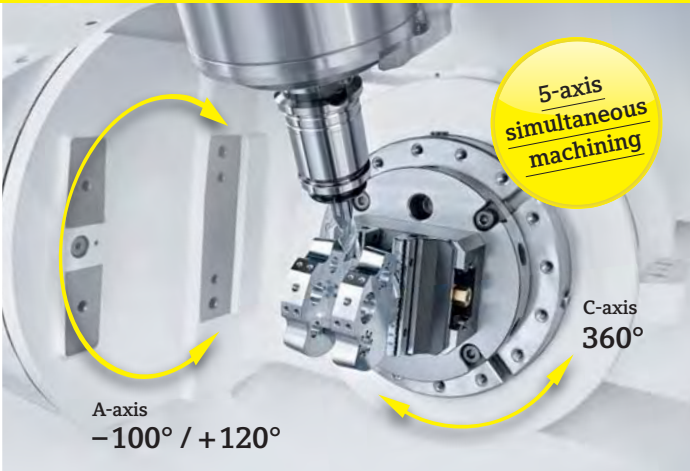
Billion Technology Ltd.
China
Chief Executive Officer
Zhang Lingfeng

» The high quality standards of our customers require us to work efficiently, which means that we are constantly striving to reduce manufacturing costs while simultaneously improving quality. Our seven ECOLINE machines help us optimize the production processes to reduce our expenses and maximize our output quality. «

Billion Technology Ltd. uses two ecoTurn, three ecoMill V as well as two MILLTAP 700.



For those looking to effectively minimize downtime, the MILLTAP 700 is designed with you in mind. Its fast tool changer and dynamic axes serve as the perfect foundation for an impressive range of production requirements. And with the extensive options kits, the MILLTAP can be transformed into a high-performance 5-axis machining center, capable of up to 24,000 rpm. The standard-equipped MILLTAP also offers impressive features: 10,000 rpm. and a 15-station tool changer at an unbeatable price!



Even more efficient and flexible with the optional 4th / 5th axis – made by DMG MORI (DDR).



WH 2 | WH 3 workpiece handling. Greater production autonomy with short cycle times, a small footprint and high workpiece storage capacity.

ecoMill 635 V
ecoMill 1035 V
Compact and powerful with a 3D control



MILLTAP
Your partner for the most challenging production requirements



ECOLINE
ready for automation

Technical specifications

		ecoMill 50	ecoMill 70	ecoMill 635 V	ecoMill 1035 V	MILLTAP 700
Travel (X / Y / Z)	in.	19.7 / 17.7 / 15.7	29.5 / 23.6 / 20.5	25.0 / 20.1 / 18.1	40.7 / 22.0 / 20.1	27.6 / 16.5 / 15.0
Speed	rpm.	8,000 (10,000*)	12,000	8,000 (12,000*)	8,000 (12,000*)	10,000 / 10,000 high torque* / 24,000*
Torque (40 / 100% DC)	ft. / lbs.	61.2 / 42.0	61.2 / 42.0	61.2 / 42.0	61.2 / 42.0	9.2 / 5.9; 33.2 / 21.4 (max. 57.5)*; 8.9 / 5.9*
Drive power (40 / 100% DC)	hp.	17.4 / 12.1	17.4 / 12.1	17.4 / 12.1	17.4 / 12.1	9.0 / 6.0; 8.7 / 6.0 (max. 18.2)*; 8.0 / 5.4*
Tool stations		16 (32*)	32	20 (30*)	20 (30*)	15 (25*)
Rapid traverse	ipm.	944.9 / 944.9 / 944.9	944.9 / 944.9 / 944.9	1,181.1/1,181.1/1,181.1	1,181.1/1,181.1/1,181.1	2,362.2 / 2,362.2 / 2,362.2
Table load	lbs.	440.9	771.6	1,322.8	2,204.6	881.8 / 220.5**
NC swivel rotary table	Degrees	-5 / +110	-10 / +95	-	-	-100 / +120

* Optional / ** Value for MILLTAP 700 with integrated 4th / 5th axis

Sandvik Coromant tools:
for greater productivity!
Sandvik Coromant are compatible with the MILLTAP 700 from DMG MORI.



ECOLINE

HIGH-END CONTROLS AT ECOLINE PRICES

3D control technology for any requirement.

Make no compromises when it comes to the power and capabilities of your machine control: time is money. That is why ECOLINE offers the right 3D control technology with the fastest operating systems for every machine operator and production requirement. We deliver only the best hardware and software solutions to supplement your entire process chain - from the drawing to your finished workpiece.



SLIMline® with MAPPs IV
on a MITSUBISHI control

15" TFT display with
3D workpiece simulation

Memory: 50 MB (6 GB optional)

Programming: ISO & interactive
programming function

HELP button for quick assistance
during programming

available for ecoTurn 310, ecoTurn 450,
ecoMill 635 V and ecoMill 1035 V



SLIMline® with HEIDENHAIN
CNC PILOT 640 / TNC 620 control

15" TFT display with
3D workpiece simulation

Memory: 1.8 GB

Programming: DIN, clear text
programming / smart.Turn

Block processing time: 1.5 ms

DMG MORI SMARTkey®

not available for ecoTurn 650
and MILLTAP 700



SLIMline®

with the Operate 4.5 panel
on a SIEMENS 840D
solutionline control

15" TFT display with
3D workpiece simulation

Memory: 5 MB + 4 GB

Programming:
DIN, ShopMill / ShopTurn

Block processing time: 1.5 ms

HELP button for quick
assistance during programming

DMG MORI SMARTkey®



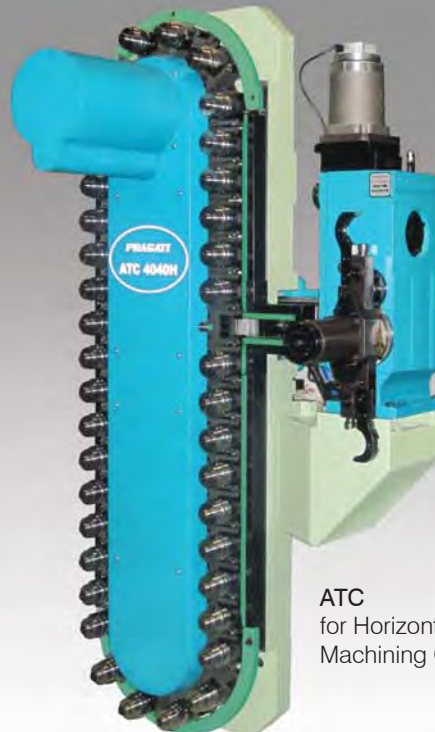
Servo Turret (STP)



Single Motor Servo Turret
(SMT)



Chain type ATC
for Vertical Machining Center



ATC
for Horizontal
Machining Center

PRAGATI

Partnering Machine Tool Builders - Worldwide

Pragati is a leading manufacturer of Tool Turrets and Automatic Tool Changers with a worldwide customer base. More than 46,000 Turrets and 20,000 ATC's in the field are a testimony of the quality, reliability and competitive prices of the products. Turrets and ATC's are available in different sizes to cater to the requirement of every machine tool builder.

