4 World Premieres in early 2015 –
an overview inside.

CELOS® from DMG MORI
4 new APPs and a new PC version.

ECOLINE
Highest functionality, best price! The complete ECOLINE Series.

DMG MORI Systems
Innovative automation through collaborative expertise.

DMG MORI

Nº 1 – 2015

journal

The DMG MORI magazine for customers around the world

Innovation secures the future

CELOS® from DMG MORI

4 new CELOS® APPs

NEW: version for PCs

→ *more on* **PAGE 6**

4 World Premieres in early 2015

→ *more on* **PAGE 5**

www.dmgmori.com

WELCOME TO DMG MORI USA INNOVATION DAYS!

DMG MORI USA Innovation Days in Chicago, May 19th – 22nd, 2015

Dear Sir or Madam,

Discover the power of innovation first-hand with live demonstrations of CELOS® and more than 30 advanced machines in new unified DMG MORI design. Come visit our remodeled 42,000 square-foot exhibition space, which is home to our biggest open house event in the U.S. Highlights include **2 U.S. Premieres and 4 new CELOS® APPs**.

We will showcase the newest technology, machinery, automation and customization solutions. In addition, we will offer over 20 educational technology seminars presented by industry experts throughout this four day event.

We cordially invite you to the DMG MORI Innovation Days in Chicago, and look forward to your visit!

For more information, event schedule and to register, please visit **www.dmgmori.com**

DMG MORI INNOVATION DAYS HIGHLIGHTS

_ **2 U.S. premieres: NRX 2000** and **DMU 65 monoBLOCK®** with direct drive rotary axes
_ **World premiere of new cell controller –** NHX 4000 II with RPP
_ **Welcome Wasino to DMG MORI –** World premiere of Wasino machine in the DMG product line
_ **4 new APPs for CELOS® –** From the idea to the finished product
_ **Additive manufacturing solutions on 2 machines –** LASERTEC 65 3D, LASERTEC 4300 3D
_ **NHX 2nd GENERATION horizontals live in operation –** built locally in Davis, California

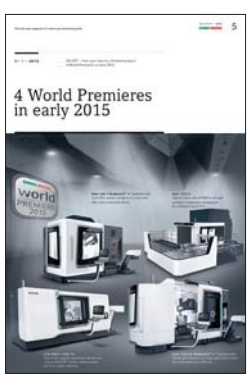
2 U.S. Premieres at Innovation Days

US PREMIERE
NRX 2000

US PREMIERE
DMU 65 monoBLOCK®

Journal 1 – 2015

All developments and highlights from DMG MORI in **6 sections:**

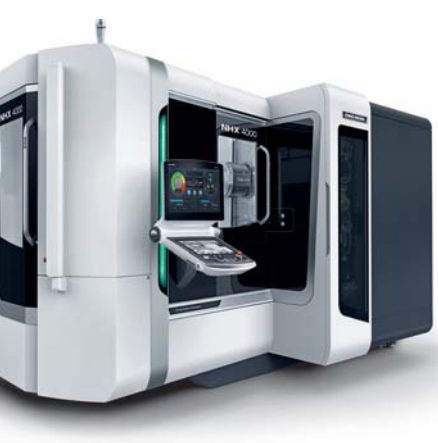


DMG MORI MANUFACTURING IN THE USA

Davis, California Factory Highlights

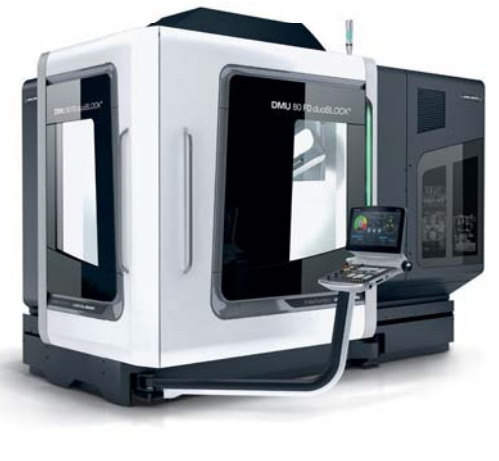
- The horizontal machining centers NHX 4000 and NHX 5000, plus the DMU 50 five-axis universal milling machines are produced here
- Our flagship system consists of 3 DMG MORI NHX 10000 horizontal machining centers and a robot-loaded linear pallet pool (LPP) with 60 pallets
- The company's LPS software 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

Also at Innovation Days



NHX 4000 2ND GENERATION

NLX 2500 | 700



DMU 80 FD DUOBLOCK®

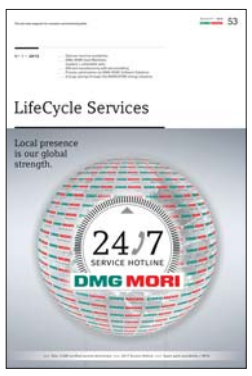
DMF 260 *linear*

PAGES 37 – 44 **ECOLINE**

Superior productivity at an unbeatable price! The complete ECOLINE Series.

PAGES 45 – 52 **DMG MORI Systems**

The right automation for every industry. New location in Wernau. 2 customer stories.



PAGES 53 – 60 **LifeCycle Services**

Increase machine availability. Process optimization with DMG MORI Software Solutions.

Nº 1 – 2015

4 World Premieres in early 2015

DMU 100 P duoBLOCK® 4TH GENERATION
Up to 30% greater workpiece accuracy with fully water-cooled feed drives.

DMC 270 U
High precision with ±0.0004 in. through intelligent temperature management for workpieces up to 9.9 tons.

CTX beta 1250 TC
Turn & mill complete machining with the new compactMASTER® turning / milling spindle for 6.7 in. larger work area.

DMC 125 FD duoBLOCK® 4TH GENERATION
Milling and turning in one setup with a Direct Drive table and speeds up to 500 rpm.

21.5″ MULTI-TOUCH MONITOR

for quick and easy operation.

CELOS® with Siemens

CELOS®

4 new APPs

available 04.01.2015

Simplified machine operation with comprehensive integration for your business.

CELOS® offers a uniform interface for all high-tech machines from DMG MORI. It features a large 21.5″ multi-touch monitor with **CELOS® APPs for comprehensive management, documentation and visualization of jobs, processes and machine data**. Your machine operations are simplified, standardized and automated. The latest CELOS®, featuring 16 APPs, will be available in April of 2015 with **4 new APPs**, which debuted at the DECKEL MAHO Open House in Pfronten, Germany. Also new this year is our PC version of CELOS®. Now you have optimal direct control over **your production planning**.

CELOS® uniquely integrates the machine with your company's infrastructure for a **seamlessly comprehensive digital production process**. CELOS® delivers 30% faster production by directly combining ERP/PPS and PDM. With CELOS®, DMG MORI is setting new standards and **leading the way for Industry 4.0**.

CELOS® with MAPPS

APP MENU

Just like a smartphone, the APP MENU offers direct access to all available programs, which are organized into 5 groups.

**APP MENU –
AN OVERVIEW OF THE 5 GROUPS:**

Production | Utilities | Support | Configuration | Machine views

NEW!

4 new APPs

2 for production and 2 for support

JOB SCHEDULER
Production planning for all machines.

MESSENGER
Receive live updates on the status of your operations.

SERVICE AGENT
Increased machine availability through an intelligent maintenance system.

TOOL HANDLING
Faster setup with "estimated / actual" comparisons to streamline magazine loading for sequential jobs.

NEW!

CELOS® for PCs

Plan and control your production processes in advance. With CELOS® for PCs, you can also comprehensively integrate other machines and equipment into one unified system.

MORE ON PAGES 8–9 →

MULTI-TOUCH USER INTERFACE

from CELOS® with the MAPPS panel on a MITSUBISHI control for exceptional user comfort and unique functionality.

"Machine operation is now much easier."

"Easy access via an external computer – with CELOS® I can bring my office to the machine."

"I have all the required information for a given job electronically available."

4 new CELOS® APPs

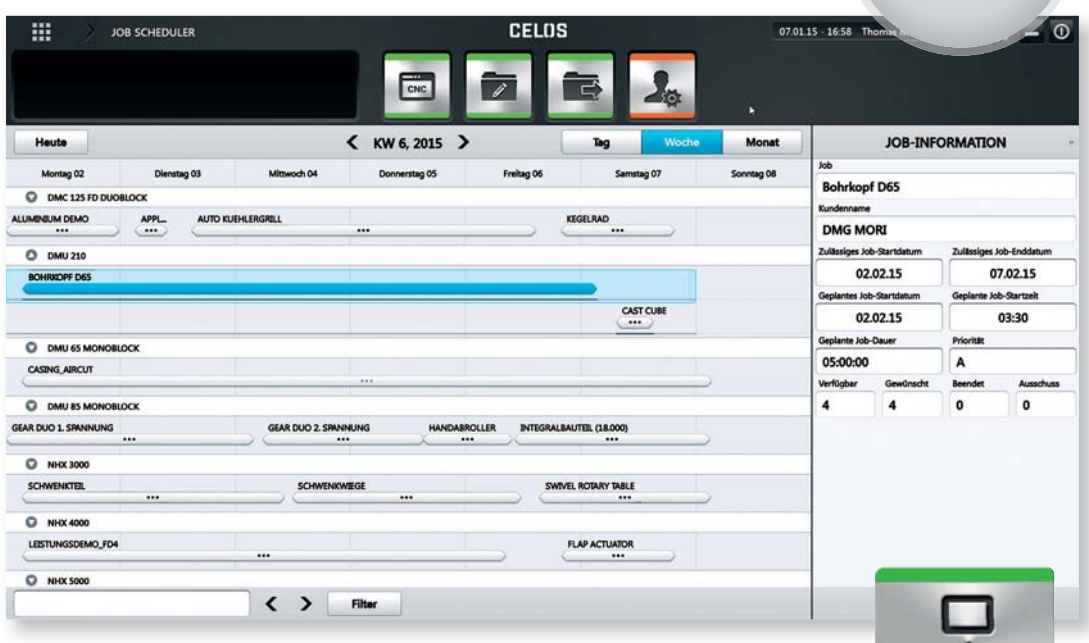
"Information and demos" for all available APPs: **www.dmgmori.com**

→ *more about Messenger* **ON PAGE 59**

JOB SCHEDULER

Production planning for all machines.

NEW!



- Setup, management and scheduling of individual jobs
- Coordination and transfer of jobs to the machine(s)
- Overview of the complete job status on all machines

MESSENGER

Keep a constant eye on your operations!

NEW!

- Better live status overview of all networked machines
- Detailed status and history information for each machine
- Evaluation of machine runtime, downtime and disruptions

CELOS® PC-Version

Comprehensive production planning on a PC with CELOS®.

Once you install the **CELOS® software on your PC, all CELOS® functions** are immediately at your disposal. With the new CELOS® for PCs, optimal planning and control of your production processes are available during **preparation**. With the **JOB MANAGER** APP, you can create jobs and coordinate them with your machines via the **JOB SCHEDULER** APP. Also, with the **MESSENGER** APP, you have a real-time comprehensive overview of all machines and production conditions.

CELOS® for PCs also allows you to integrate **most machines and peripherals into one comprehensive system**. Increase the availability of your machines with CELOS® for PCs by maintaining a comprehensive real-time overview of all job data for every machine.

CELOS® for PCs **combines planning and production** to give you a competitive advantage for future Industry 4.0 challenges.

CELOS® – also great for training and development

MORE ON PAGE 56 →

PLANNING ON A PC WITH A DIRECT CONNECTION TO THE MACHINE

NEW!

From a PC direct to the machine

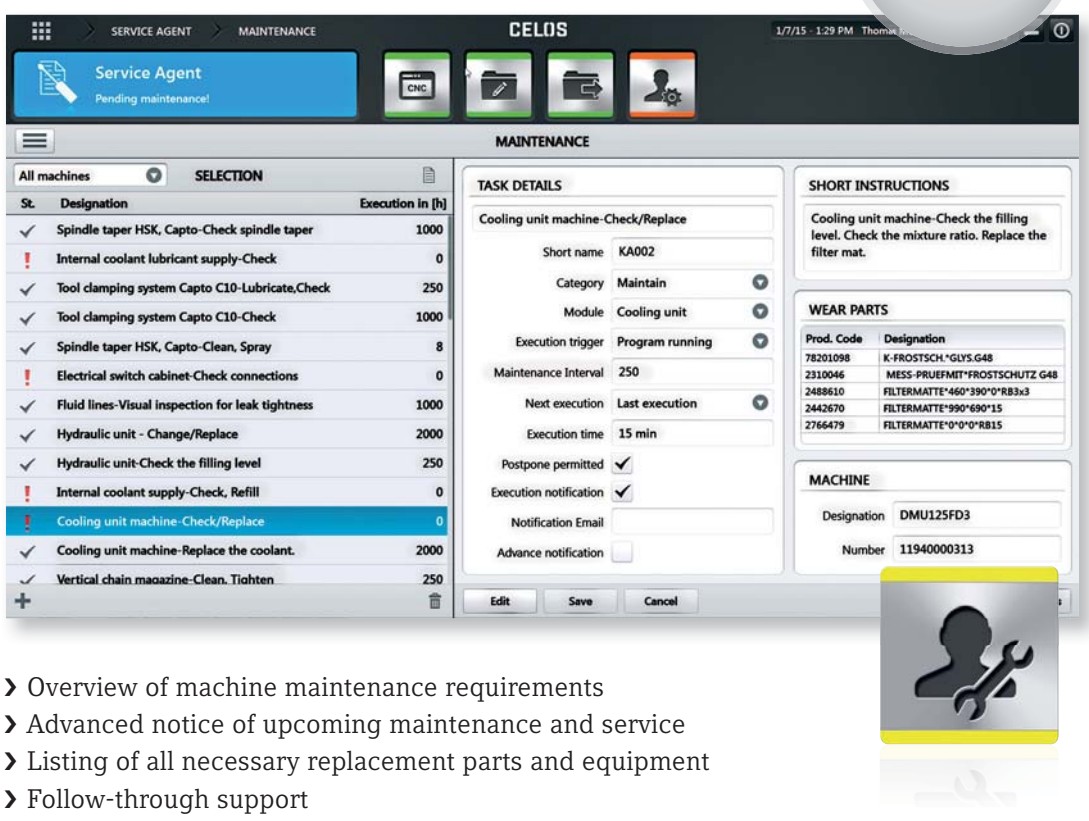
NLX 2500|700

DMU 65 monoBLOCK®

SERVICE AGENT

Greater machine availability through an intelligent maintenance system.

NEW!