PRAGATI

Pragati Automation Pvt. Ltd. #19 & 20, (Plot No. 467 - 469),
IV Phase, 12th Cross, Peenya Industrial Area, Bangalore - 560 058. INDIA.
Tel. : (+91-80) 2836-1543 Fax : (+91-80) 2836-1549.
E-mail : info@pragatiautomation.com URL : http://www.pragati-automation.com

N° 2 – 2014

- DMG MORI Systems: process-specific automation solutions
- Expertise in all areas of automation: machine-integrated automation, standard automation, flexible manufacturing cells and production lines
- Intelligent production lines with Industry 4.0

DMG MORI Systems



System solutions for
high-volume serial
production

More about the i50 production line on

PAGE 42



DMG MORI SYSTEMS

Analysis, consultation and implementation for all areas of automation.

SEGMENT 1

Machine-integrated automation



Rotary and linear storage

Many DMG MORI machines are optionally available with automation solutions already integrated. Example: **Rotary Pallet Pool (RPP)**: compact footprint and simple setup. Easy management via the machine control.

SEGMENT 2

Standard automation



Pallet or workpiece handling

Efficient robot or gantry solutions with additional modules (cleaning, measuring, brushing, etc.). Custom or plug-and-play solutions available.



Carrier Pallet Pool (CPP):

Simple installation and expandable for up to 8 machines with 2 setup stations.

Industry 4.0 –comprehensive system solutions.

— With **DMG MORI Systems**, we bring together unparalleled, comprehensive expertise to offer complete systems solutions. Our product portfolio includes machine-integrated automation, standard automation, flexible manufacturing cells and complete production line systems. The company's Managing Director emphasize, "We see ourselves as a service provider that develops and implements the optimal solution for each specific customer requirement." **DMG MORI Systems** is completely in-line with "Industry 4.0" trends through our advanced solutions for systematic networking of global process chains that maximize your production flexibility. "Our **production lines and flexible manufacturing cells** are an essential part of the intelligent factory environment because they benefit the **entire manufacturing process**," says Silvio Krüger.

For the Managing Director of **DMG MORI Systems**, the real benefit lies in the comprehensive, **meticulously coordinated use of technology**, machine tools and automation: "Our customers gain a major advantage through **quality integrated system solutions provided by a single source**. We are involved from the design concept of the system, throughout the technology integration phase as well as final turnkey project implementation. This **single-source advantage offered by DMG MORI Systems** guarantees that our customers can look to the future with absolute confidence in their productivity advantage."



Silvio Krüger
Managing Director
DMG MORI Systems



Dr. Bingyan Zhao
General Manager,
Manufacturing Automation
DMG MORI SEIKI Manufacturing USA

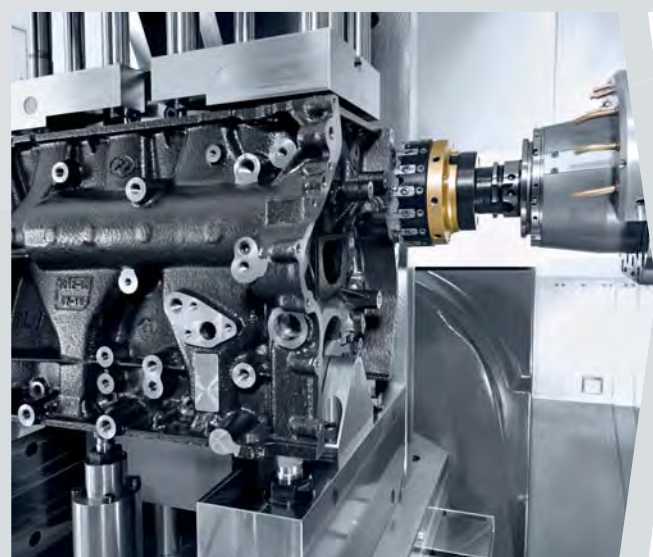
Our online amortization calculator instantly shows your potential cost savings when implementing our standard automation solutions.

Find out more about **DMG MORI Systems** and our wide range of automation solutions online:

→ www.dmgmori.com

Everything from one source!

We evaluate and coordinate a complete solution for your entire material flow and manufacturing process.




Technology





Machine


DMG MORI Systems worldwide.



- 5 locations in Germany, Japan, China and the United States
-  › Wernau and Hüfingen, Germany

 › Davis, CA, United States

 › Nara, Japan

 › Tianjing, China

Our 360° solution expertise – innovative project management for seamless and transparent implementation.

Production planning

› Process analysis
› Technology planning
› Machine layout
› Cycle time calculation
› Simulation

Production logistics

› Automation planning
› Material flow analysis
› Layout planning

Start-up support

› Training
› Process visualization
› Contingency planning
› Remote diagnosis

SEGMENT 3

Flexible manufacturing cells



Multi-process linking
Including gantry solutions, fixed/moving robots, and additional modules for multi-machine loading with optional supplemental operations integration.



Linear Pallet Pool (LPP)
Flexibly tailored to specific customer requirements.

SEGMENT 4

Production lines



Comprehensive solutions for serial production
Design and implementation of pallet, gantry and robot handling into a production line with a master computer system.



Automation



Peripherals

SEGMENT 2

Customer Stories



The integrated workpiece storage for parts up to 661.4 lbs. per drawer ensures safe and efficient delivery of blanks.



The raw and finished part grippers on the WH 25 handling robot are designed for parts weighing up to 55.1 lbs.



FAES COO Matthias Weibel (left) and Production Manager Daniel Beeler are impressed with the 50% faster cycle times.

FAES AG – Robot handling means no manual re-clamping.



FAES AG
Roosstrasse 49, CH-8832 Wollerau
info@faes.com, www.faes.com



FAES was founded over 100 years ago and today operates out of a state-of-the-art facility in Switzerland. Because the company makes no compromises when it comes to **precision, reliability and quality**, FAES has come to represent the very best in manufacturing. In addition to building machines for **cutting and winding of film**, FAES manufactures diverse **precision parts, assemblies and complete machines** for technology companies. With production process automation, FAES strives to offer customers Swiss quality at competitive prices. Recently, they acquired a high-performance NZX 2000 | 800SY2 turning center with a WH 25 handling robot for dynamic automation of small batches and quick parts loading. "With our latest investment, **productivity increased by almost 30%**," says COO Matthias Weibel.

The handling robot allows setup during machining and makes **unmanned production** possible. "On a milling machine, we would have to manually reclamp a part up to 4 times. Now, being able to **perform setup operations during machining** on the NZX, we can **execute these tasks in half the time**," says Daniel Beeler, Production Manager at FAES. For Beeler, it was clear that bar machining is significantly more efficient than milling. That is why the turning center has also been equipped with a short bar loader.



Sören Gaiser, Owner of Gaiser-Mechanik, is happy with their automation solutions: "we work night and day."



The DMU 50 with a WH 10 handling system enables Gaiser-Mechanik to deliver faster than ever.



The workpiece storage with 2 drawers offers ample space for longer unmanned production phases.

GAISER- MECHANIK GmbH– working night and day.

Gaiser-Mechanik GmbH
Taubenäckerweg 5, 72655 Altdorf, Germany
gaiser-mechanik@online.de



Gaiser-Mechanik GmbH of Altdorf, Germany has been a successful contract manufacturer in the metal cutting industry since 1985. This 16-employee company specializes in **complex aluminum components** for a wide range of industries, including **medical and automation technology**. Gaiser-Mechanik has produced high-quality products since 2009 with **CNC technology from DMG MORI** and since 2011 with automation solutions from DMG MORI Systems. **Two DMU 50 machines with WH 10 handling systems** have delivered Gaiser-Mechanik significant productivity gains outside of their conventional hours of operation. "Thanks to our automation upgrades, we have **produced more efficiently** than ever before over the last three years. This unique capability has motivated us to expand our automated processes further", says Sören Gaiser. In early 2014, the company increased its auto-

mated manufacturing to leverage even greater output potential. The **compact design** of the automated systems fit perfectly with Gaiser-Mechanik's shop floor logistics. Both automation systems are equipped with a **6-axis robot** that can reliably load and unload **up to 22.0 lbs. parts**. The workpiece storage, featuring two drawers, offers plenty of space for longer unmanned production runs. With the two handling systems Gaiser-Mechanik will be well positioned to deliver timely products and address anticipated growth in demand for years to come. Particularly advantageous, workpieces requiring long machining times can now be easily produced overnight through unmanned operation – in one setup and already inspected with an integrated measuring probe. Sören Gaiser sees great efficiency advantages and says, "We now work night and day."

SEGMENT 3

Customer Story



At the end of 2013, DMG MORI Systems installed a production cell at XYLEM consisting of 2 CTX beta 800 turning machines, 1 CTX beta 800 *linear* and a robot.



Two conveyor belts handle loading and unloading of the production cell. All other processes, including workpiece measuring, are carried out automatically, eliminating the need for final inspection.



The steady rest of the CTX beta 800 *linear* stabilizes the workpiece during subsequent groove and drill hole operations.

XYLEM – Complete machining with real-time quality control.



XYLEM
Utvägen 1, SE-361 80 Emmaboda
info.sverige@xyleminc.com, www.xyleminc.com

—Xylem (XYL) is a leading global water technology provider. The Flygt brand is one of the market-leading product brands owned by Xylem and throughout the last half century the Flygt brand has been one of the innovative leading products brand in the water technology business. The main Flygt production site is located in Sweden and was founded already in 1901. The state-of-the-art plant is the foundation for the company's high standard of product quality. XYLEM continues to stay ahead of the curve and most recently upgraded to an automation solution from DMG MORI Systems that includes 2 CTX beta 800 turning machines from GILDEMEISTER, 1 CTX beta 800 *linear* as well as a robot. Since 2013 XYLEM has been making shafts for waste water pumps in this stand-alone production cell – with exceptional results: loading and unloading on 2

conveyor belts with workpiece transfer via the robot to the machines for various production steps – roughing, turning, groove/borehole drilling, and finishing. Fredrik Gereborg, Project Manager at XYLEM, is highly pleased with the **cost savings**: "Not only does the production cell turn out fully **completed shaft parts**, but the integrated measuring system also evaluates each part and corrects measurements automatically and in real-time, **eliminating the need for final quality control.**"



SEGMENT 4

i 50 – production line for cylinder blocks

Five i 50 machines with automatic loading via a 2-arm gantry loader, cleaning station and workpiece conveyor.

- › Space between machines: 23.6 in.
 - › Distance between machine centers: 82.3 in.
- (Machine with gantry-type loader specification)

i 50 – new revolutionary design concept for flexible and compact serial production.

Fully automated machining process



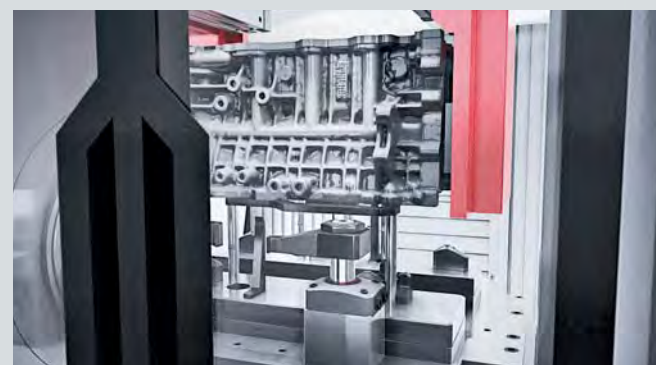
Blank part retrieval from the workpiece conveyor

After retrieving the blank part from the conveyor belt, the gantry loader unloads the finished workpiece from the first machine.



Gantry loader –

unloading of the cylinder block through the loading hatch.



Automatic clamping device –

after loading via the gantry system, the automatic clamping device secures the cylinder block.

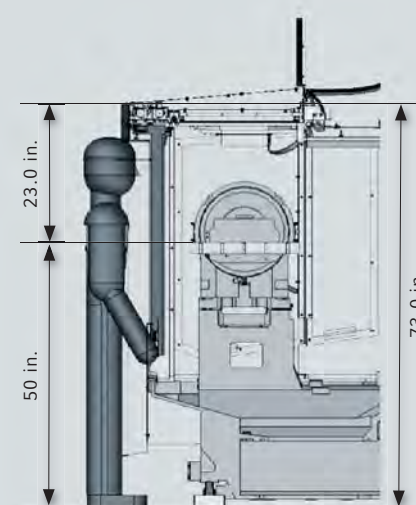
The optimal machine for production lines.