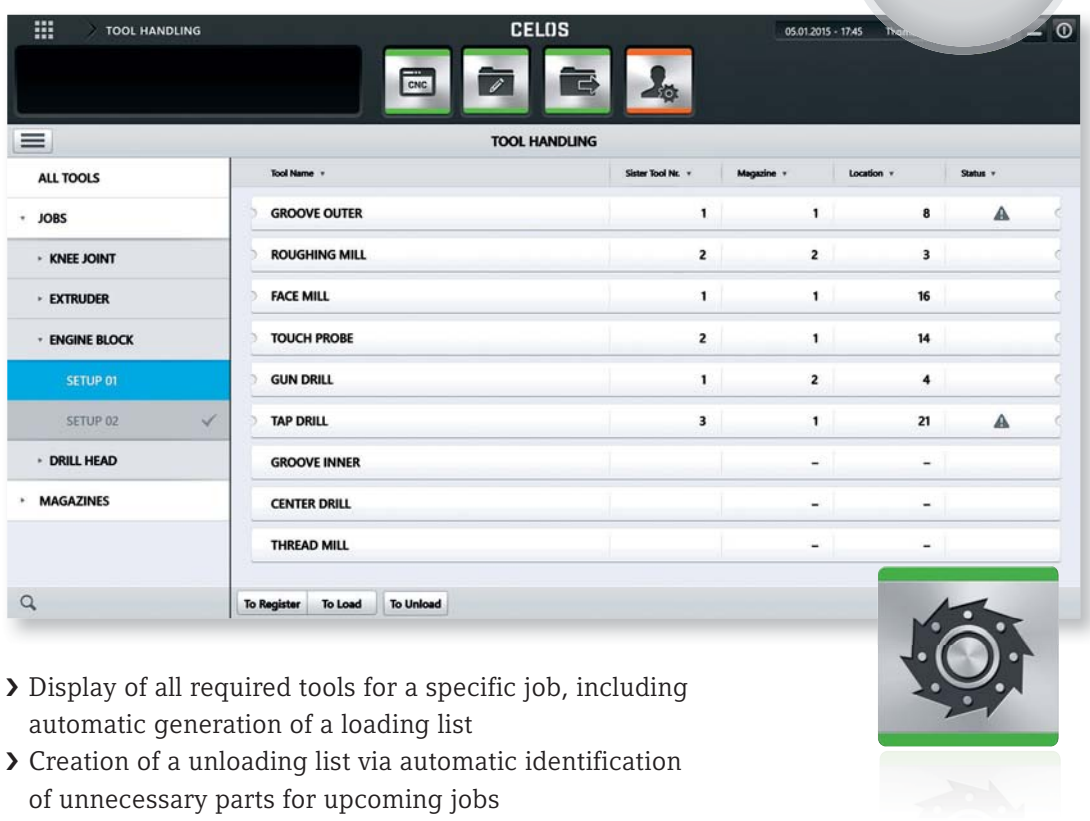


- Overview of machine maintenance requirements
- Advanced notice of upcoming maintenance and service
- Listing of all necessary replacement parts and equipment
- Follow-through support

TOOL HANDLING

Faster setup with "estimated / actual" comparisons to streamline magazine loading for sequential jobs.

NEW!



- Display of all required tools for a specific job, including automatic generation of a loading list
- Creation of a unloading list via automatic identification of unnecessary parts for upcoming jobs

Paul Horn GmbH

20% faster setup on our DMU eVo thanks to CELOS®.

CELOS® improves shop floor programming and setup for Horn.

Werner Fritz (right), Production Manager for Horn and Rainer Bergmann, Department Manager for Fixture Construction.

Paul Horn GmbH in Tübingen, Germany is the **leading specialist** for standardized and custom **high-performance tools and systems**. One fundamental element of an efficient production process is independent fixture manufacturing capabilities, which Horn recently upgraded with **4 high-tech DMU eVo Series machines**. Werner Fritz (right), Production Manager for Horn and Rainer Bergmann, Department Manager for Fixture Construction both agree that they made the right decision. This is particularly true in regards to CELOS®. With the available **APPs, CELOS® simplifies shop floor programming** and optimizes job setup. Thanks to CELOS®, this has led to improved machine runtimes and higher parts production.

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

August Strecker GmbH & Co. KG

Optimized job setup and execution with CELOS®.

CELOS® optimizes setup, reduces errors and significantly increase machine utilization.

Satisfied customers: Strecker CEO Bernd Stock and Specialist Dennis Schöwer.

August Strecker GmbH & Co. KG is one of the **leading manufacturers of butt-welding machines** for the wire and cable industry. Customer satisfaction is their top priority. In order to maintain the **highest level of quality and delivery expectations**, the company chose to expand their in-house **NC production** with the **CTX alpha 500**, featuring a Y-axis, bar loader and **CELOS®**. Strecker's CEO Bernd Stock is impressed: **"CELOS® saves us significant setup and programming time**. Along with the Y-axis and bar loader, we are able to completely machine a part through automation in one setup."

August Strecker GmbH & Co. KG
Jahnstraße 5, D-65549 Limburg
www.strecker-limburg.de

TURN & MILL COMPLETE MACHINING

CTX TC

CTX beta 1250 TC
with the new compactMASTER® turning/milling spindle.

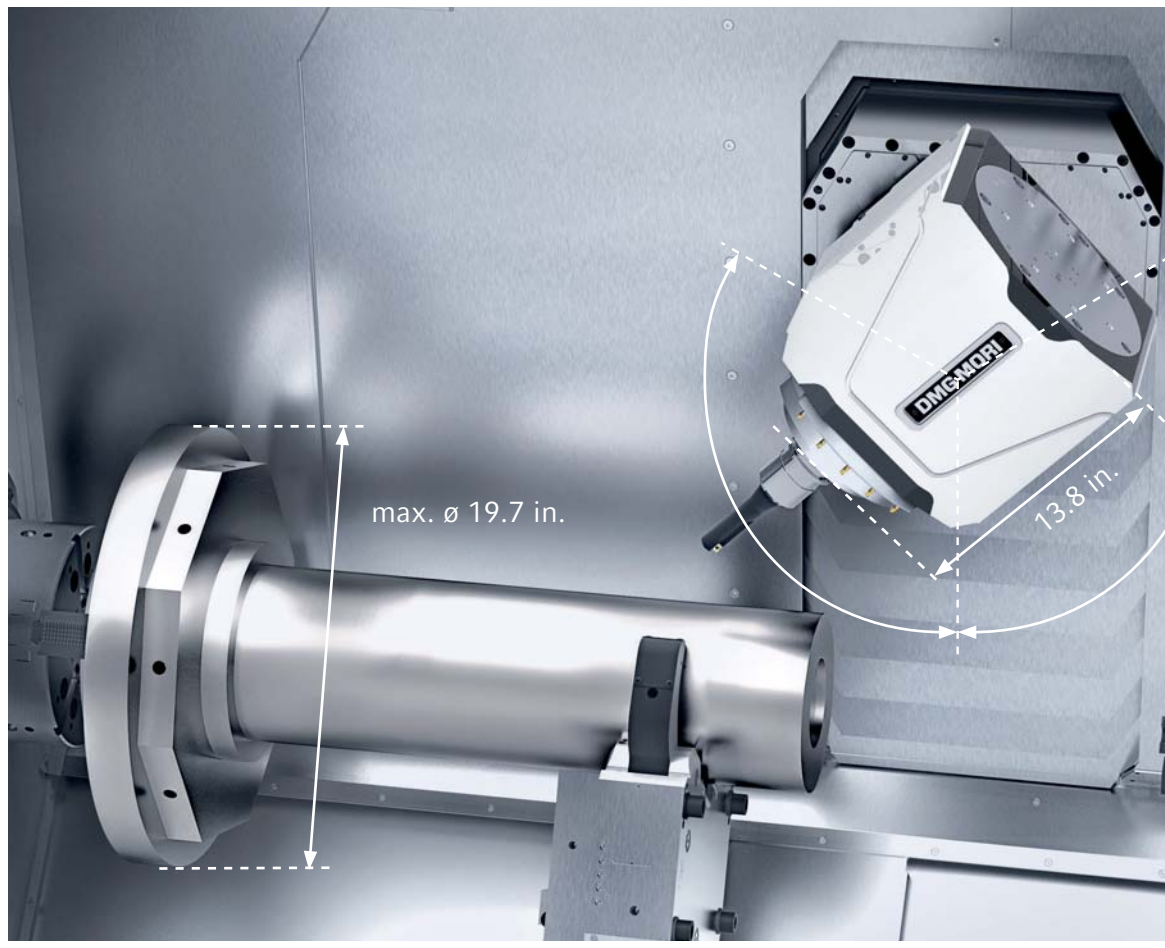
Following the success of the **CTX beta 800 TC**, the series is being expanded with the **CTX beta 1250 TC (2nd GENERATION)**. The CTX beta 1250 TC is designed for universal turning & milling operations with **max. ø 19.7 in. and 47.6 in. turning length workpieces**. Greater dynamics and precision come standard with up to **65% faster feed rates** (max. 1,968.5 ipm.) and a **direct path measuring system from MAGNESCALE**. The automatic tool changer has 80 tool slots for exceptional flexibility by traditional turning operations. A core element of the new CTX beta 1250 TC is the **Direct Drive B-axis**, featuring an **unrestricted swivel range of ±120°** and the new **compactMASTER® turning/milling** spindle. The spindle's compact design delivers **88.5 ft./lbs.** of torque **for lengths up to 13.8 in.**

compactMASTER®: ultra-compact HSK-A63 turning / milling spindle with 88.5 ft./lbs.

Linear drive* with 1 g acceleration and exceptionally consistent precision

Direct linear path measuring system from MAGNESCALE

Following the success of the CTX beta 800 TC, we are expanding the series with our new CTX beta 1250 TC.



CTX beta TC

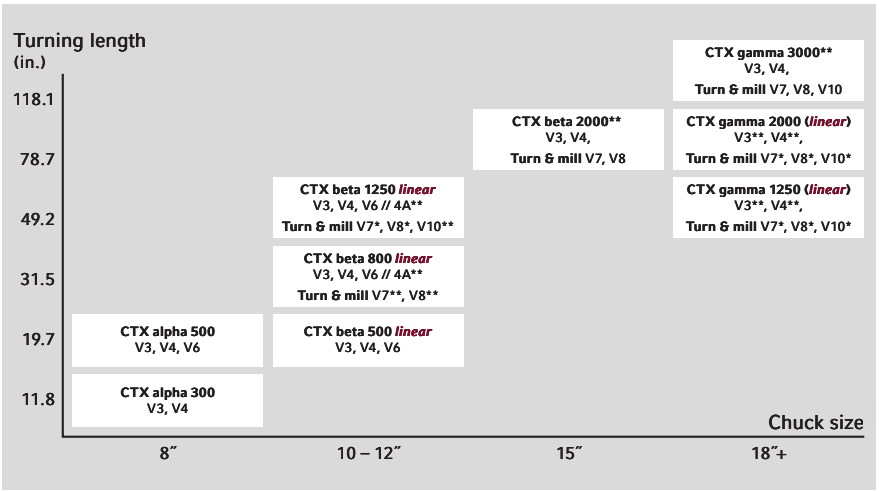
	CTX beta 800 TC	CTX beta 1250 TC
Turning diameter / Turning length	ø 19.7 / 31.5 in.	ø 19.7 / 47.6 in.
Footprint	91.5 ft.²	109.8 ft.²

CTX BETA 1250 TC HIGHLIGHTS

_ **compactMASTER®:** ultra-compact turning/milling spindle for a maximized work area with **20% greater torque, HSK-A63** (Capto* C6), 12,000 rpm., 29.5 hp., 88.5 ft./lbs., and high-speed operation with 20,000* rpm.
_ **6.7 in. more space with the new B-axis: 13.8 in. long workpieces for horizontal through drilling or turn out,** tools up to 15.7 in. long
_ **More dynamic with 65% greater feed rate,** max. 1,968.5 ipm. (X / Y / Z = 1,574.8 / 1,574.8 / 1,968.5 ipm.)
_ **1 g acceleration** and **2,362.2 ipm. feed** with a linear drive* in the Z-axis for the greatest consistent precision and a **5-year warranty** on all linear drives
_ **2.0 in. greater Y-stroke (9.8 in.)** for enhanced flexibility by eccentric machining
_ **Advanced 3D control technology: CELOS®** from DMG MORI with a 21.5″ ERGO*line*® panel on a SIEMENS control
_ **5-axis simultaneous machining** (in combination with technology cycles*) via the B-axis with Direct Drive technology

*Optional

9 machines with 40 expansion options – from universal turning to turning & milling.



*Linear drive optional, ** Not available with linear drive

Turning: V3 (MC) = driven tools; V4 (Y) = driven tools and Y-axis;
V6 (SY) = driven tools, Y-axis and counter spindle;
4A = 2 turrets, incl. driven tools and 2 Y-axes

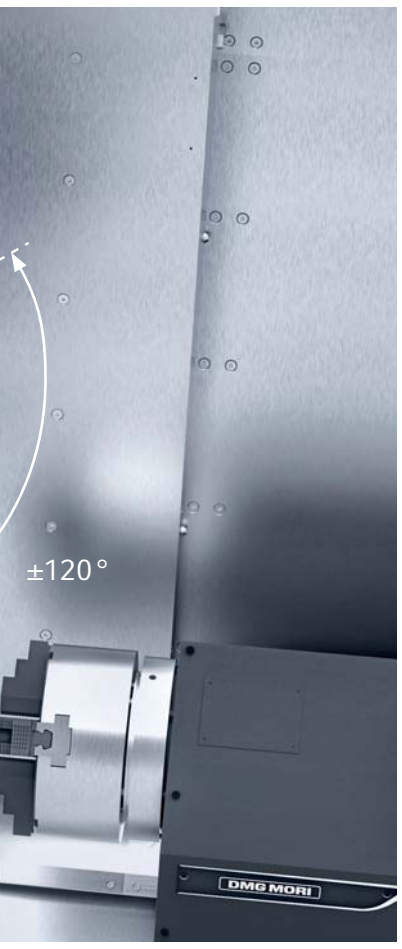
Turning / milling: V7 (T) = turning / milling spindle and tailstock; **V8 (S)** = turning / milling spindle and counter spindle; **V10 (SZM)** = turning / milling spindle, counter spindle and lower turret

CTX beta 1250 TC –
The expanded 2nd GENERATION CTX TC machines for workpieces up to ø 19.7 in. and 47.6 in. turning lengths on a 109.8 ft.² footprint

ø 5.5 × 19.5 in.

Chain wheel / Machine construction
Material: 42CrMo4
Production time: 35 min.

TECHNICAL DATA
max. turning length: 47.6 in.; max. workpiece diameter: 19.7 in.; Y-stroke: ±4.9 in.; ISM 76 main spindle with 5,000 rpm.; tailstock; optional 6-sided complete machining via the main spindle with up to 567.9 ft./lbs. and the counter spindle with max. 6,000 rpm. or 265.5 ft./lbs.



6.1 × 4.3 × 30.3 i n.

Guide vane / Energy technology
Material: X13Cr12Ni2W1V-5
Production time: 180 min.

linear DRIVE
5-year warranty

TURN & MILL COMPLETE MACHINING

NTX

NTX 1000 – Production turning with a 2nd toolholder.

2 tools operating simultaneously for maximum productivity.

Bar machining of complex workpieces up to ø 2.6 in., 2.0 in. (standard); max. ø 7.9 in. chucks.

5-axis simultaneous machining of complex workpieces through Direct Drive (DDM® technology) in the B-axis

Synchronous machining with B-axis and lower 10-slot turret (optional)

Up to 10 driven tools on the BMT® turret (optional) with up to 10,000 rpm.

NTX 1000
Bar machining of complex workpieces up to ø 2.6 in., 2.0 in. (standard)

NTX 1000 HIGHLIGHTS

_ **Direct Drive** (DDM® technology) in the B-axis for **5-axis simultaneous machining** of complex workpieces for medical, tool making, aerospace and automotive: **±120° swivel range** in the B-axis and 100 rpm. rapid traverse
_ **Capto C5 turning/milling spindle** with up to 20,000 rpm., 12,000 rpm. (standard)
_ **Bar machining** of complex workpieces up to **ø 2.6 in.,** 2.0 in. (standard); **chucks up to ø 7.9 in.**
_ Large work area for **workpieces up to 31.5 in. in length** and **ø 16.9 in. in diameter**

"Compact footprint: 111.9 ft.² "

ø 2.4 in.

Hip joint socket / Medical
Material: Titanium
Production time: 7 min., 30 sec.

ø 3.5 × 4.2 in.

Toolholder / Tooling
Material: 1.2343 (X37CrMoV5-1)
Production time: 15 min.

TECHNICAL DATA
travel (X / Y / Z): 17.9 / 4.1 / 31.5 in.; turning length (max.): 31.5 in.; bar capacity: ø 2.0 in. (ø 2.6 in.*); speed (b-axis spindle): 12,000 rpm.

* Machine with 38 tool slots, incl. chip conveyor; Image: double chain configuration for 76 tools

EROFIO S.A. – Portugal

EROFIO CEO Manuel Novo: "We are achieving unprecedented precision and performance with less energy through modern 5-axis technology from DMG MORI."

Comprehensive success with 4th GENERATION duoBLOCK®

EROFIO S.A., located in Portuguese Batalha, was founded in 1993 and has since grown to 125 employees. The company's core competency is the **development and production of injection molding tools** for the **automotive industry.** With their sister company, EROFIO ATLÂNTICO, they create samples for larger orders or as part of a bigger project.

For machining expertise, EROFIO has been partnering with **DMG MORI** since 1996 – most recently by purchasing vertical machining centers. Since the turn of the century, EROFIO has invested in **5-axis technology from DECKEL MAHO**. Today, 9 of their **14 machines** offer 5-axis precision machining capabilities.

Of particular note is the **DMU 80 P duoBLOCK® 4th GENERATION** universal milling machine. EROFIO CEO Manuel Novo is particularly impressed with its capabilities: "We are exceeding all prior benchmarks for **precision** and **performance** – and we are reducing our energy costs at the same time." Additionally, the **large swivel range of the B-axis** greatly improves flexibility.

As far as the impact of 5-axis technology on EROFIO's production, Manuel Novo explains: **"The capabilities of the DMG MORI machines have delivered a significant advantage that allows us to realize double digit growth, year over year."** In order to sustain this positive growth rate going forward, EROFIO will soon be bringing a large DMU 270 P gantry milling center online – for a new dimension in their manufacturing services.

EROFIO S.A.
Rua do Pinhal n.° 200, Jardoeira,
2440-373 Batalha, Leiria, Portugal
geral@erofio.pt, www.erofio.pt

DMU 100 P duoBLOCK® DMC 125 FD duoBLOCK® 4th GENERATION – 30% greater precision, performance and efficiency.

After the groundbreaking success of the recently introduced duoBLOCK® 4th GENERATION machines, we debuted three additional versions at this year's Pfronten Open House.

Superior milling performance characterizes the **DMU 100 P duoBLOCK®,** making it ideal for **both powerful heavy-duty jobs as well as precision all-round applications**. The sturdy construction and intelligent temperature management delivers 30% greater precision (vs. prior models). Even the **new DMC 125 U and DMC 125 FD duoBLOCK® (with pallet changer) benefit from these enhanced sturdiness characteristics.**

They also feature an automatic pallet changer for run-time parallel setup that **reduces downtime** and delivers sustained optimal production. With a relentless **focus on efficiency**, the DMC 125 FD duoBLOCK® features advanced **milling and turning technology** that makes complete machining possible on one machine. The duoBLOCK® design concept also offers many custom solutions for a wide range of applications, including spindles for **heavy-duty** production - like the **powerMASTER® 1000**, featuring 737.6 ft./lbs. of torque at 9,000 rpm. or the gear spindle (available April 2015) with up to 958.8 ft./lbs. at 8,000 rpm.

DMU 100 P duoBLOCK®
4th GENERATION

DMC 125 FD duoBLOCK®
4th GENERATION

26.0 × 31.5 × 31.5 in.

Drill head / Energy
Material: 21CrNiMo2 (1.6523)
Production time: 20 hrs., 30 min.

TECHNICAL DATA
travel (X / Y / Z): 39.4 / 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: 95.8 ft./lbs.; workpiece size: ø 43.3 × 63.0 in.; workpiece weight: 4,850.2 lbs.; tool magazine: 40 (63 / 123) slots

ø 37.4 × 15.7 in.

Fan disk / Aerospace
Material: Titanium (Ti6Al4V)
Production time: 38 hrs.

powerMASTER® 1000 –
with a 10,000-hour or 18-month warranty,
737.6 ft./lbs. of torque and 9,000 rpm.

78% greater torque with the new
5X torqueMASTER® – a gear spindle
with 8,000 rpm., 958.8 ft./lbs. and
49.6 hp. (available Q4 / 2015)

PORTAL 5-AXIS MILLING

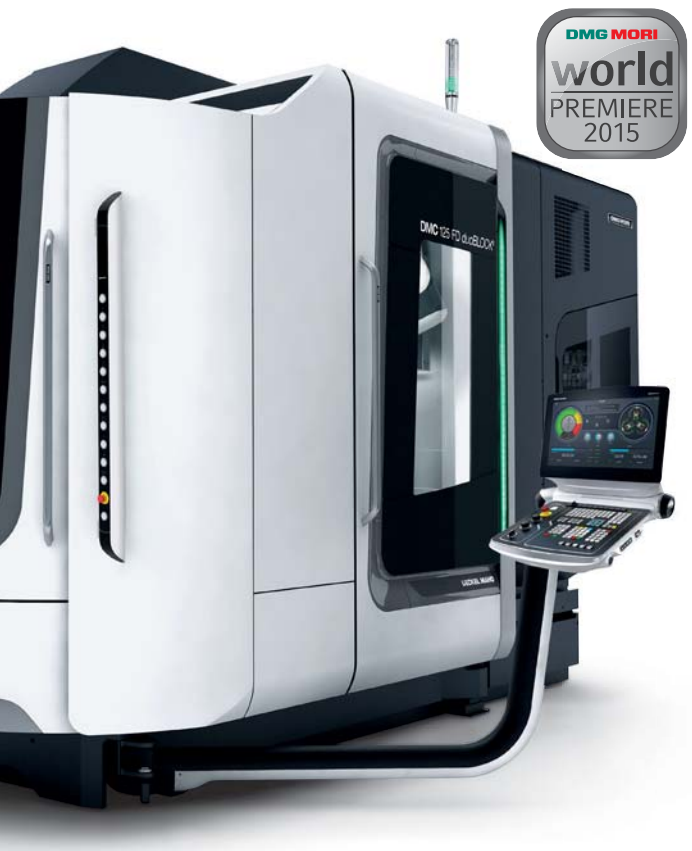
DMC 270 U
with a pallet changer for highly productive large-part machining (up to 9.9 tons).

Highly productive machining with the powerMASTER® 1000 motor spindle, featuring 737.6 ft./lbs. and 103.3 hp.

The 5-axis machine, with a highly stable gantry design, delivers **maximum precision and dynamics**. A **fast, compact pallet changer** combined with the high flexibility of the machine provides unmatched efficiency. **Pallet loads up to 9.9 tons, setup during production, custom automation options** as well as **easy access** to work areas, setup stations and maintenance components also make this machine stand out while unprecedented sturdiness and temperature control ensure top precision.

duoBLOCK® 4TH GENERATION HIGHLIGHTS

- **Performance:** up to 30% greater sturdiness for maximum performance
- **Efficient:** up to 30% energy savings with intelligent needs-based components
- **Maximum flexibility** and fast production with the **new B-axis**, featuring 20% more sturdiness and an integrated cable-drag assembly
- Quick and intelligent wheel magazine with **0.5 second tool changing** and up to 453 tools on a compact footprint



TECHNICAL DATA
travel (X / Y / Z): 49.2 / 49.2 / 39.4 in.; rapid traverse: 2,362.2 / 2,362.2 / 2,362.2 ipm.; spindle speed: 10,000 rpm.; power: 59.0 hp.; torque: 212.4 ft./lbs.; workpiece size: 49.2 × 63.0 in.; workpiece weight: 4,409.2 lbs.; tool magazine: 63 (123 / 183 / 243) slots

DMC 270 U
Highly precise with ±0.0005 in. through intelligent temperature management

DMC 270 U HIGHLIGHTS

- Large work area for workpieces up to **ø 118.1 × 63.0 in. & 19,841.6 lbs.**
- **50% greater dynamics** via new drive technology in the NC rotary table
- **Wheel magazine comes standard** for setup during production (min. 2 wheels)
- **B-axis** with an improved interference contour and internal cable drag as well as a 250° swivel range
- **High precision through optimized temperature stability**
- **3-point support**

ø 100.8 × 29.5 in.

Bevel gear / Machine construction
Material: 18CrNiMo-6
Production time: 25 hrs.

TECHNICAL DATA
travel (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: ø 118.1 × 63.0 in.; workpiece weight: 19,841.6 lbs.; tool magazine: 63 (123 / 183 / 243) slots

DMG MORI HIGH-TECH COMPONENTS

Christian Thönes
Board Member
DMG MORI SEIKI AG
Managing Director for Production
& Technology Development

Dr. Naoshi Takayama
Board of Directors
DMG MORI SEIKI CO., LTD
Senior Executive Managing
Director for Quality Assurance

First Quality from DMG MORI.

The high quality and reliability of our products and services is the cornerstone of DMG MORI. With uniform global standards and targeted action steps, DMG MORI guarantees maximum quality for all customers.

What does quality mean for DMG MORI?

CHRISTIAN THÖNES ___ Quality has always been very important at DMG MORI. We have made it our goal to be an innovation leader by setting a high benchmark for quality in the industry. We are strongly focused on customer value and ensuring that they experience only the best product performance and service support from DMG MORI.

NAOSHI TAKAYAMA ___ The very high reliability and durability of our products are the result of our comprehensive understanding of quality. And now with our partnership, both companies can combined their long-standing stringent quality management systems to deliver the best of both organizations for a level of quality that far exceeds ISO 9001 standards.

"First Quality" – what does this mean in the context of understanding quality?

CHRISTIAN THÖNES ___ Through the use of forward-looking "First Quality" standards, we can now better avoid errors through advanced detection and correction. For example, extended prototype testing in our new demo centers replicate the toughest conditions. And, every machine must undergo a 100-hour run test before delivery. In development, we focus on the robustness of our products. Our industry-leading 10,000-hour extended warranty on new speedMASTER or powerMASTER® spindles as well as our impressive 5-year warranty on linear direct drives shows how confident we are in our products.

NAOSHI TAKAYAMA ___ "First Quality" standards were jointly developed with our suppliers, who employ the same stringent requirements. This means that we only partner with the best expert suppliers. Our clients directly benefit from a collaborative supplier development experience. One example of this is the MAGNESCALE high-precision magnetic path measuring system, which is available on both DMG and MORI SEIKI machines.

FIRST QUALITY STANDS FOR ...

_ **Greater availability,** even under extreme conditions, through wear-free linear drives (5-year warranty), MAGNESCALE precision magnetic path measuring system with high oil and condensation resistance
_ **Maximum reliability** thanks to robust components including new DMG MORI spindles that feature a 10,000-hour warranty (max. 18 months)
_ **High value retention** through durable surfaces designed for demanding production
_ **100-hour quality run test** in accordance with enhanced DMG MORI Best Practice Methods (BPM)

Linear drive
5-year warranty.

NEW: CTX beta 800 *linear* WITH A LINEAR DRIVE (STANDARD)

_ Shortest idling due to high jolt and 1 g acceleration: **fast positioning**, even for short distances - **ideal for grooves and recesses**
_ **Highest rigidity = greatest continuous accuracy** and surface finish quality: constant positioning by elimination of drive train elasticity – **ideal for hard turning**
_ **Low maintenance requirements and lifecycle cost: no mechanical transmission parts, no wear and a 5-year warranty – ideal for all production**

more on the CTX beta 800 linear + customer story
ON PAGE 30 →

Over 15,000 linear motors in operation.

Since 1999, linear drives have been successfully used in DMG MORI machines. Linear drives are now available in **46 models** across 12 machine series.

New milling spindles from DMG MORI
10,000-hour warranty*.

_ Large spindle bearings for greater longevity
_ Optimally sealed to eliminate potential coolant contamination
_ Spindle cooling to mitigate temperature influence

speedMASTER
#40 universal milling spindle

Comes standard on 2nd GENERATION NHX Series machines; available in 2015 for monoBLOCK®, NVX, DMC V, DMU.

MORE ON PAGE 34 →

compactMASTER®
#40 turning/milling spindle

Comes standard on 2nd GENERATION CTX beta TC Series machines.

MORE ON PAGE 10 →

DMG MORI FIRST QUALITY

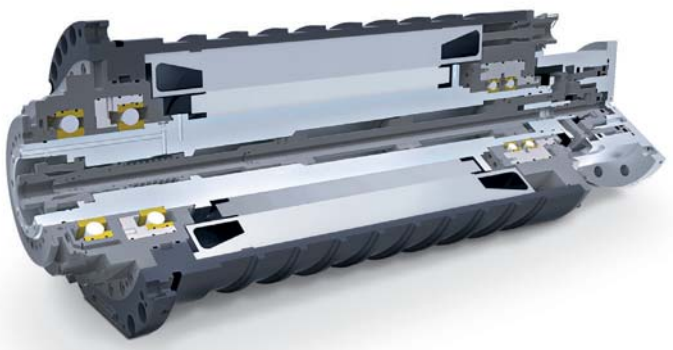
100-hour quality run test – we know how you work and that's why our machines must meet the highest quality standards!

DMG MORI FIRST QUALITY

› Machine testing under real production conditions
› 100-hour quality run test with strict quality criteria that simulate realistic workshop conditions
› Greatest performance and availability

linear DRIVE

_ Greatest dynamics and consistent precision
_ 5-year warranty



speedMASTER with oil-cooled stator and tool clamp featuring constant clamping strength for up to 500,000,000 cycles.

powerMASTER®
#50 universal milling spindle

Optional on all 4th GENERATION duoBLOCK®, DMU / DMC 270 and NHX 6300 machines.

* Max. 18 months

MAGNETIC FOR MAXIMUM PRECISION

Magnescale

SPEED X PRECISION

_ Robust construction
_ Resistant to oil and condensation
_ High impact resistance
_ High vibration resistance
_ Same coefficient of expansion as steel

Now at Wernau: MR sensor adjustment accuracy on a microscope within 0.00009 in.

MAGNESCALE in Isehara, Japan.

Greatest precision through a magnetic measuring system with 0.000004 in.

MAGNESCALE, a DMG MORI company, has more than 45 years experience in the development and manufacturing of high-precision length and angle measuring systems for the machine tool and semi-conductor industries.

MAGNESCALE Co. Ltd. has locations in Isehara, Japan and Iga, Japan as well as Wernau, Germany. The company specializes in ultra-precision length and angle measuring systems that uniquely incorporate magnetic division. In addition to their **0.000004 in. resolution and atomic pm range**, the MAGNESCALE systems also are known for their **exceptional reliability** - even under the most extreme environmental conditions. The company has existing **production facilities** in I**sehara and Iga, Japan as well as a NEW location in Wernau, Germany,** for high-performance measuring technology in European markets.

The magnetic measurement systems from MAGNESCALE are based on magnetic storage technology used in tape recorders. Similar to an optical measurement system that perceives changes in light intensity on a grid, the head of the magnetic measurement system detects the magnetic field strength of a magnetic division. This technology is also **impervious to harsh environmental conditions**, including moisture, oil, dust and vibration. This ensures a **highly accurate sensor position** and tool control.

SR27A / SR67A Series*

Complete magnetic length measuring system with a slim (SR27A) or robust (SR67A) design.

RS97 Series*

Complete magnetic angle measuring system with an open design for restrictive installation conditions.