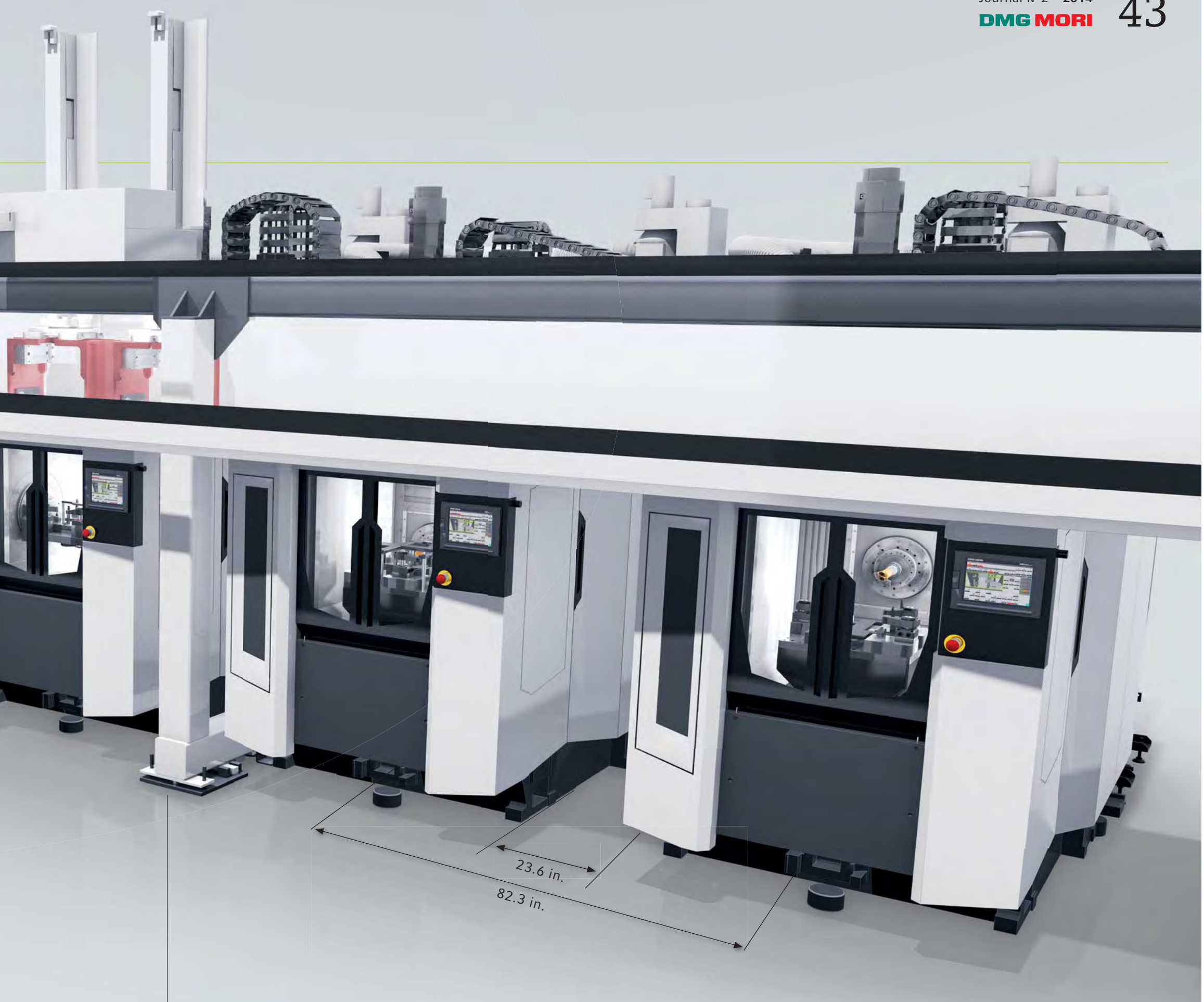
- › Compact horizontal machining center without a pallet changer
- › Ideal for the production of cylinder heads and cylinder blocks
- › Compact footprint, 58.7 in. machine width
(Machine with gantry-type loader specification)



Fast workpiece loading and unloading.

- › Short loading and unloading path of only 23.0 in. from the loading point (73.0 in.) to the upper pallet edge (50.0 in.) for **minimal idle time**





Horizontal drilling of the cylinder block –

After the A-axis table has been automatically tilted, the cylinder block is drilled.



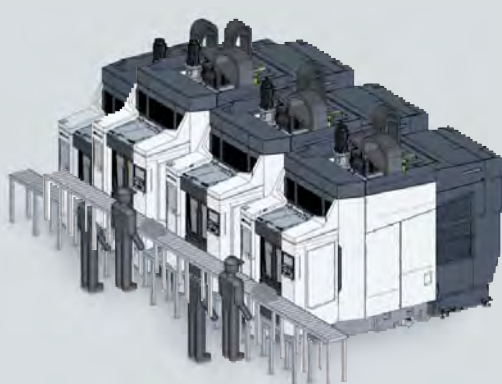
Cleaning station

The finished cylinder block is cleaned and placed on the conveyor belt.



Flexible workpiece transfer.

- › Task and customer-specific design of the machine enclosure
- › Various transfer methods for manual or automated workpiece handling



Manual transfer (roller band conveyor)



Please scan the QR code or visit our website
to watch the i50 automation video:
www.i50.dmgmori.com

PERFORMANCE PARTNER SIEMENS

Seamless robot integration – with SINUMERIK Integrate Run MyRobot.

With SINUMERIK, Siemens offers the ideal CNC equipment for machine tools in all major industries. Now, SINUMERIK also makes the seamless integration of robots into your production network possible.

Dr. Neuhauser, why was robot compatibility integrated into the SINUMERIK CNC and how does it benefit the user?

DR. NEUHAUSER ___ We are following the current trend in production automation. To make production highly flexible and completely automated, full integration of robots in the production flow and manufacturing environment is essential. With SINUMERIK Integrate Run My Robot, we can offer a solution that encompasses operation, programming and diagnosis of robots within SINUMERIK Operate. This allows simultaneous machine tool and robot

program execution on the same display in parallel channels as well as central monitoring and controlling. With SINUMERIK Operate, the user does not require additional training – they can remain focused on production. The first DMG MORI machines to debut Run MyRobot will be the NTX 1000 and the MILLTAP.

Is the robot trend part of the larger general movement towards IT integration with machine tools?

DR. NEUHAUSER ___ Yes, it is. Future production models are increasingly demanding intelligent solutions for higher productivity and efficiency. To address this move towards “Industry 4.0”, the SINUMERIK Integrate for Production product suite offers solutions for IT integration with manufacturing plants. Machines are able to communicate seamlessly with parent controls and guidance systems. PLM and MES systems can be easily linked as well, thanks to the comprehensive Siemens product portfolio. These proprietary competencies show that we are not a new player in IT integration solutions. With products like Transline for machine integration in the automotive industry, we have an established record of success in the market. This deep experience and our ever-evolving technology offerings have gone into the SINUMERIK 840D sl to make it the optimal solution for machine-integrated automation, standard automation, flexible manufacturing cells – and for your stand-alone machine as well.

You mentioned machining benefits with the SINUMERIK 840D sl. What are some of those benefits?

M. TOLKMITT ___ SINUMERIK 840D sl sets the benchmark in the CNC market. This not only applies to SINUMERIK Operate but also for all supported functions, including turning, milling and multitasking applications. For example, when it comes to mold making, the control offers superior efficiency through improved simulation as well as greater flexibility and ease-of-use for the operator. These advantages can be harnessed through our SINUMERIK MDynamic technology package for 3- and 5-axis milling applications, including HSC (high-speed cutting) milling.

The end result is unparalleled surface quality, precision, and speed through very simple, efficient operation: this unique combination can only be found on a SINUMERIK.