RU97 Series*

Complete magnetic measuring system with storage. Ideally suited for integration into rotary tables and tilting axes.

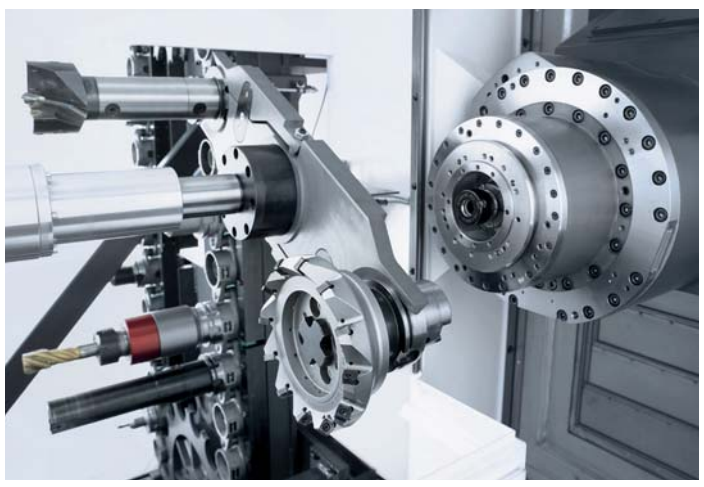
DK800S Series

For applications in automated quality control on production and assembly lines.
Measuring ranges: 0.2 in. to 8.1 in.
Precision: ± 0.00005 in.
Life cycle: up to 90,000,000 strokes

DRIVE-CLiQ

* MAGNESCALE complete measuring systems with the Siemens DRIVE-CLiQ interface for unmatched precision and reliability.

18-hour geometric check for the machine and spindles.

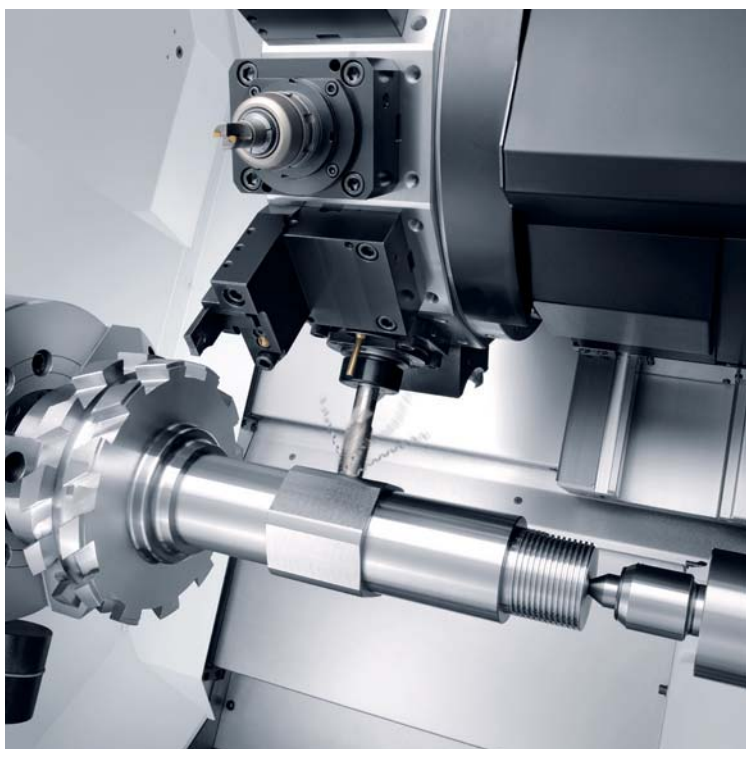


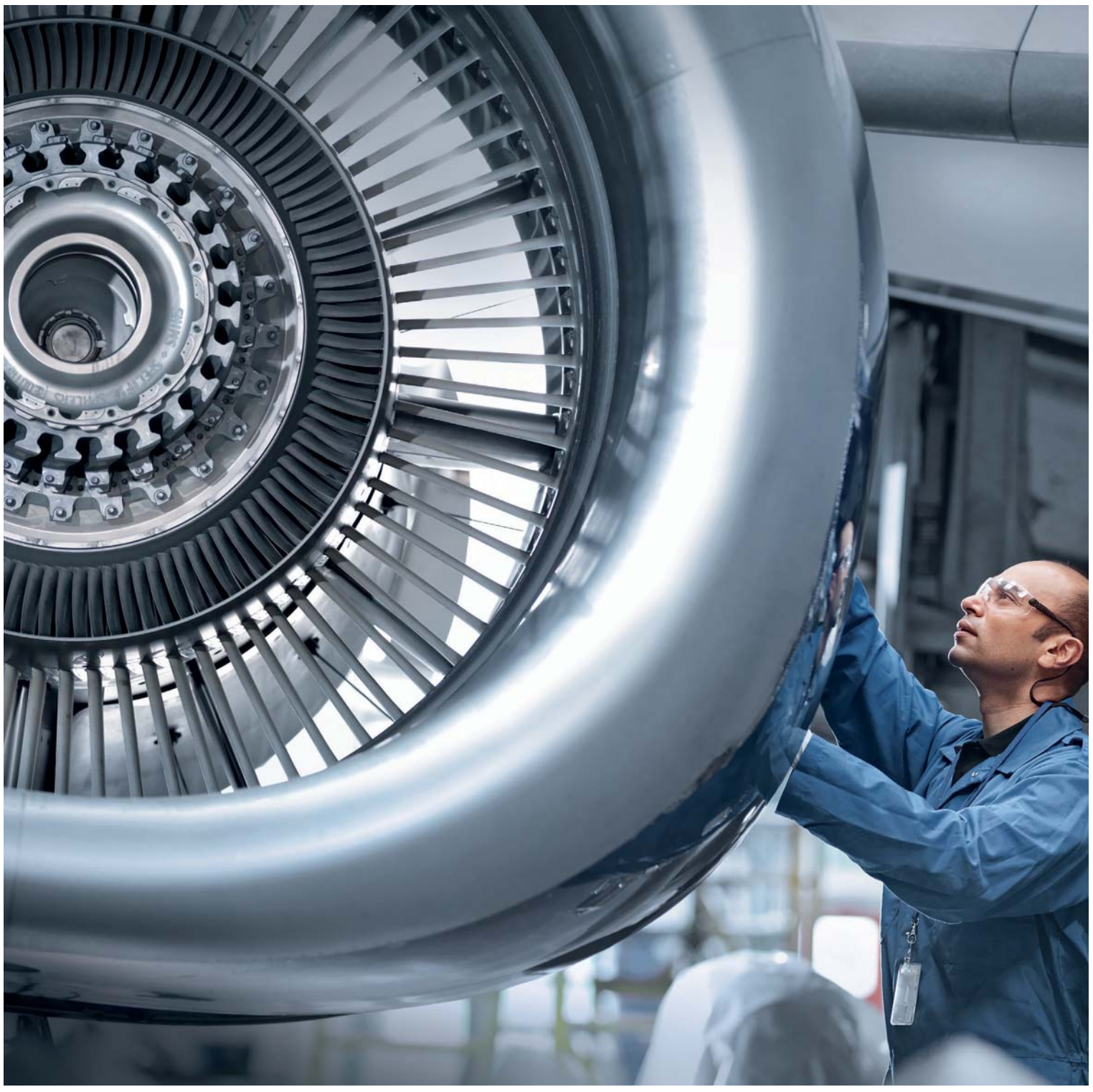
33-hour functional test of all components – for example, tool changing.

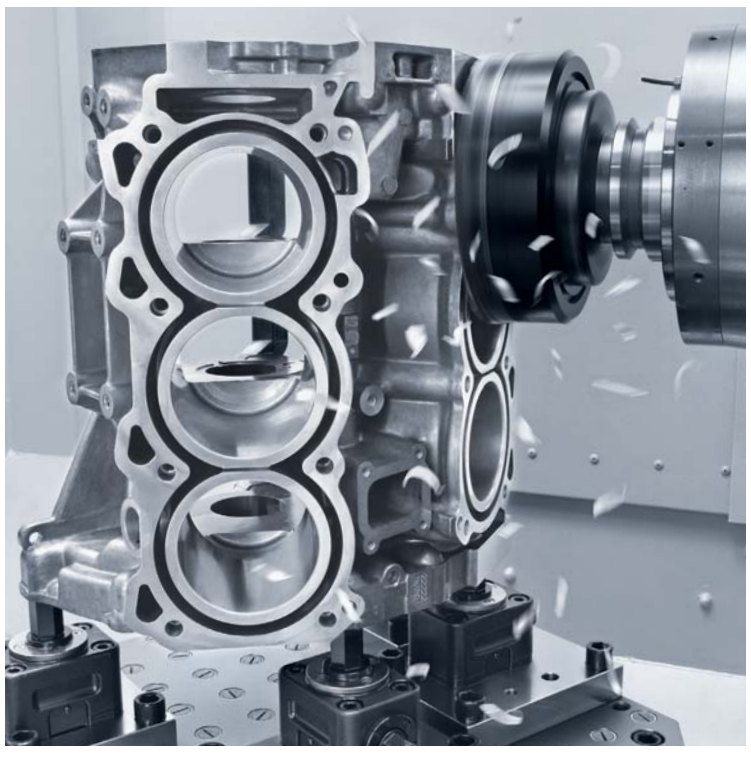
52-hour endurance test, including turning production.

Nº 1 – 2015

Technologies & customer stories







GLOBAL TECHNOLOGY EXPERTISE

77 Technology Centers worldwide

Over 500 DMG MORI machines produced around the world!

Technology expertise with global presence –
The entire DMG MORI portfolio of products and services is available via our global network of 69 offices and 8 Technology Centers, including **15 locations with** highly trained specialists qualified to develop **tailored industry solutions** for you.

15 locations for custom industry solutions.

Aerospace
Excellence Center

1 LOCATION
DECKEL MAHO PFRONTEN GMBH

› **Highlights**
_ **Worldwide technology support**
_ **Industry-specific solutions** for aerospace
_ **Turnkey processes development** for complex workpieces and challenging materials

› **monoBLOCK®, eVo, FD duoBLOCK®, Gantry, CTX TC, NTX, ULTRASONIC, LASERTEC**

5-axis
Excellence Center

5 LOCATIONS WORLDWIDE
PFRONTEN, TORONTO, CHICAGO, IGA, TOKYO

› **Highlights**
_ **Local 5-axis expertise** from the global market leader
_ **Global presence** with experienced product managers and process chain application engineers
_ **Comprehensive 5-axis product portfolio**
_ Support for technology upgrades, complex feasibility studies and custom solutions

› **DMU, NMV, monoBLOCK®, eVo, HSC, DMF, duoBLOCK®, Gantry, DIXI, DMC H *linear*, NMH**

XXL
Excellence Center

1 LOCATION
DECKEL MAHO PFRONTEN GMBH

› **Highlights**
_ **Doubled output** of DMU 600 P gantry machines
_ **Ideal manufacturing conditions:** two foundations with complex static and crane manufacturing in a fully climate controlled facility (±33.8° F)
_ **Expert team of 190 employees** specializing in development, assembly, as well as marketing and application technology

› **DMU/C Gantry** for workpieces up to 44.8 tons and X-travels up to 19.7 ft.

Die & Mold
Excellence Center

2 LOCATIONS WORLDWIDE
GERETSRIED (HSC CENTER), NARA (MOLD LABORATORY)

› **Highlights**
_ **Comprehensive solutions for tool and mold making**
_ The complete modern **HSC technology process chain LIVE** on display
_ Technology seminars and training courses for our customers

› **HSC, DMU, DMF, DMC V, NMV, NVX, NVD**
_ High-speed cutting, unmatched precision and the best surface quality

DMG MORI Global Headquarters in Winterthur

DMG MORI Global Headquarters in Tokyo

SAUER Lasertec Technology Center in Pfronten; 5 Academy Technology Centers in Bielefeld, Seebach, Stuttgart, Pfronten and Geretsried

Production turning
Competence Center

1 LOCATION
GILDEMEISTER ITALIANA S.P.A. (BERGAMO)

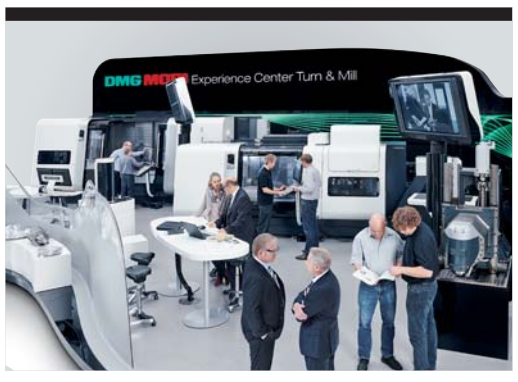
› **Highlights**
_ **Over 45 years experience in automated turning**
_ **50 application engineers** for technology and production time studies

› **SPRINT (*linear*)**
_ Automated turning, short and long turning

› **SPRINT 50 / 65**
_ Bar machining with up to 3 turrets

› **GM / GMC**
_ Multi-spindle automated turning

Turning & Milling
Experience Center



8 LOCATIONS WORLDIWDE
BIELEFELD, STUTTGART, WERNAU, PARIS, TORTONA, SHANGHAI, IGA, TOKYO

› **Highlights**
_ **LIVE demonstrations** with the customer's workpiece
_ **Technology development** tailored to customer needs
_ DMG Process Chain and **exclusive DMG MORI Technology Cycles**

› **CTX TC, CTX TC 4A, NT & NTX**
_ 5-axis universal turning with a B-axis
_ 5-axis production turning with a B-axis and 2nd toolholder

ULTRASONIC
Excellence Center

3 LOCATIONS WORLDWIDE
STIPSHAUSEN, TOKYO, CHICAGO

› **Highlights**
_ **Over 30 years of experience** with the machining of hard/brittle challenging materials
_ **Expert application technology team:** feasibility studies, process development & optimization, complete turnkey solutions
_ **Over 600 ULTRASONIC machines delivered worldwide**
_ **ULTRASONIC technology seminars**

› **ULTRASONIC 2nd GENERATION:**
_ Grinding, milling and drilling of advanced materials with reduced process forces

LASERTEC
Excellence Center

3 LOCATIONS WORLDWIDE
PFRONTEN, TOKYO, CHICAGO

› **Highlights**
_ **Over 25 years of experience** with precision laser machining
_ **Application technology expertise:** customer training & support, feasibility studies, complete turnkey solutions
_ **Over 600 LASERTEC machines delivered worldwide**
_ **LASERTEC technology seminars**

› **5 LASERTEC technology areas:**
_ Shape, PrecisionTool, FineCutting, PowerDrill, 3D / Additive Manufacturing

AEROSPACE

TAKE OFF WITH
ADVANCED TECHNOLOGY!

Aerospace Excellence Center in Pfronten

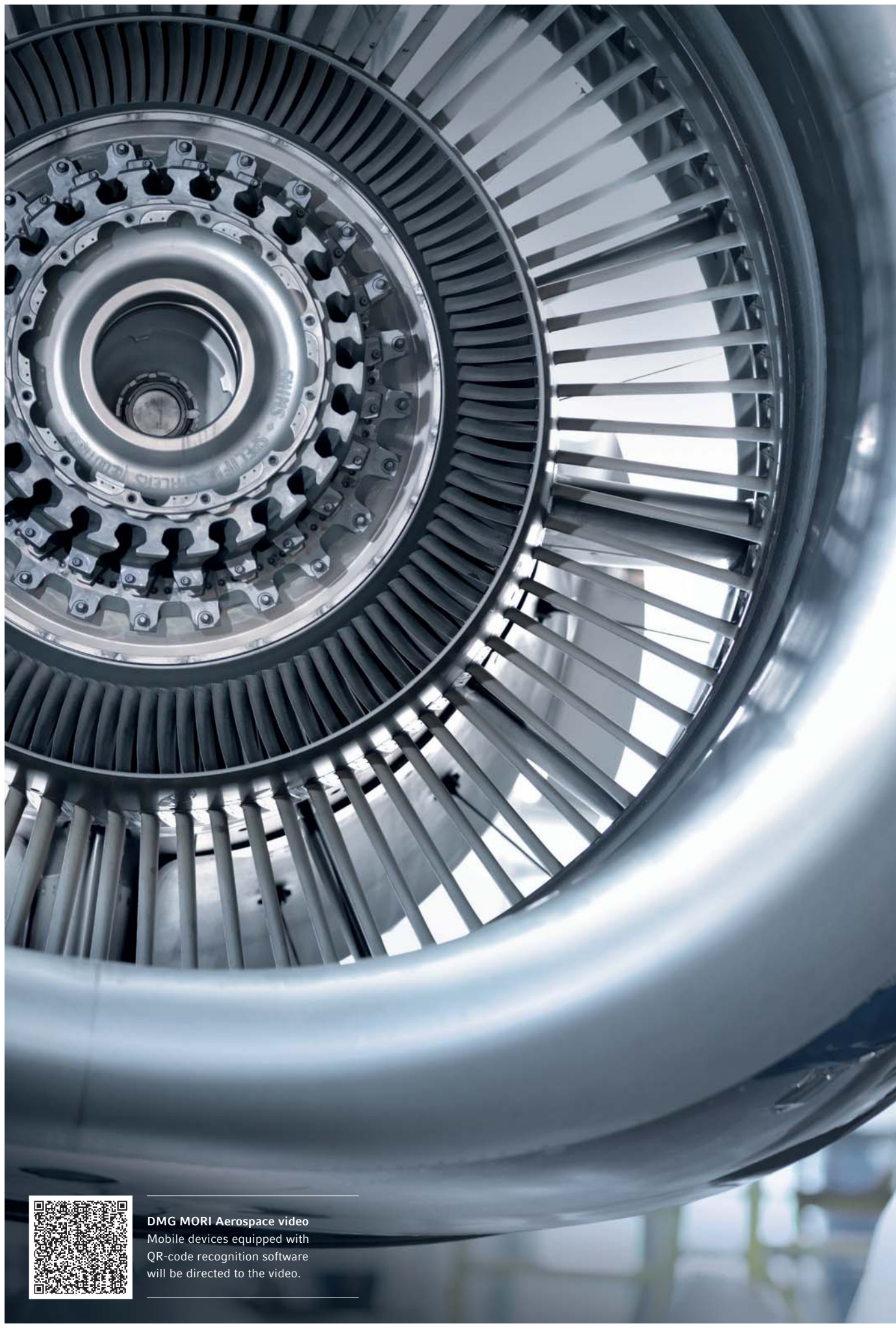
Expert partner for the international aerospace industry.

The aviation industry has experienced significant growth over the last few decades. To keep pace, manufacturers and suppliers require reliable and highly innovative partners. DMG MORI has proactively been meeting these demands for years at the **Aerospace Excellence Center in Pfronten.**

We offer the **latest technologies** and capacities required to accommodate customer initiatives and support innovation development. In close partnership with our customers, we can even develop **turnkey solutions** for machining complex workpieces and challenging materials.

As a **leader** in **5-axis technology,** DMG MORI offers a unique product range of high-tech machine tools with industry-specific options and **engineering services** for parts manufacturing in the aerospace industry.

Our team of aerospace experts will support you with your entire process chain.



DMG MORI Aerospace video
Mobile devices equipped with QR-code recognition software will be directed to the video.

High-tech components for the aerospace industry

Fan disk

ø 37.4 × 15.7 in.

DMC FD duoBLOCK® Series
Material: Titanium
Production time: 38 hrs.

High-precision milling and turning on one machine

Blisk

ø 17.7 × 4.7 in.

DMU monoBLOCK® Series
Material: Titanium
Production time: 55 hrs.

Swivel rotary table with Direct Drive technology in the A-axis & C-axis

Turbine housing

ø 7.1 × 5.9 in.

LASERTEC 65 *3D*
Additive Manufacturing
Material: Stainless steel
Production time: 306 min.

Intelligent combination of additive manufacturing and milling for generative component production in finished-part quality

Compressor stator blade

ø 1.6 × 4.7 in.

NTX 1000 2nd GENERATION
Material: Inconel 600
Production time: 3 hrs.

4-axis milling and turning with a lower BMT® turret featuring driven tools

Turbine vane

ø 3.1 × 3.5 in.

LASERTEC 50 PowerDrill
Material: Inconel
Production time: 20 min.

5-axis precision laser drilling of cooling holes in a conical outlet funnel

Rotor blade segment

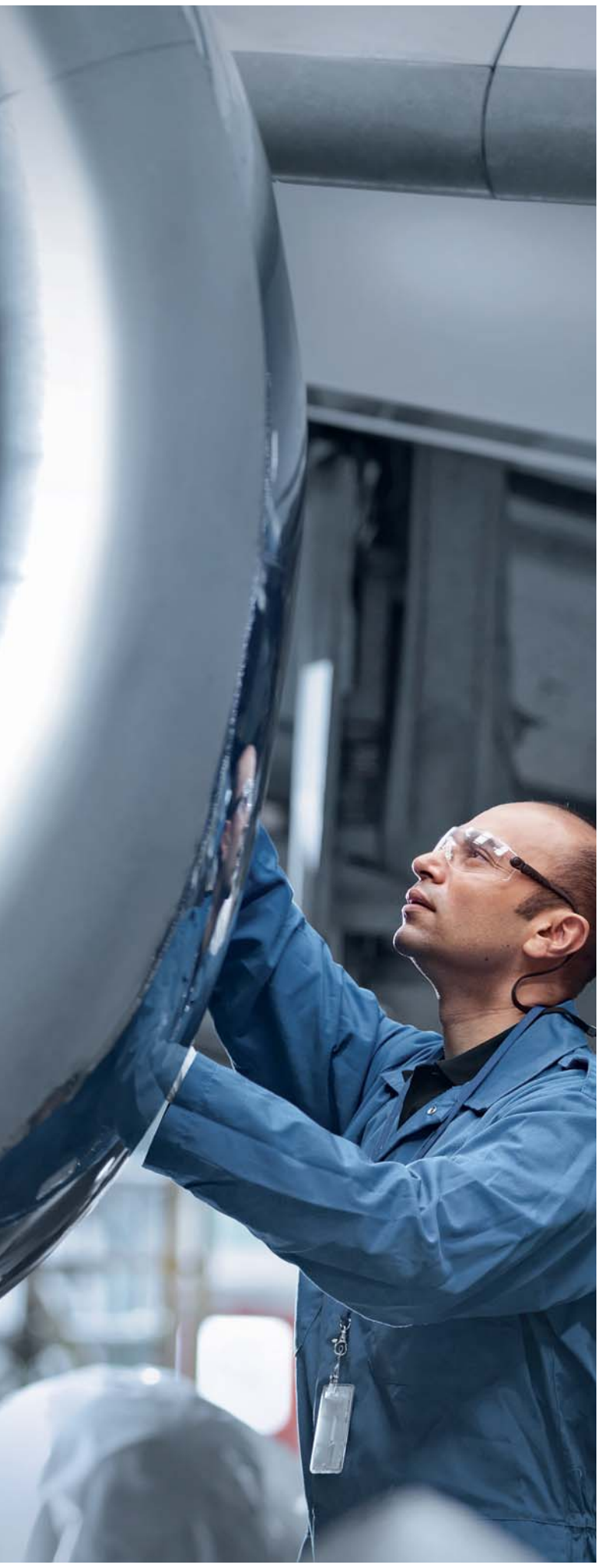
23.6 × 7.8 × 3.5 in.

ULTRASONIC 260 Composites
Material: CFRP
Production time: 55 sec.

Accurate exposure of the individual CFRP laminate layers without delamination or fiber tearing via ULTRASONIC

ENGINE | **ROTOR BLADE**

AMRC – Research center for Boeing



Redefine technology boundaries.

With highly precise and dynamic machining centers, like the DMC 160 FD duoBLOCK®, AMRC produces challenging component parts.

Research Director, Keith Ridgway, Advanced Manufacturing Research Center (AMRC) at Sheffield University.

Founded in 2001, the **University of Sheffield Advanced Manufacturing Research Center (AMRC)** has established itself as one of the leading research centers in the aerospace industry. With founding member Boeing and other major companies, the AMRC has effectively linked education and business with the common goal of efficiently implementing innovative research developments into practical production processes. Dean Keith Ridgway, CBE and his team have counted on the **machining expertise of DMG MORI** since 2003 to process titanium, nickel-aluminum alloys and sintered materials on powerful **NT and NMV Series** machines. Recently, the AMRC also acquired a **DMC 160 FD duoBLOCK®**. "Our applications require the use of **high-precision** and **dynamic machining centers,"** says Keith Ridgway. The duoBLOCK® is up to the challenge!

The AMRC always strives to push the limits of manufacturing and researchers are constantly redefining technological barriers to discover and invest in the future of manufacturing. For this, Keith Ridgway sees value in the **DMC 160 FD duoBLOCK®** to produce innovative engine housings: "The **milling / turning technology** is well suited for demanding advanced workpiece production." The AMRC also seeks **productive and efficient manufacturing solutions** for industry development and technology promotion that effectively translates to practical manufacturing output. DMG MORI offers milling / turning centers with **heavy machining packages** (gear spindle max. **torque: 811.3 ft./lbs.**) as well as high-precision packages. Keith Ridgway values high flexibility: "The DMC 160 FD duoBLOCK® offers **comprehensive manufacturing processes**, from rough production to precision machining."

AMRC with Boeing
Advanced Manufacturing Park
Wallis Way, Catcliffe, Rotherham S60 5TZ
enquiries@amrc.co.uk

The University Of Sheffield.
Advanced Manufacturing Research Centre

BOEING

Structural components

41.0 × 31.0 × 5.2 in.

DMC 340 U
Material: Aluminum
Production time: 5 hrs.

50 % faster via 5-axis simultaneous machining in only three setups

Door lock fitting

14.2 × 11.8 × 4.9 in.

NHX 4000 2nd Generation
Material: ALMg4.5Mn
Production time: 1 hr. 24 min.

90% material removal with the new speedMASTER milling spindle

Chassis part

42.5 × 24.0 × 8.3 in.

DMU 160 duoBLOCK®
Material: Titanium
Production time: 23 hrs.

43% faster machining with a 811.3 ft./lbs. gear spindle

Helicopter landing frame

ø 11.8 × 11.8 in.

NLX 4000
Material: 42CRMo4
Production time: 57 min.

6-sided complete machining via the main spindle & counter spindle

Suspension cylinder

ø 5.1 × 11.4 in.

CTX beta 1250 TC 4A
Material: Steel
Production time: 165 min.

5 -axis simultaneous machining

Valve housing

6.7 × 5.9 × 3.9 in.

DMU 60 eVo *linear*
Material: Titanium
Production time: 5 hrs.

25% faster machining thanks to impressive linear drive dynamics with up to 3,149.6 ipm. rapid traverse

STRUCTURAL PARTS

SUSPENSION COMPONENTS

DMU monoBLOCK®

TECT Power

Advanced blisk machining with the DMU 65 monoBLOCK® and a swivel rotary table.

Impressive stability and dynamics of the monoBLOCK® Series are ideal for the production of blisk components.

Initially, seven DMU 65 monoBLOCK® were installed at TECT Power - more are planned.

Direct Drive

Direct Drive swivel rotary table with a torque drive in the A-axis and C-axis.

_____For DMU 65 monoBLOCK® customers with highly dynamic processing tasks, the new **Direct Drive swivel rotary table**, featuring **backlash-free direct drive technology in the A-axis and C-axis**, is the perfect solution for all 5-axis simultaneous machining jobs.

Direct Drive swivel rotary table highlights

- Table size ø 23.6 in. & workpieces up to ø 27.6 × 19.7 in., 1,322.8 lbs.
- ±120° swivel range
- Impressive dynamics:
  A-axis up to 20 rpm. & 21 rad/sec.²
  C-axis up to 80 rpm. & 24 rad/sec.²

TECT Power
8839 Pioneer Boulevard
Santa Fe Springs, CA 90670, USA
www.tectpower.com

DMU 50

Sparton Technology Corporation

Sparton masters complex parts with 5-axis technology

Sparton recently purchased a DMU 50 5-axis CNC universal milling machine to stay ahead of the competition and grow into new markets

Sparton utilizes 5-axis technology to deliver more involved parts that require a higher level of precision

_____Skilled machinists are hard to come by these days. How does one adapt to human resource limitations? With equipment that boosts operator productivity and delivers top-quality results for excellent customer satisfaction. That is the winning strategy for Sparton Technology, a machining, sheet-metal fabrication, and mechanical assembly firm based in Hudson, NH. Sparton has 65 employees and 30 machinists in its 80,000 sq. ft. facility, some with almost 30 years of experience.

"We have a number of defense, medical and aerospace contracts but we are also a job shop that serves many different industries thanks to our long-established reputation for providing exceptional quality." says Steve Breton, Vice President of Sparton. To stay ahead of the competition and grow into new markets, the company recently purchased a DMU 50 5-axis CNC universal milling machine from DMG MORI and a MAGNESCALE measuring probe. "The DMU 50 will help us reduce setups to one or two for low and mid volume jobs," explains Breton. "Our highly skilled machinists can do much more on a DMU 50 in a single setup, which allow us to meet increasing demands."

DMG MORI's innovative manufacturing solutions and exceptional customer support help Sparton Technology meet the intricate challenges of modern day production. "With the complexity of projects growing each day, 5-axis technology will become the norm for our segment of the industry going forward," states Breton. "Manufacturers are using advanced modeling techniques to design more involved parts that require the level of precision only 5-axis technology can provide." And, comprehensive, flexible manufacturing support through intimate business partnerships is a main source of pride for Sparton. The company often serves as a vital means for entrepreneurs to develop new products and bring their ideas to life.

Cutting edge technology from DMG MORI along with recent AS9100 certification will help Sparton further build upon its strong record of manufacturing quality and dedicated client support. "Today's job shops are focusing heavily on small and medium volume projects for new product designs. We have to stay competitive in that area through flexible efficiency - and we accomplish it with 5-axis technology from DMG MORI."

Sparton Technology Company
8 Hampshire Drive, Hudson, NH 03051
Tel.: (603) 880-3692, www.sparton.biz

SPARTON TECHNOLOGY CORP.
Excellence in machining & precision sheet metal fabrication

DMF Loll Feinmechanik GmbH

Jens Loll, CEO of Loll Feinmechanik, with an aerospace structural part manufactured on a DMF traveling column machine from DMG MORI.

The impressive dynamics and positioning precision that the linear technology provides helps Loll Feinmechanik effectively machine large workpieces.

In the last eight years, Loll Feinmechanik has acquired a total of eight DMF machines from DMG MORI.

Maximum performance with unmatched precision and dynamics thanks to linear technology.

With nearly 70 years of machining experience, Tomesch-based **Loll Feinmechanik GmbH** lives by the motto, **"quality through passion."** The strategically oriented job shop serves demanding industries, including **energy, aerospace and medical technology**. Over 230 highly trained employees and **60 CNC machines** form the technological backbone of the company. A majority of the company's machining centers are produced by **DMG MORI.** In just the past eight years, Loll Feinmechanik invested in six **DMF Series** traveling column machines.