Dr. Robert Neuhauser, CEO Motion Control with Matthias Tolkmitt, Business Development, SINUMERIK

Visit us at
IMTS Chicago
Sept. 08 – 13, 2014
Booth E-5010



SINUMERIK Operate

The intuitive and uniform user interface for all technologies on your DMG MORI machine.

siemens.de/sinumerik

Clear layout, intuitive operation and many powerful new functions – the SINUMERIK® CNC user interface makes it easier than ever to operate your machine. By combining production steps setup and high-level programming on one interface, NC programming and

production planning is quick and efficient. Whether turning or milling operations – the look & feel is the same. And, with intuitive features like animated simulation and screenshots, you always have optimal support.



Answers for industry.

№ 2 – 2014

- DMG MORI Spindle Service
- Maximize productivity with DMG MORI Services
- Greater production efficiency with tool presetting
- Process optimization with DMG MORI Software Solutions
- Lower energy costs with GILDEMEISTER energy solutions

LifeCycle Services



LifeCycle Services – our expertise for your productivity.



Dr. Maurice Eschweiler
Board Member, Industrial Services
DMG MORI SEIKI AG



Kevin Bowers
General Manager,
President's Office & National Service
DMG MORI USA

“With products and services from DMG MORI LifeCycle Services, you receive maximum performance from your machine tools over their full service life.”

“Service has a significant impact on customers, not just on uptime, but also on satisfaction and loyalty. As such, we continually strive to optimize the service experience.”

DMG MORI LifeCycle Services – products and services for the entire service life of your machine. Our solutions include preventive maintenance to ensure **machine availability**, application training for more efficient operation, as well as high-precision tool presetting for **maximum productivity**. DMG MORI LifeCycle Services make sure that your machine runs reliably and produces the **highest quality workpieces** possible. Our service support also extends the service life of your DMG MORI machine and increases output production through **process optimization**. For an overview of everything that DMG MORI LifeCycle Services can offer you, please see our **Services and Accessories Catalog**.

As part of a large-scale benchmarking study by the research institute **Forschungsinstitut für Rationalisierung (FIR)** at the technical university **Westfälisch Technischen Hochschule (RWTH) in Aachen, Germany**, DMG MORI was rated as a **top performer in service and support** amongst over 100 participating companies. Evaluation points included **service quality, response time and customer satisfaction**. The decision was unanimous – **the professionalism of DMG MORI Services** is exemplary across all industries.

And the winner is ... DMG MORI!

We received the award for Top Performer in Service and won the "Lean Services 2014" benchmarking study.

FAST AND RELIABLE EXPERTISE

DMG MORI SPINDLE SERVICE REBUILD OR REPLACE.

With DMG MORI Spindle Service, each customer is our top priority to ensure minimal downtime so that your production can resume as quickly as possible. Trained service technicians at our Dallas facility will expertly rebuild and return your spindle, usually within about a week. Need one faster? We keep many replacement spindles on hand for immediate delivery. Whether spindle repair or replacement - DMG MORI gives you a range of options that only we can provide.

DMG MORI USA, Parts Center, Dallas, TX
Dedicated spindle area, 5 skilled technicians perform 200 spindles repairs and overhauls per year.

Spindle repairs

- › Repairs within a few working days
- › Replacement of all defective components with new original parts
- › Professional removal and installation of your spindle
- › Alignment and inspection

Spindle replacement service

- › Over 1,000 spindles in-stock worldwide
- › Minimal downtime through fast delivery
- › The choice is yours: new part or a completely reconditioned replacement part
- › Professional replacement of the damaged spindle
- › Alignment and inspection

SERVICE & SPARE PARTS

Service fact check by DMG MORI.

DMG MORI customers have high expectations when it comes to service. As a premium manufacturer of machine tools, we must also offer top support. This is why DMG MORI LifeCycle Services has highly qualified staff available 24/7 to offer customers exceptionally quick service support and unparalleled access to the widest available selection of spare parts. Customer satisfaction is our first priority.



Milling spindle repairs
DECKEL MAHO, Pfronten
Dedicated spindle service area for milling machines, continually expanded and adapted to customer needs. Currently, 11 employees perform about 1,100 repairs and overhauls per year.



Turning and milling spindle repairs
DMG MORI SEIKI CO., LTD., Iga
State-of-the-art spindle service area with 3 spindle repair specialists on staff dedicated solely to the repair and overhaul of defective spindles. In 2013, approx. 400 spindles were overhauled at this facility.



Worldwide service

145 national and international service and support centers with more than 2,500 certified technicians worldwide.



Fast service

Toll-free 24/7 Service Hotline for support when you need it. Approximately 60% of all issues are resolved over the phone.



Exclusive training expertise from the manufacturer

More than 200 highly qualified experts available to train your machine operators and maintenance staff.



Turning spindle repair
GRAZIANO, Tortona
GILDEMEISTER Italiana, Bergamo
Spindle repair for all Italian-made DMG MORI machines with technical expertise directly from the factory. Approx. 100 spindle repairs and overhauls per year.



Turning spindle repair
GILDEMEISTER Drehmaschinen, Bielefeld
Dedicated spindle service area with state-of-the-art capabilities and 5 specialists that overhaul and repair approx. 200 spindles per year.



Turning and milling spindle repair
MORI SEIKI GmbH, Wernau
Highly specialized spindle service department for MORI machines with 3 specialists repairing and overhauling approx. 150 spindles per year.



Exclusive spindle repairs
from KESSLER for DMG MORI
China, USA and Russia
Strong cooperation with high parts availability and over 100 specially trained service technicians worldwide.



Spare parts immediately available worldwide

7 Spare Parts Centers worldwide with over 95% spare parts availability.



Result: satisfied customers

Overall customer satisfaction: 1.9*

*Based on a scale of 1-6:
1 = very satisfied
6 = very unsatisfied

SPARE PARTS

DMG MORI Spare Parts – Global spare parts availability through local representatives.



We deliver quickly: all orders are **processed centrally** and replacement parts are shipped from the **closest Spare Parts Center**. DMG MORI utilizes a truly **global inventory network** – for fast delivery to your facility.

7 Spare Parts Centers for fast delivery.

**1 GERMANY**

Global Parts Center,
Geretsried

**2 JAPAN**

Global Parts Center,
Nara

**3 USA**

American Parts Center,
Dallas, TX

**4 RUSSIA**

Regional Parts Center,
Moscow

**5 INDIA**

Regional Parts Center,
Chennai

**6 THAILAND**

Regional Parts Center,
Ayutthaya

**7 CHINA**

Regional Parts Center,
Shanghai



Only original spare parts from DMG MORI can guarantee maximum production reliability.