The **DMF models** are used to process **large workpieces** and can handle virtually any size part. Loll Feinmechanik's latest models include a **DMF 260** ***linear*** and **DMF 360** ***linear*** with a heavy-duty package that features an expanded Y-travel range. "**Stability and speed** were the decisive factors in choosing the **DMG MORI traveling column machines,"** recalls CEO Jens Loll. Often, they machine large aluminum structural parts for the aerospace industry. "The removal rates can be over 90%." **Powerful spindles and dynamic linear drives** are perfect for manufacturing these components. But, the linear technology precision is also crucial to the CEO: "The high positioning accuracy is imperative for us to meet our quality standards." The **stable construction** of the traveling column machines also contributes to ensuring that high quality standards are achieved. "The DMF Series' exceptional design ensures minimal variation over long periods and travels."

Loll Feinmechanik GmbH
Borstelweg 14–16, D-25436 Tornesch
info@loll-feinmechanik.de

ULTRASONIC COMPOSITES

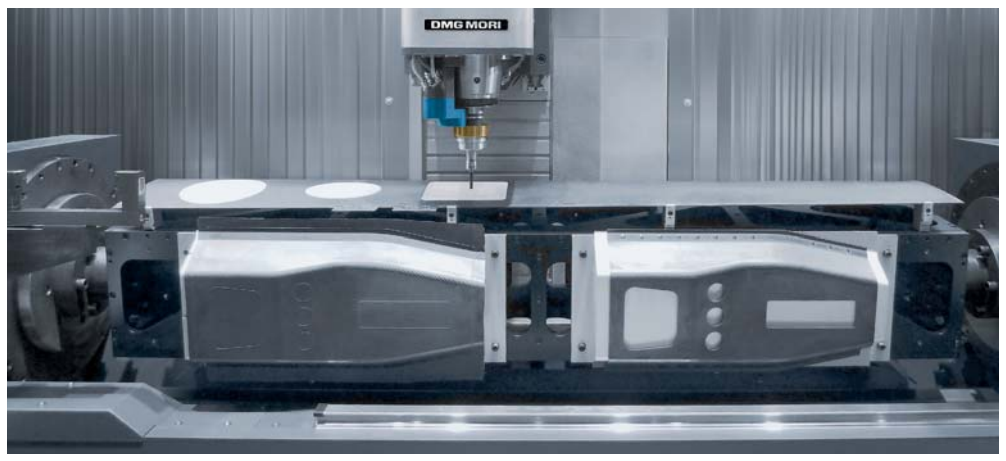
Carbon fiber splicing and trimming without edge chipping, fiber tearing or delamination.

ULTRASONIC milling of composites with 50% less process force.

Technology benefits:
- Up to 40% process force reduction to prevent delamination and fiber tearing
- Precision exposure of laminate layers (splicing)
- Sharp edges for trimming operations
- Mobile and stationary ULTRASONIC machining for serial production as well as repair work

Materials:
- CFRP, GFRP, AFRP
- CMC
- Stacks

Target markets:
- Aerospace, renewable energy: rotor blade parts, wing parts, housing parts
- Automotive parts



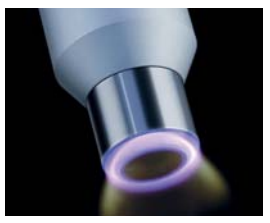
ULTRASONIC 260 with advanced technology and a custom clamping device: trimmings for rotor blade parts; splicings, drillings and pockets for a CFRP center console.

31.5 x 15.7 x 9.8 in.

Center console / Automotive
Material: CFRP
Production time: 3 min. 50 sec.

43.3 x 15.4 x 11.8 in.

Instrument panel / Ship building
Material: CFRP
Production time: 9 min. 20 sec.



Unique integration:
Atmospheric pressure plasma
for surface activation / cleaning

TECHNICAL DATA
travel (X / Y / Z): 102.3 / 43.3 / 35.4 in.; B-axis swivel range: ±100°; spindle speed: 24,000 rpm.; rapid traverse: 1,574.8 (3,149.6) ipm.

ADDITIVE MANUFACTURING

LASERTEC 65 *3D*
Additive manufacturing of high-quality 3D parts.

Application example: impeller/stainless steel

Laser cladding – production time: 312 min.


1. Laser build-up of the cylinder

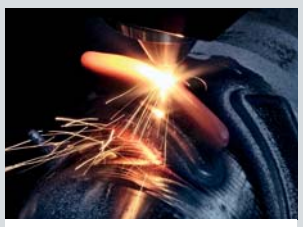

2. Contour generation


3. Finish with conical taper


4. Milling of the conical structure

Milling – production time: 240 min.

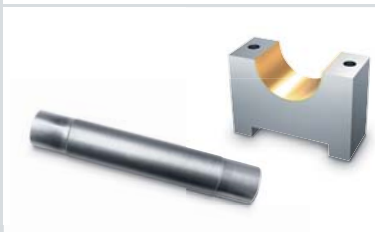

5. Milling of the outer contour


6. Build-up of the vanes


7. Milling of the vanes


8. Finishing

Application areas

Production	Repair	Coating
		
Prototypes and small-series manufacturing of complex parts.	Repair of damaged or worn components.	Application of partial or complete coatings (corrosion protection).

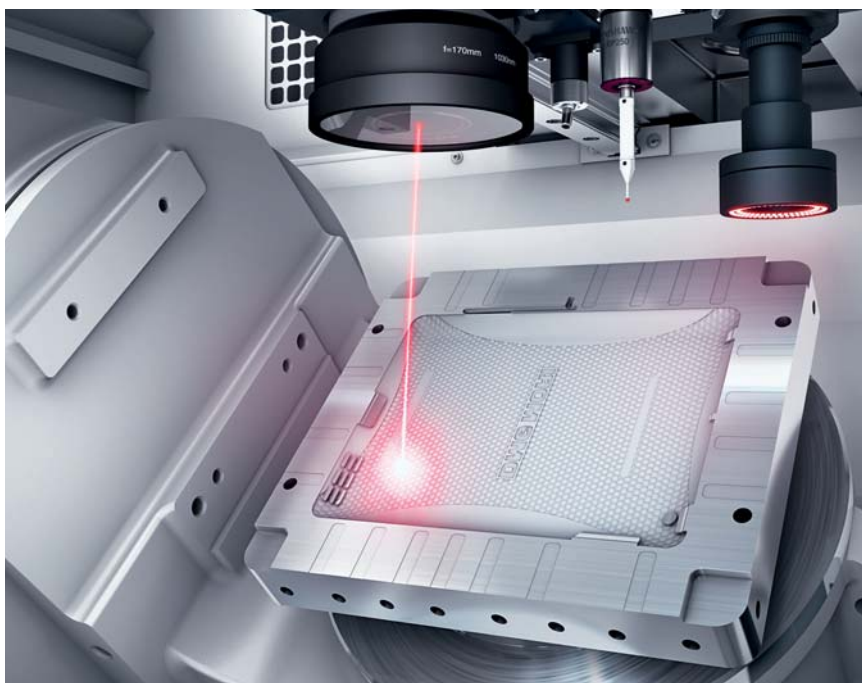
LASERTEC 65 *3D* video
Mobile devices equipped with QR-code recognition software will be directed to the video.
All product brochures available at: ***www.dmgmori.com***

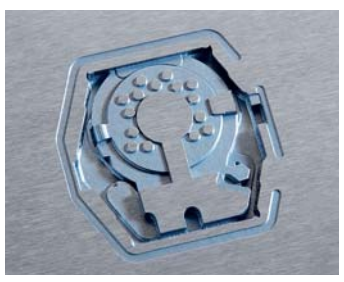
LASERTEC 65 *3D*
Laser cladding & milling – intelligently combined

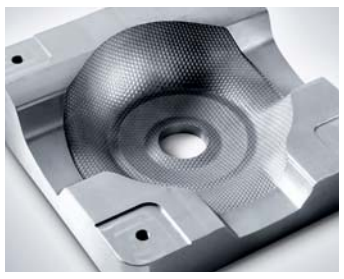
HIGHLIGHTS
- Best surface quality and part precision
- **Laser cladding with a powder nozzle:** 10× faster vs. powder bed
- **3D parts up to ø 19.7 in.** (incl. protruding contours without support geometry)
- **Comprehensive software** for design, programming and machining

TECHNICAL DATA
travel (X / Y / Z): 28.9 / 25.6 / 22.0 in.; workpiece dimensions, max. (5-axis): ø 19.7 × 13.8 in.; load weight, max. (5-axis): 1,322.7 lbs.; footprint (machine only): approx. 129.1 ft.²; control: CELOS® from DMG MORI with a 21.5″ ERGO*line*® panel featuring Operate 4.5 platform on a SIEMENS 840D solutionline control

LASERTEC 45 Shape
A new dimension in high-precision 3D laser cladding and texturing.


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


Laser cladding: filigree cavities in miniature forms.


Texturing: honeycomb structure in a steering wheel cap injection mold.

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

*Machine only

HIGHLIGHTS
- **80% larger work area** with the same footprint and **3x greater dynamics featuring 2,362.2 ipm. rapid traverse (vs. LASERTEC 40)**
- **5-axis laser machining** through the integrated swivel / rotary axis with a torque motor (optional)

3-axis model

LASERTEC SHAPE SERIES
Injection molds up to **82.7 in.** and max. **8.8 tons.**

WEIHBRECHT

Rapid prototyping with combined laser and milling technology.

Gerhard Weihbrecht, CEO of WEIHBRECHT

Wolpertshausen headquarters of family-run WEIHBRECHT.

Since 1986, **Weihbrecht Lasertechnik GmbH** in Wolpertshausen has stood for **precision, perfected products and innovation**. True to the motto "from idea to solution," Weihbrecht offers a wide range of different processing technologies including lasering, conventional machining, and water jet cutting. "We are a medium-sized company specializing in laser machining and rapid prototyping. We integrate almost any effective, **pioneering development** to meet virtually all manufacturing requirements involving laser production," says Gerhard Weihbrecht, CEO of Weihbrecht. In January 2015 the company acquired their first **LASERTEC 65 *3D***. "Compared to alternative production methods, I see great opportunity in the hybrid technology of our **LASERTEC 65 *3D*** to make **challenging workpieces and new geometries** without requiring process chambers or support geometries. The benefits are already evident in product development. And, the integrated **milling option is a very important selling point.," affirms Mr. Weighbrecht.**

WEIHBRECHT Lasertechnik GmbH
Frankenstraße 1, D-74549 Wolpertshausen
info@weihbrecht.de, www.weihbrecht.de

Laser factory GmbH

LASERTEC delivers efficient and high-precision results, even for carbide and ceramic jobs.

Laser factory GmbH Chief Executive Officers Michael Köppel & Björn Büchel.

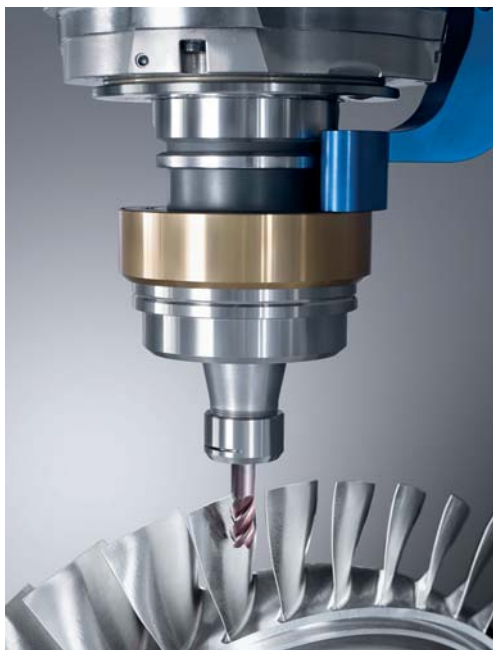
Laser processing of recessed 3D contours in carbide via a picosecond laser.

Since 2002, **Laser factory GmbH** in Rebstein, Switzerland has been recognized as a leader in **precision laser cladding**. On a total of **ten LASERTEC 40 Shape machines from DMG MORI**, this innovative company produces **intricate 3D forms**, including tools and molds via **plastic injection molding, stamping, embossing and cold forming**. Advanced laser technology allows Laser factor GmbH to be **very responsive** to customers, often delivering product with-in one day. The **picosecond lasers** are especially advantageous for co-CEOs Björn Büchel and Michael Koppel: "Unlike previous laser sources, we can now also **process carbides and ceramics efficiently with exceptional precision.**"

Laser factory GmbH
Alte Landstrasse 106, CH-9445 Rebstein
info@laser-factory.ch, www.laser-factory.ch

ULTRASONIC

ULTRASONIC
Efficient grinding, milling and drilling of advanced materials.



ULTRASONIC grinding

Technology benefits:
- Up to 10 x more productivity through reduced process forces
- Minimized sub-surface damage
- Longer tool service life
- Optimized particle rinsing
- Complete production (grinding, drilling, polishing) on one machine

Materials:
- Oxide ceramics, Si3N4, SiC
- Glass and ceramic glass
- Corundum (sapphire, ruby), carbide

Target markets:
- Semiconductor, aerospace industries
- Watch industry, precision engineering
- Optics, medical industries
- Pumps, fittings, textile industries

ULTRASONIC milling

Technology benefits:
- Reduced process forces for increased productivity and reduced chatter
- Uniform surface structures
- Increased removal rates during finishing
- Longer tool service life

Materials:
- Inconel
- Titanium aluminide
- Mg and Al alloys

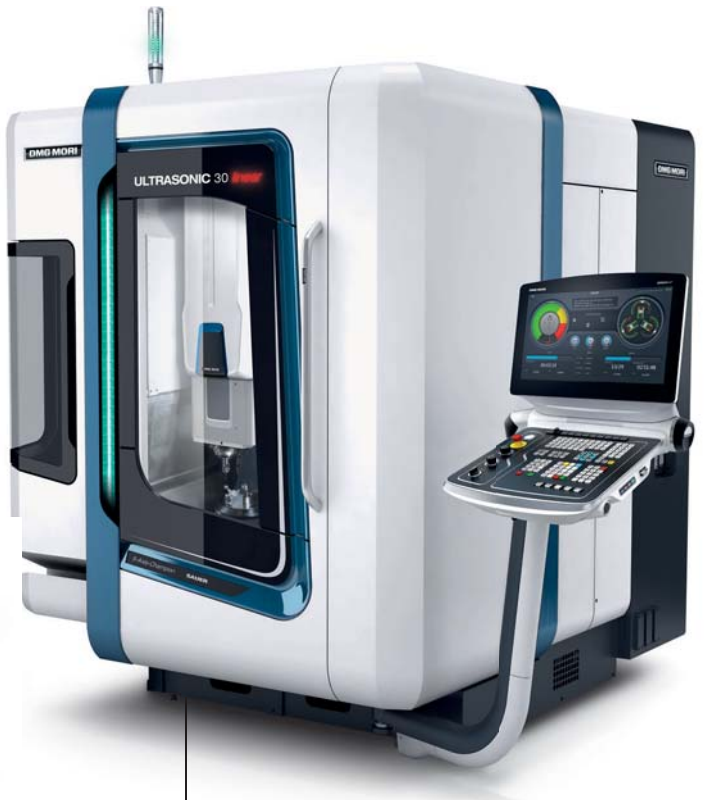
Target markets:
- Turbine components
- Motor components
- Drive shafts
- Medical implants

2.4 × 2.4 × 1.2 in.

Gyroscope / Aerospace
Material: Ceramic glass
Production time: 179 min.

2.2 × 2.0 × 0.4 in.

Watch housing / Watch industry
Material: CFRP
Production time: 13 min.



TECHNICAL DATA
travel (X / Y / Z): 12.6 / 11.8 / 11.0 in.;
rapid traverse: 1,968.5 ipm.; acceleration: 39.4 ft./s²;
spindle speed: 40,000 rpm.;
table load, max.: 176.4 lbs. (5-axis model)

DMG MORI & PORSCHE

At the frontier of production.

After a 16-year absence, Porsche returned to the **FIA World Endurance Championship**, bringing a legacy of tradition and experience to the LMP1 class. In **DMG MORI**, the team has a **technology partner** that produces highly advanced machine tools designed to meet their every requirement. DMG MORI supports Porsche in two ways: First, as a long-time supplier for companies that make **high-quality vehicle components** for the team. Second, **DECKEL MAHO Seebach** began **manufacturing a growing range of components** for the Porsche 919 Hybrid during the 2014 season - including complex housings for pump stages or electric motors and differential valve caps. Also, bearing shafts, bearing heads as well as mounting pins and spacers for the pedals are made out of thermoplastic. In fact, a broad range of materials are used to produce the Porsche 919 Hybrid, including steel, aluminum, titanium and plastic. Through these collaborative efforts, the **"Porsche Motorsport CNC Competence Center"** stands for precision, flexibility and innovative technology transfer.

"For us, this relationship is a great opportunity to demonstrate the capabilities of our machines by putting our technical expertise to the test," says Dr. Thomas Hauer, Head of Application Technology at DECKEL MAHO Seebach. The ultra-modern plant in Thuringia is perfect for the company's partnership with Porsche: DECKEL MAHO Seebach has extensive expertise in manufacturing **precision HSC machining centers** and other innovative machine tools for **5-axis universal machining** – including the **DMU eVo *linear* Series**. The Thuringia facility also stands out for its impressive vertical integration and expertise in machine component production. All this is combined with a comprehensive understanding of process and machine engineering to deliver cutting-edge application technology. Today, the company uses an **HSC 70 *linear*** and a **DMU 60 eVo** machine to produce components that push the limits of modern manufacturing - both in **precision** and **complexity**.

With the **"Porsche Motorsport CNC Competence Center,"** DMG MORI supports the Weissach team's ongoing development of high-quality components. But above all else, the broader goal is to develop intelligent manufacturing solutions for demanding component production with a focus on long-term technology transfer to cultivate sustainable success.

ø 1.2 × 3.5 in.

Electric motor housing
Milling on a DMU 60 eVo FD
Material: Aluminum
Production time: 105 min.

3.1 × 2.8 × 0.8 in.

Pump stage housing
Milling on a DMU 60 eVo FD
Material: Aluminum
Production time: 58 min.

1.4 × 1.7 × 0.4 in.

Push bar
Milling on a HSC 70 *linear*
Material: Aluminum
Production time: 28 min.

The new cooperation between DMG MORI and Porsche highlights the shared values of tradition, precision and innovation on a global scale – reinforcing DMG MORI's established reputation as a reliable partner.

Perfection in action. More information about the high-tech steering wheel on a Porsche 919 Hybrid is available on the next page.

DMG MORI & PORSCHE

Porsche LMP1 Motorsport Team – **"Success through innovation"**

Alexander Hitzinger, Technical Director of the Porsche Team.

Alexander Hitzinger, Head of LMP1 Development for Porsche, talks about the challenges of returning to the World Endurance Championship and the close partnership with DMG MORI.

Mr. Hitzinger, after a 16-year absence, why has Porsche returned to LMP1-class racing?

A. HITZINGER ___ Porsche is very closely associated with motorsport and has always considered it a cornerstone of the company. The LMP1 class was chosen because it is a top-level circuit and Porsche has a very successful history in endurance racing. Also, the regulations provide ample scope to demonstrate technological innovations, including new hybrid technology.

What were the biggest challenges in this project, especially in the development of the Porsche 919 Hybrid?

A. HITZINGER ___ The competition in the LMP1 class and for Le Mans prototypes has increased significantly over the past ten years. Our biggest challenge was to re-establish an adequate organizational structure. Even a standard development team has grown rapidly from a staff of about 10 employees to 150 today. Similarly, we began developing the Porsche 919 Hybrid from scratch because we had no base vehicle and, therefore, or reference data that could serve as a template.

What experience have you gathered in your first season, not only on the track but also in regards to vehicle development?

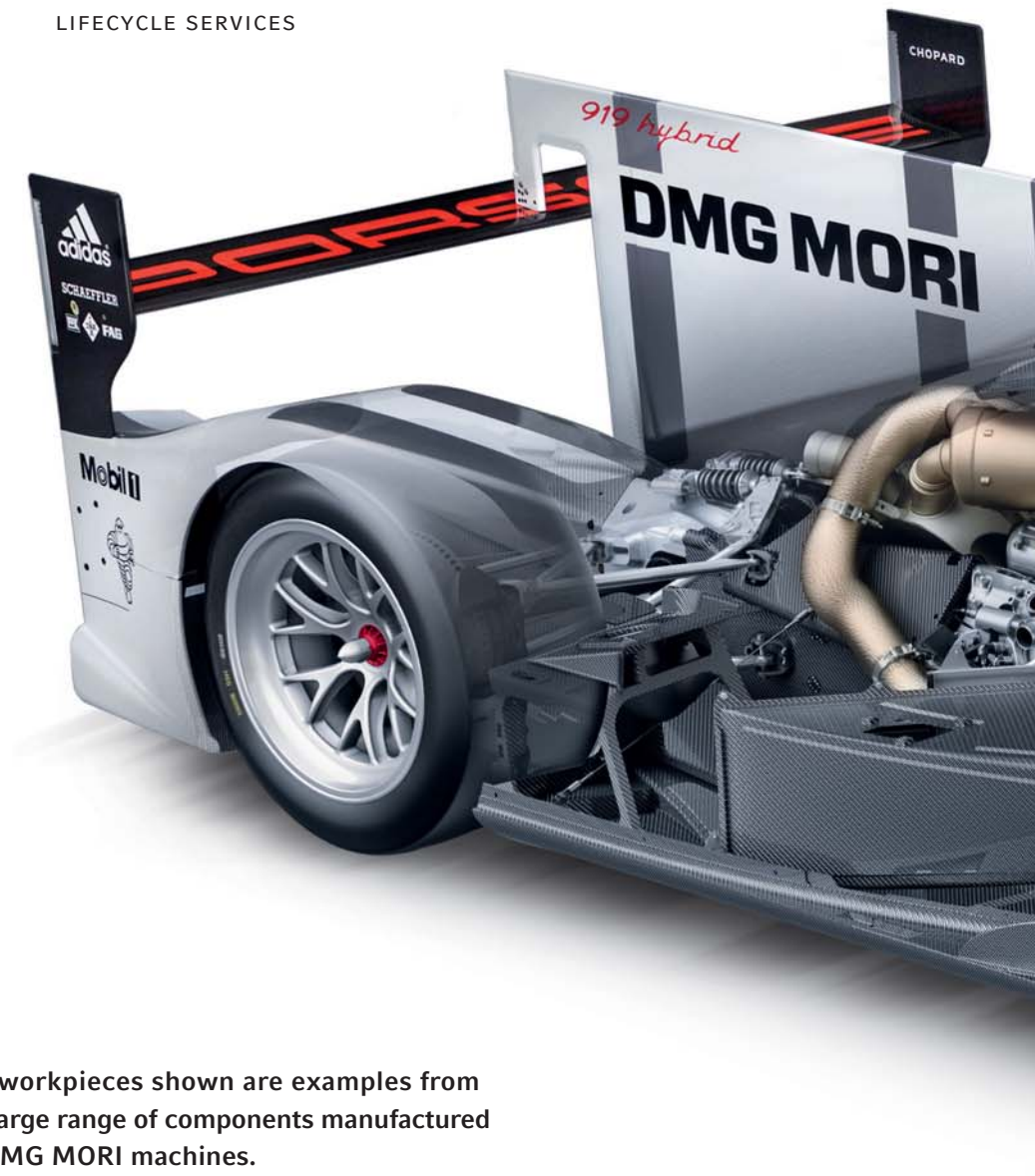
A. HITZINGER ___ We continuously improved from race to race and quickly had a very competitive car. In qualifying, Porsche is now regarded as a major competitor. We owe this rapid success to a very steep learning curve and relentless focus on process optimization.

Before the start of the season, you announced DMG MORI as an exclusive premium partner of the Porsche team. What makes this collaboration valuable?

A. HITZINGER ___ Both DMG MORI and Porsche are technologically very innovative. This is a great foundation for exploiting our combined expertise to develop new, efficient manufacturing solutions that meet on our demanding parts requirements. That kind of core competency is particularly relevant in motorsports, where innovation directly influences success.

What are your goals for next season?

A. HITZINGER ___ Further optimization of our processes and the Porsche 919 Hybrid are in focus. By working closely with DMG MORI on our manufacturing techniques, we hope to cultivate a technological and efficiency edge that ultimately transfers to the racetrack. That is where we can continue the positive trend from last year – to secure as many podium finishes as possible.



The workpieces shown are examples from the large range of components manufactured on DMG MORI machines.

Steering wheel mold
Milling of a form for the carbon fiber steering wheel of the Porsche 919 Hybrid on a DMC 105 V *linear*
Material: Aluminum
Production time: approx. 5 hrs.

ubc GmbH

Lightweight and safety in motorsport.

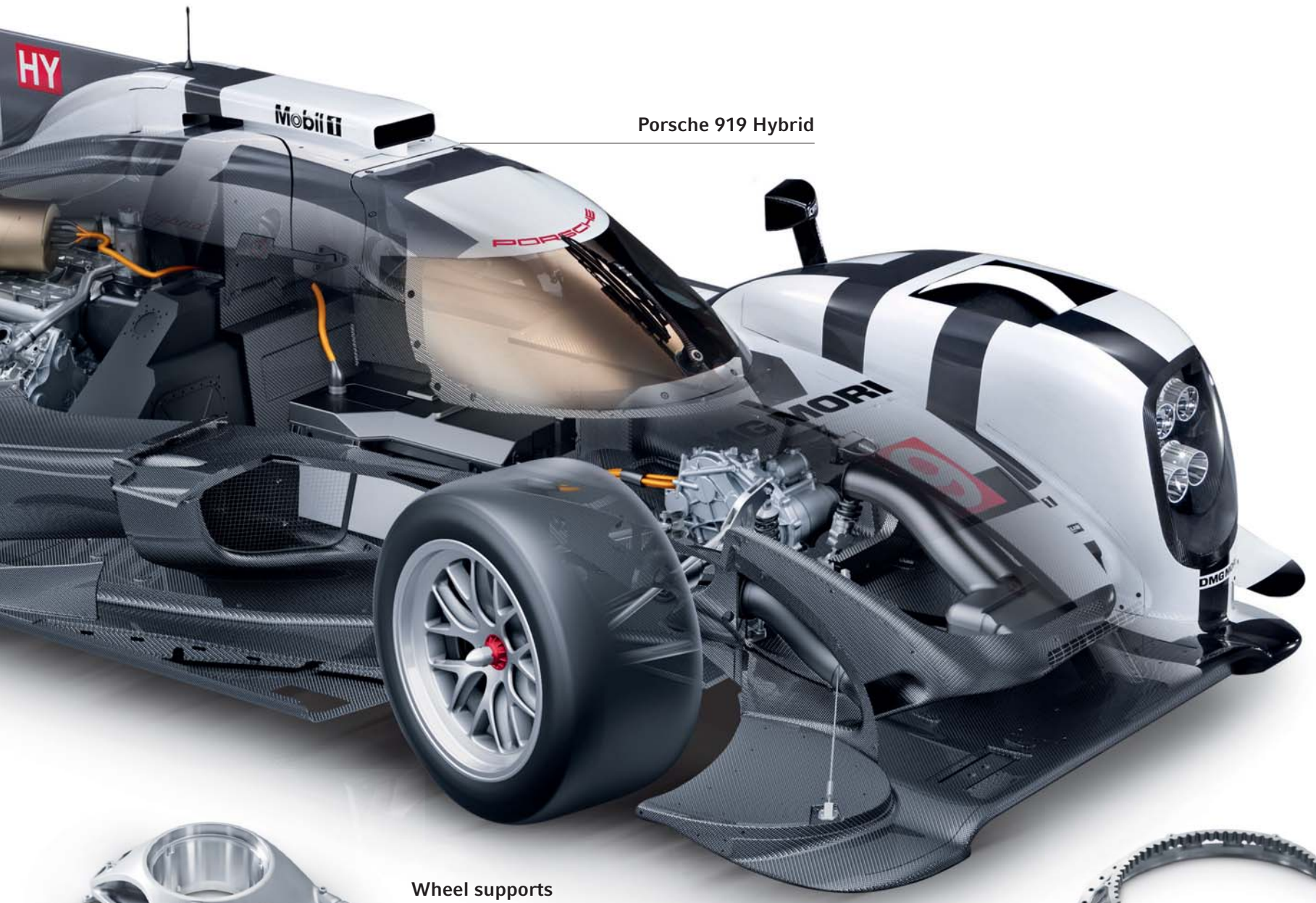
Thorsten Lengwenus, CNC Team Leader, values the flexibility and reliability of DMU machining centers form DMG MORI.

The services offered by ubc start with CAD / CAM, where a steering wheel for the Porsche 919 Hybrid is also created.

ubc GmbH in Murr is a **Porsche LMP1-class Team Partner** and has heavy involvement with of the Porsche 919 Hybrid development. The 150-employee company has been **designing and producing high-performance carbon components** for almost 20 years – including custom parts for **motorsport** and **standard vehicles**, like the Porsche GT3 RS. "Thanks to its high strength, carbon is a perfect alternative to conventional lightweight materials, like aluminum and titanium," says Thorsten Lengwenus, CNC Team Leader. ubc delivers **quality and flexibility** on challenging jobs through technical expertise, **100% vertical integration** and maximum **advanced technology** utilization.

For complex milling, the company uses three **DMU machining centers from DMG MORI**: one **DMU 200 P**, one **DMU 125 P duoBLOCK®** and one **DMC 105 V *linear***. "The accuracy of the forms directly impact the quality of the final products," says Thorsten Lengwenus. DMG MORI understands these accuracy expectations and delivers unmatched precision with their **powerful and reliable machines**. **Dependability** is also important for Lengwenus: "We depend on smooth CNC machining operation." In the fast-paced world of racing, the ability to meet very **short turnaround times** is a must.

ubc GmbH
Robert-Bosch-Strasse 10, D-71711 Murr
info@ubc-gmbh.com, www.ubc-gmbh.com



Porsche 919 Hybrid

Wheel supports
Milling on a DMC 125 U duoBLOCK®
Material: Aluminum (special variant)

Brake disk hub
Turning on a CTX beta 800
Milling on a DMU 80 eVo *linear*
Material: Titanium
Production time:
approx. 7 hrs. (5-axis milling)

MBFZ toolcraft GmbH

Precision machining in record time.

Christoph Hauck (left), CEO of toolcraft, with the Porsche Project Managers Stefan Auernhammer (middle) and Robert Renner.

With highly precise and productive 5-axis machining, toolcraft produces complex precision parts (example: wheel support).