HIGHLIGHTS

- Global logistics network with 7 Spare Parts Centers on 3 continents
- Over \$260 million USD inventory with **spare parts availability > 95%**
- More than 260,000** different parts in stock
- Original spare parts** directly from the manufacturer
- New and replacement parts available
- Many spare parts for model years 1970 and later**
- DIN ISO 9001 certified processes
- Order via our toll-free 24/7 Service Hotline

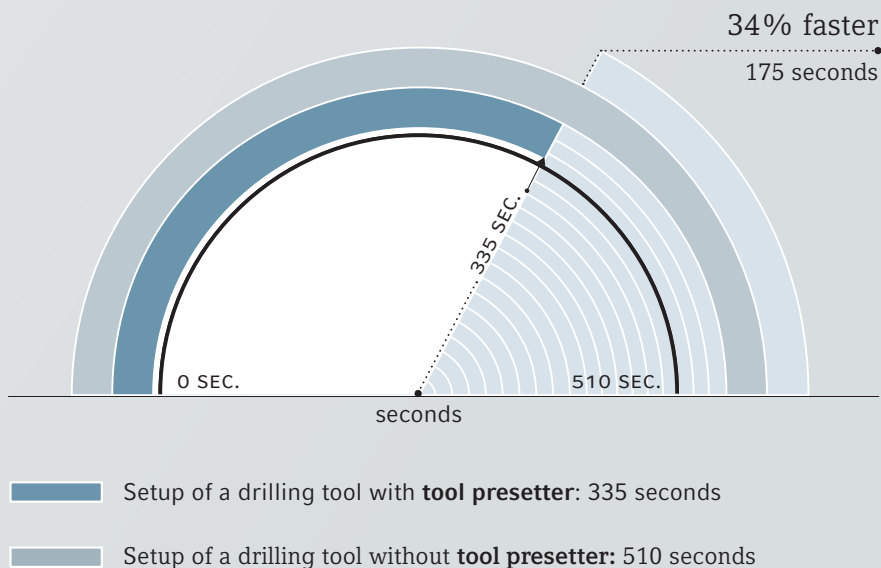
MEASURING AND TESTING

DMG MORI Microset – efficient and precise production with tool presetting.

Whether it is presetting, shrinking, balancing or testing and measuring - DMG MORI Microset offers the perfect solution for all tool sizes and machine environments. Increase the quality and precision of your workpieces with our expertise and comprehensive product portfolio.

External presetters – save time and money

An efficient presetting and measuring instrument offers maximum productivity and profitability. With improved tool preparation and early detection of damaged tools, the number of rejects is reduced significantly and parts quality is greatly improved. Presetting during machining also offers significant time savings.



Fast and error-free data transfer to the machine.



More information about
UNO automatic drive

ON PAGE 11

UNO 20|40 automatic drive

CONTACT

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DMG MORI Microset

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Presetter

- › Optimized setup time
- › Reduced machine downtime
- › Extended tool service life
- › Lower process costs
- › Ensured production quality
- › Greater process reliability



Production

- › Fast, error-free data transfer via post processor
- › Compatible with all control manufacturers
- › Extended tool service life

TRAINING

DMG MORI Academy: global training expertise from one source.

When it comes to **world-class training**, DMG MORI Academy is the first choice. Around the globe, our customers look for comprehensive training expertise that only the manufacturer can deliver. As the world's largest CNC academy, DMG MORI Academy not only trains our own service technicians, but also our customers in operations, programming and preventive maintenance. We pass our knowledge on to you - book your course today!

- › 11 training locations worldwide, **NEW – Wernau (Germany), Uljanovsk (Russia) under construction**
- › **Over 200 highly qualified experts worldwide for professional training of machine operators and technicians**
- › **50 training machines worth over > \$18 million USD**
- › **50 classrooms with more than 300 PCs / programming stations**
- › **Service training for maximum production reliability**



Customized training curriculums are the focus of DMG MORI Academy.



Quality testing for finished parts.

DMG MORI Equator 300

+

Inspection

- › Practical inspection of all workpieces during production
- › Flexible and custom utilization
- › Logging of all test results
- › Measuring and inspection is free of temperature influence

USED MACHINES

DMG MORI Used Machines: your used machine may be worth more than you think!

We will make you an offer that you cannot refuse! DMG MORI Used Machines buys back used machines at top market prices. If you decide to invest directly in a new DMG MORI machine, we will apply the value of your old machine towards payment for a new one.

- Your advantages
- › Fast and fair market value offer with a binding price quote
 - › Quick payment
 - › Professional disassembly and removal by our service team
 - › Attractive financing

Are you buying new CNC equipment?
DMG MORI Used Machines will take your trade-in, regardless of age and brand!



Robert Dolan
National Manager,
Used Machine Sales Division
DMG MORI USA
Office: (847) 387-1147
Cell: (630) 659-5950
Email: rdolan@dmgmori-usa.com

Let us put together a custom offer for you today

→ www.dmgmori.com

DMU 60 eVo *linear* Universal milling machine for 5-axis machining

Features
Siemens 840D solutionline 3D control, 60-station tool magazine, milling/turning package, internal coolant supply, combined tool measuring with a Blum LaserControl, PP 60 infrared measuring probe

Used machine
Model year: 2012
Product ID: 040446

**Interested in a quality
DMG MORI Used Machine?**
Contact us for more information about great used machine deals!



Not available in the Americas

SERVICE

DMG MORI Maintenance Kit. Original spare parts in one complete package!

Original spare parts in a convenient kit – save up to 30%! These maintenance kits are developed by our experts for specific machine types. They exclusively contain original spare parts, including wipers, filters and belts. Your advantage – everything in one kit at an unbeatable price.

AVAILABILITY

Tailor-made for DMG MORI machines.



Example: Maintenance kit for a DMC 105 V milling machine



Example: Maintenance kit for a CTX 600 linear turning machine

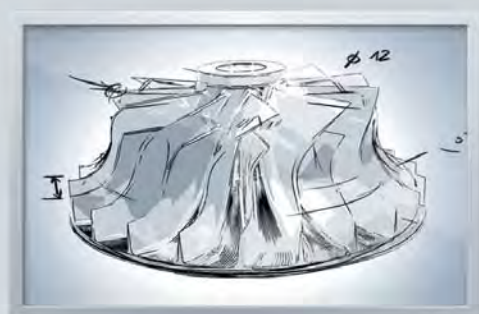
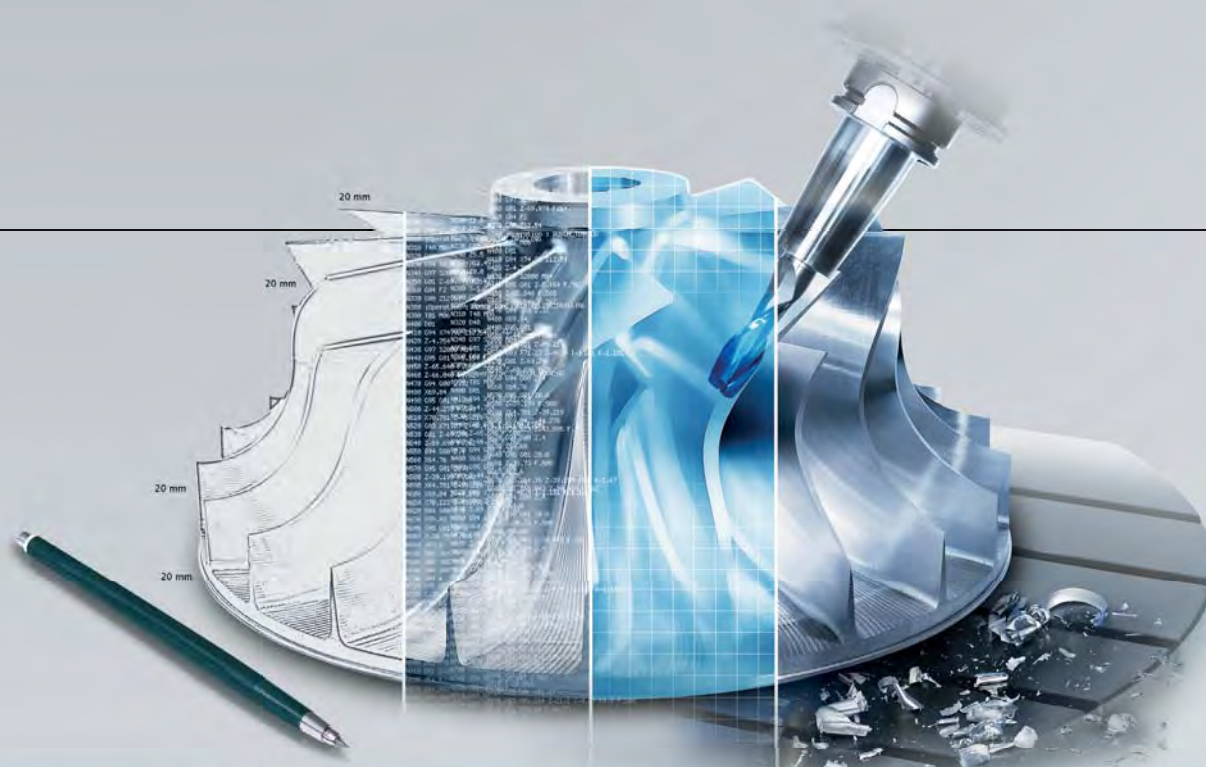
HIGHLIGHTS

- _ All essential wear parts in one kit
- _ Specifically tailored to the machine type
- _ Contents selected by our team of experts
- _ Original spare parts of the highest quality
- _ Save up to 30% with attractive package pricing
- _ Ensured machine availability and productivity
- _ Protection against costly repairs

up to
–30%
savings versus individual part orders

DMG PROCESS CHAIN

From the idea
to the finished
workpiece.



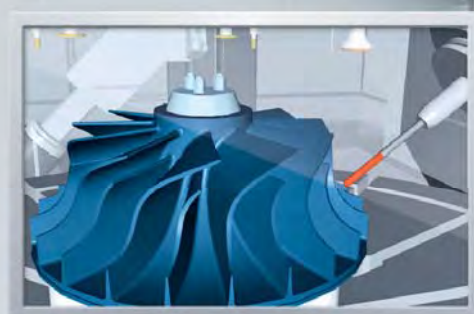
IDEA SIEMENS NX CAD

Your new workpiece has been sketched on paper and can now be modeled with full scalability in the SIEMENS NX CAD environment. Thanks to the latest CAD technology, you benefit from extremely fast model preparation.



PROGRAMING SIEMENS NX CAM

NX CAM supports all machining operations for your DMG MORI machine, including turning and milling. Program output via certified post processors guarantees NC paths feasibility.



1:1 SIMULATION DMG VIRTUAL MACHINE

After automatic transfer of the NC programs and all relevant NX data into DMG Virtual Machine, the complete integration of the control and the exact representation of the machine geometry and kinematics ensure an exact simulation. Potential collisions and programming errors are identified immediately.



PRODUCTION DMG MORI MACHINES

Now, nothing stands in the way of you realizing your idea on a DMG MORI machine - 100% collision-free production of workpieces on your DMG MORI machine. With SIEMENS and DMG MORI, your production is guaranteed to be even more economical, safe and fast!

Success Story



DMG Process Chain and ZSW: The NC programs are created with Siemens NX CAM and directly tested on a PC via DMG Virtual Machine.



Since ZSW has been using a DMU 60 monoBLOCK®, the company has also benefited from simultaneous 5-axis production technology.



The end plates ensure that the fuel cell stacks are compressed uniformly with a well-defined contact pressure over the entire surface area.

ZSW – intelligent fuel cell production

— On a DMU 60 monoBLOCK®, the Center for Solar Energy and Hydrogen Research of Baden-Württemberg, Germany (ZSW) mills complex components for fuel cells, including end plates that hold together complete fuel cell stacks. "Complex geometries are required for the end plates to achieve uniform compression over the entire area," said Frank Haussler, Deputy Head of Fuel Cells. The NC programs are created using the powerful Siemens NX 3D CAD / CAM system from DMG Process Chain. Program integrity and collision checks are then carried out with 1: 1 simulation on DMG Virtual Machine.

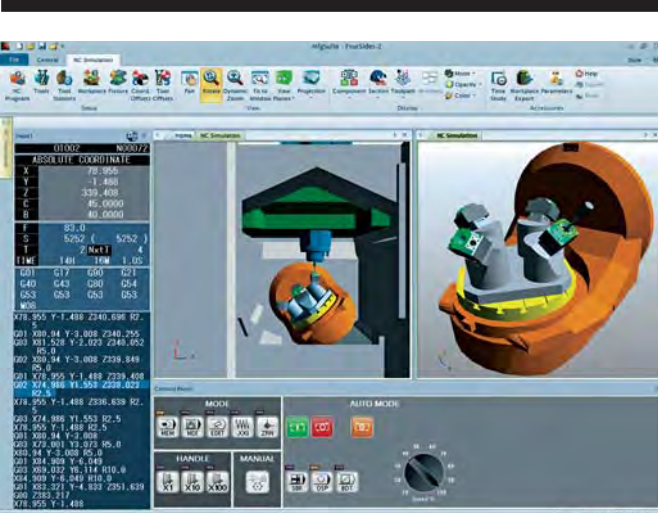
— Factory Manager George Zettisch was quickly impressed with DMG Process Chain: "Especially when it comes to process safety, we have virtually eliminated the need for test runs on the machine." The computer simulation immediately identifies potential collisions and adjusts the program accordingly. He can evaluate the

feasibility of producing a part in advance and see, for example, if a particular workpiece may protrude over the table: "On the machine I had to guess if the work area would be large enough. But, the virtual machine showed me that the flap of the tool changer would encroach on the part." DMG Virtual Machine, via a machine-specific PLC in the control, prevented a serious collision. Georg Zettisch sees great benefits in DMG Process Chain: "Just as our fuel cell manufacturing simulations produce very accurate results, DMG Virtual Machine can show us in advance on a PC, whether we will achieve the desired result. And, thanks to the high-performance CAD / CAM system, we can design and manufacture geometries that were previously not possible."

JOB PREPARATION

MORI MfgSuite

Simple programming

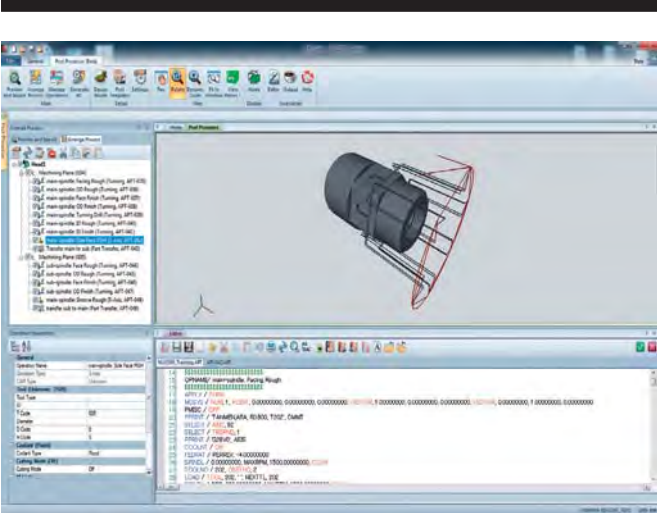


HIGHLIGHTS

- Exact machine models are provided by MORI SEIKI for seamless machine configuration
- Fully integrated MAPPS parameters
- Accurate virtual machine environment
- Full compatibility with MAPPS / MORI-AP tool data

MORI MfgSuite Post Processor

Seamless program output

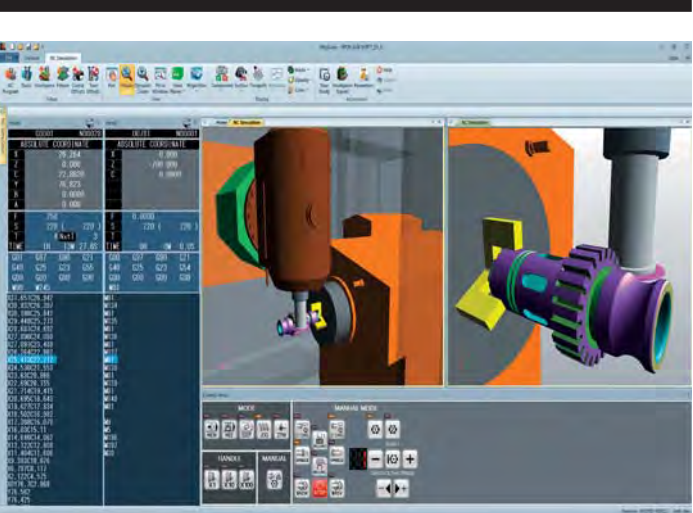


HIGHLIGHTS

- Universal compatibility with MORI-APT-CL-format that can be transferred to any MORI SEIKI machine
- Integrated standard templates for every MORI SEIKI machine
- Customizable post templates that can be tailored to the customer's specific NC program output

MORI MfgSuite NC Simulation

Powerful machine simulation



HIGHLIGHTS

- MORI MfgSuite is a windows-based software application that performs machining simulations with powerful and highly accurate collision detection
- Precise MORI SEIKI machine tool models come standard for easy configuration
- Seamless use of MAPPS parameters

JOB MONITORING

DMG MORI Messenger –

always an eye on your production!



Reduce downtime - increase productivity: the new DMG MORI Messenger gives you live access to detailed machine status information - anytime, anywhere. Through constant online monitoring, you can always keep an eye on your production and significantly reduce downtime.

» Now I have a clear overview of my operations and can accurately monitor and ensure optimal machine utilization. «



- Your advantages:**
- Real-time machine status information
 - Analysis of machine running time, downtime and errors

JOB MONITORING

DMG Service Agent – greater machine availability

through timely maintenance and servicing



DMG Service Agent is an intelligent maintenance system that increases the availability of your DMG machines. With DMG Service Agent, you will be informed in advance of required upcoming maintenance work and supported throughout the process. The actual machine run time is automatically read via the PLC and logged. This data is used to plan and execute required maintenance on the machine.

» Finally, my maintenance activities are proactive rather than simply reactive. «

- Your advantages:**
- Automatic scheduling of upcoming maintenance and service activities
 - Advance notice of required maintenance for wear parts



DMG MORI 15 / 30

Operate like DMG MORI and benefit from significant energy cost savings!

“DMG MORI will save over 2.0 million dollars per year in energy costs from 2015”
Follow our lead!

Through the DMG MORI 15–30 energy efficiency initiative, we plan to realize a 30% reduction in our energy costs company-wide by 2015. We have already implemented these energy-saving projects at eight of our locations – a milestone in our path to becoming an MDAX-listed energy efficient company.

A key tool in helping drive efficient energy consumption is the GILDEMEISTER energy monitor software, which regulates and optimizes energy use. With the GILDEMEISTER energy monitor, you receive detailed energy consumption analyses, clear load curve overviews and comprehensive reports. Energy efficiency is continuously monitored to ensure optimal use.



GILDEMEISTER ENERGY MONITOR



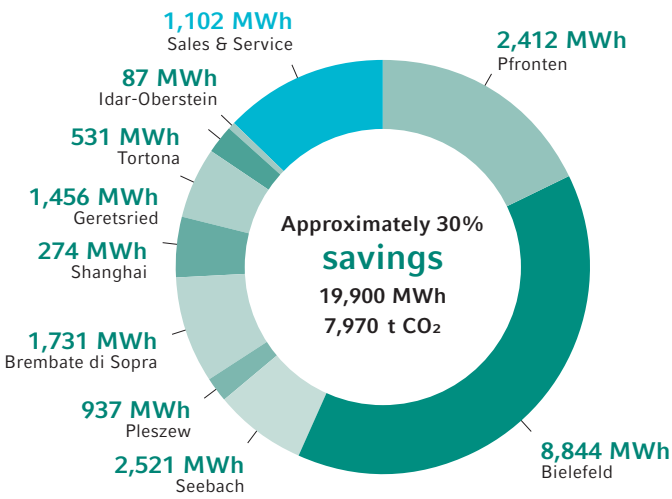
Detailed energy use analysis

Power load curve analysis

Organized management overview

GILDEMEISTER energy solutions

DMG MORI ENERGY GOALS FOR 2015 BY LOCATION



Total savings

	2012	2015	Savings
Energy use:	82,600 MWh	62,700 MWh	-19,900 MWh
Total emissions:	33,230 t CO ₂	25,250 t CO ₂	-7,970 t CO ₂

HIGHLIGHTS

- Save approximately 15% of total energy costs with the GILDEMEISTER energy monitor
- Detailed use analysis
- Energy reports at the click of a button
- Cost center allocation
- Seamless integration with existing energy systems

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