With fast and reliable manufacturing of precision components, **MBFZ toolcraft GmbH** (founded in 1989) serves customers in aerospace technology, optics, medical technology and motorsport. The company's connection to motorsport has grown rapidly over the last three years through its relationship with the **Porsche LMP1-Class Team** as part of the World Endurance Championship. With a 113,021.1 ft.² production facility, over **260 quality-focused employees** ensure smooth production of sophisticated vehicle components.

toolcraft uses 15 **CNC machines from DMG MORI** for their full range of manufacturing capabilities. The parts spectrum ranges from heat-resistant manifold flanges (made of nickel-based alloys) to **heavy-duty wheel supports**. Christoph Hauck, CEO of toolcraft, says: "We make prototypes as well as small series and medium series parts encompassing several hundred different items per year." The versatile and **powerful machines** provide the required flexibility. And, to meet high-quality standards, advanced production techniques are imperative. "These areas are where DMG MORI's focus on innovation really benefits our company." says Christoph Hauck in reference to the **LASERTEC 65 *3D***. toolcraft already operates four metal laser melting systems and sees potential for complex geometry manufacturing via hybrid laser cladding / milling machine tools.

MBFZ toolcraft GmbH
Handelsstraße 1, D-91166 Georgensgmünd
toolcraft@toolcraft.de, www.toolcraft.de

toolcraft

Kaiser Werkzeugbau GmbH

Quality components for motorsport success.

(from left) Kathrin Hebgen, Team Communication; Ragnar Bregler, Sales Manager; Hans Ihrlich, Sales Manager; Birgit Jachmann, Team Communication.

Complete quality control in tool production is the standard at Kaiser.

Founded in 1984, **Kaiser Werkzeugbau GmbH** of Helferskirchen has many years of **experience with motorsport** and understands the unique challenges well. Over 50 highly trained employees oversee **top-quality production and timely product delivery**. In the past two years, the team has continuously expanded its portfolio with sophisticated mechanical components for the **Porsche 919 Hybrid,** as part of the LMP1-Class World Endurance Championship. Kaiser meets strict production standards through advanced manufacturing techniques: **17 machining centers and turning machines from DMG MORI** ensure reliable and flexible production.

More recently, Kaiser purchased two **CTX beta Series** turning machines and two **DMU eVo machining centers**. "The machines are setup to cover a **wide range of parts**," says Sales Director Ragnar Bregler. "This allows us to build almost all critical race car parts, including brake disk hubs, steering and motor components as well as various structural parts." Due to **high complexity** manufacturing, the focus is on productive manufacturing solutions, including **5-axis technology** and **high-speed milling.** The next machining center is already planned: "The **HSC 70 *linear*** ideal for the **high surface quality** of our products."

Kaiser Werkzeugbau GmbH
Gewerbegebiet, D-56244 Helferskirchen
kontakt@kaiser-wzb.de, www.kaiser-wzb.eu

KAISER® RACE TECHNOLOGY

MD Drucklufttechnik GmbH & Co. KG

Claus-Werner Bay, CEO of MD Drucklufttechnik: "The linear drive on the CTX beta 800 *linear* guarantees maximum dynamics and high positioning accuracy."

For MD Drucklufttechnik, challenging high-precision workpieces is part of their everyday production.

Greatest precision through maintenance-free linear drives.

Originally part of the Mannesmann Group, **MD Drucklufttechnik GmbH & Co. KG** has many years of experience with **compressors and compressed air equipment**. Since 1983, the Stuttgart-based company has been producing **high-quality pneumatic tools and motors** for craft and industrial use. "It requires a lot of know-how and advanced manufacturing technologies to produce high-precision components for our products," explains CEO Claus-Werner Bay. MD Drucklufttechnik has been meeting these **demands for quality and flexibility** in-house since 2010 with **three CTX beta 800 *linear*** machines.

With a **linear drive in its X-axis**, the **CTX beta 800 *linear*** can achieve up to **1 g acceleration**. "This feature delivers impressive dynamics for greater **productivity** as well as exceptional **positioning accuracy,"** says Claus-Werner Bay. The accuracy advantage is critical for us, given the **high-quality standards expected** by our customers. Mr. Bay, as a certified engineer, also sees great benefit in the **wear-free aspect of the linear technology**: "This not only affects **long-term precision** but also axial reliability."

MD Drucklufttechnik GmbH & Co. KG
Weissacher Straße 1, D-70499 Stuttgart
www.mannesmann-demag.com

MANNESMANN DEMAG

CTX beta 800 *linear*
Linear drive in the X-axis featuring 1 g acceleration & unmatched long-term precision.

CTX beta 800 *linear* highlights

- CTX *linear* – turning with 1 g acceleration thanks to the linear drive (5-year warranty)
- Up to 30% faster production with the highest long-term precision
- 28% energy savings vs. 2010 models (full KfW support)

linear DRIVE

- Impressive dynamics and long-term accuracy
- 5-year warranty

TECHNICAL DATA
bar machining up to ø3.0 in. (optional ISM 102 up to ø 4.0 in.); 33.5 in. max. turning length and 16.1 in. max. workpiece diameter; ISM 76 main spindle with 5,000 rpm., 280.3 ft./lbs., 45.6 hp.; 12-slot VDI 40 turret, 4,000 rpm. 15.2 hp. and 20.7 ft./lbs., excl. 6 block tool slots

NLX SERIES

NLX Series – 9 models with 30 custom configurations.

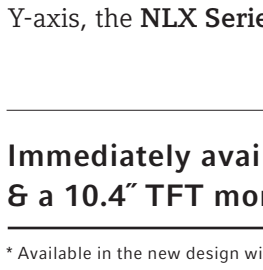
The NLX Series, with **9 models and 30 different configurations,** offers **maximum performance, flexibility and reliability**. From the 2-axis turning machines to 6-sided complete machining centers with a counter spindle and Y-axis, the **NLX Series** has you covered.

Immediately available with MAPPS IV & a 10.4″ TFT monitor****

* Available in the new design with CELOS®
** Only available in the new design with CELOS®
*** NLX 2500 | 700MC, NLX 2500 | 1250MC currently not available in the new design with CELOS®
**** 19″ for NLX 4000
Turning = fixed tools; **MC** = driven tools; **Y** = driven tools & Y-axis;
SMC = driven tools & counter spindle;
SY = driven tools, Y-axis & counter spindle

NLX 2500SY | 700
The top model with a counter spindle and Y-axis

Bestseller! The top selling machine from DMG MORI



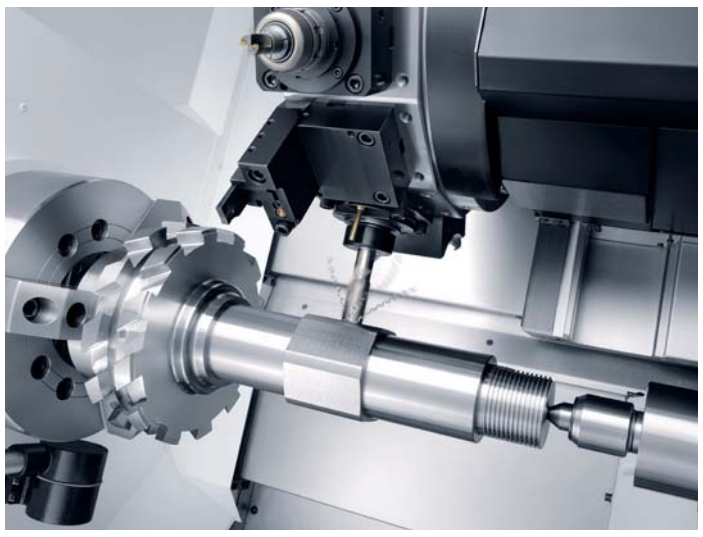
ø 3.1 × 3.9 in.

Guide brush / Automotive
Material: S45C
Production time: 13 min. 29 sec.

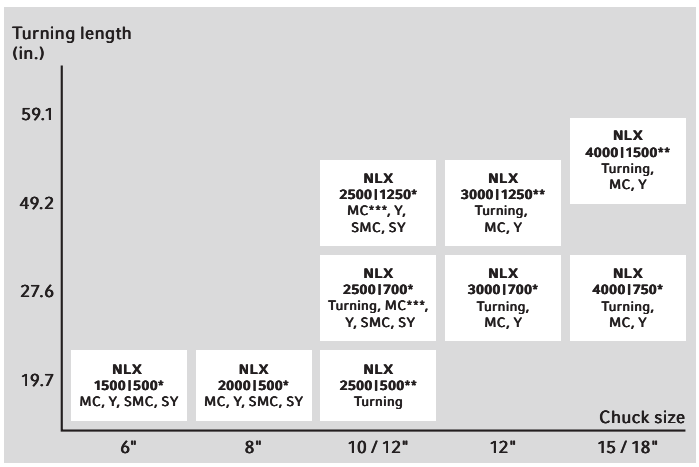
ø 4.7 × 3.9 in.

Hydraulic valve / Fluidics
Material: S45C
Production time: 30 min. 35 sec.

BMT® technology for impressive milling performance with driven tools and 4,000 rpm. (10,000 rpm. optional)



9 machine models with 30 custom configurations.



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

NLX SERIES HIGHLIGHTS

_ New DMG MORI design with CELOS®
_ **Flat guide ways in all axes** with optimal damping properties and dynamic stability
_ **Integrated coolant circulation** through the machine bed for greater thermal stability
_ **BMT® turret** (Built-in Motor Turret) for milling performance comparable to machining centers
_ **Automation options**, including bar feeder and gantry loader

TECHNICAL DATA
turning diameter, max.: 14.4 in. (18.1 in. turning diameter without Y-axis); turning length, max.: 27.8 in.; bar loading: 3. in.; main spindle: 4,000 rpm., 24.8 hp.; counter spindle: 6,000 rpm., 14.8 hp.; 12-slot turret (10-, 16-, 20-slot turret optional); driven tool speed: 10,000 rpm.

microart e.K.

Since 2008 microart exclusively uses NLX turning machines from DMG MORI.

microart's latest addition is a NLX 2500Y | 700.

The art of precision.

_____Since its founding seven years ago, **microart e.K.** has quickly evolved as an **expert in machining technologies**. The job shop in Roding supplies well-known customers in automotive, aerospace and other high-tech fields with **complex precision components**. microart is a strong partner for demanding businesses. To meet client needs and maintain a high level of performance, the company relies on **CNC solutions from DMG MORI**. Seven **NLX Series** models - five with tailstocks and two with counter spindles - form the technological foundation for the company's high-precision turning operations. Their latest acquisition is a **NLX 2500Y | 700**.

Since purchasing their first **DMG MORI** machine in 2008, microart has seen nothing but benefits from their ongoing relationship. "The deciding factor for us was **the high stability of their machines**," says Michael Kerscher, Technical Managing Director at microart. Stability through r**eliable machine tools** is absolutely critical for achieving e**fficient, high-precision results**. This is another major reason that they chose NLX machines: "In the last six years, these machines have required **barely any servicing**."

microart e.K.
Turonstraße 16, D-93426 Roding
info@microart-roding.de, www.microart-roding.de

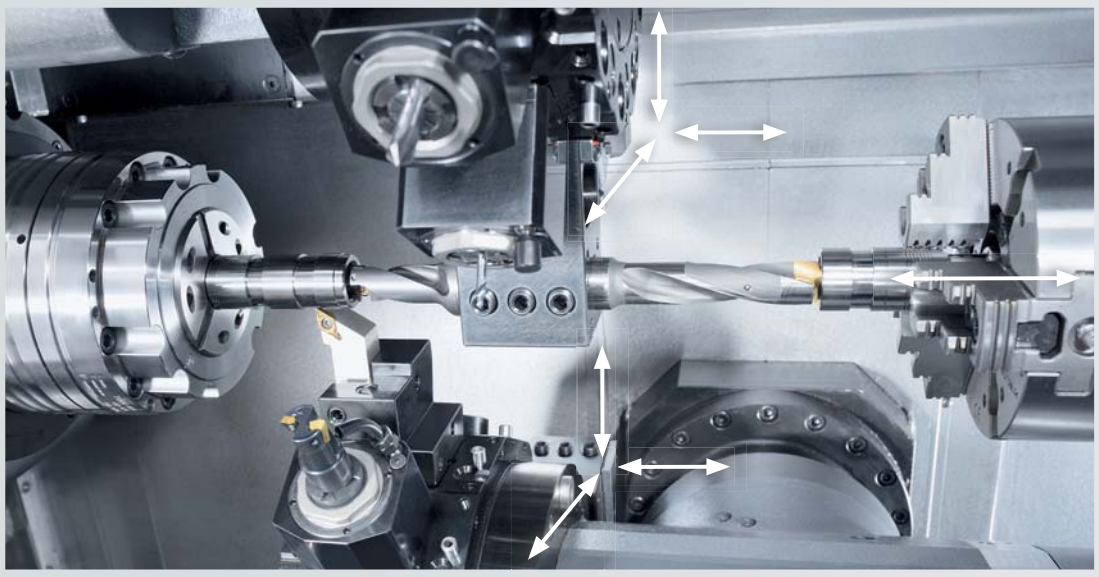
microart
the art of_precision.

NLX 4000 | 1500
Efficient complete machining of large workpieces up to ø 19.6 in. (ø 23.6 in. without a Y-axis)

TECHNICAL DATA
turning diameter, max.: 23.6 / 19.7 in.; turning length, max.: 60.6 / 62.4 in.; bar capacity, max.: 4.6 in.; main spindle speed, max.: 2,000 rpm.; main spindle power: 49.6 / 40.2 hp.; number of tool stations: 10 (12 optional)

SPRINT AUTOMATIC TURNING

SPRINT 50-2T –
NEW: CELOS® FROM DMG MORI WITH MAPPS ON A FANUC 31iB.



Parallel machining on the main and counter spindle; Y-axis with ±1.4 in. for the upper turret (standard), lower (optional)

2× VDI 25 turrets incl. TRIFIX® precision quick change system with 12 slots for driven tools

SPRINT 50-2T
4-axis production turning with up to 24 driven tools and 2 Y-axes

SPRINT 50 HIGHLIGHTS

_ **4-axis production turning of bar parts up to ø 2.0 in. (2.6 in.*)**
_ **6-sided complete machining** of bar parts in two setups on the main and counter spindle via **synchronous transfer without speed reduction**
_ **Large work area, deep drilling up to 11.8 in.** on the main and counter spindle
_ **12-slot VDI 25 turret with TRIFIX® quick change system,** < 30 sec. tool setup and repeat precision of < 0.0002 in.
_ **Unmatched performance** thanks to a turret with 12 slots for power tools, 6,000 rpm.**, 8.8 ft./lbs. & 8.4 hp. (S6 - 40%)

*Optional, **8,000 rpm. (Siemens version)

ø 1.9 × 2.4 in.

Nozzle / Hydraulics
Material: Stainless steel (AiSi 303)
Production time: 210 sec.

ALTERNATIVE OPTIONS
CELOS® from DMG MORI with SIEMENS (available 06/2015)
_ Machine with 2 turrets and the TWIN design
_ 3 turrets
_ 3 turrets, with B-axis for lower turret

NZX PRODUCTION TURNING

NZX 4000 | 3000
Highly productive shaft machining with two turrets.

Long shaft parts with large diameters for oil or gas pipelines are indispensable in the energy industry. The NZX 4000, with two turrets, is perfect for these jobs and delivers uncompromising **high-performance machining**. Thanks to the machine's impressive stability, it can easily support an upper turret with **BMT® technology** (Built-in Motor Turret). The milling power of the BMT® turret is equal to that of an SK40-class machining center. And, with the wide range of available spindle passages, countless workpiece variations can be produced on the **NZX – maximum productivity for large-part machining**.

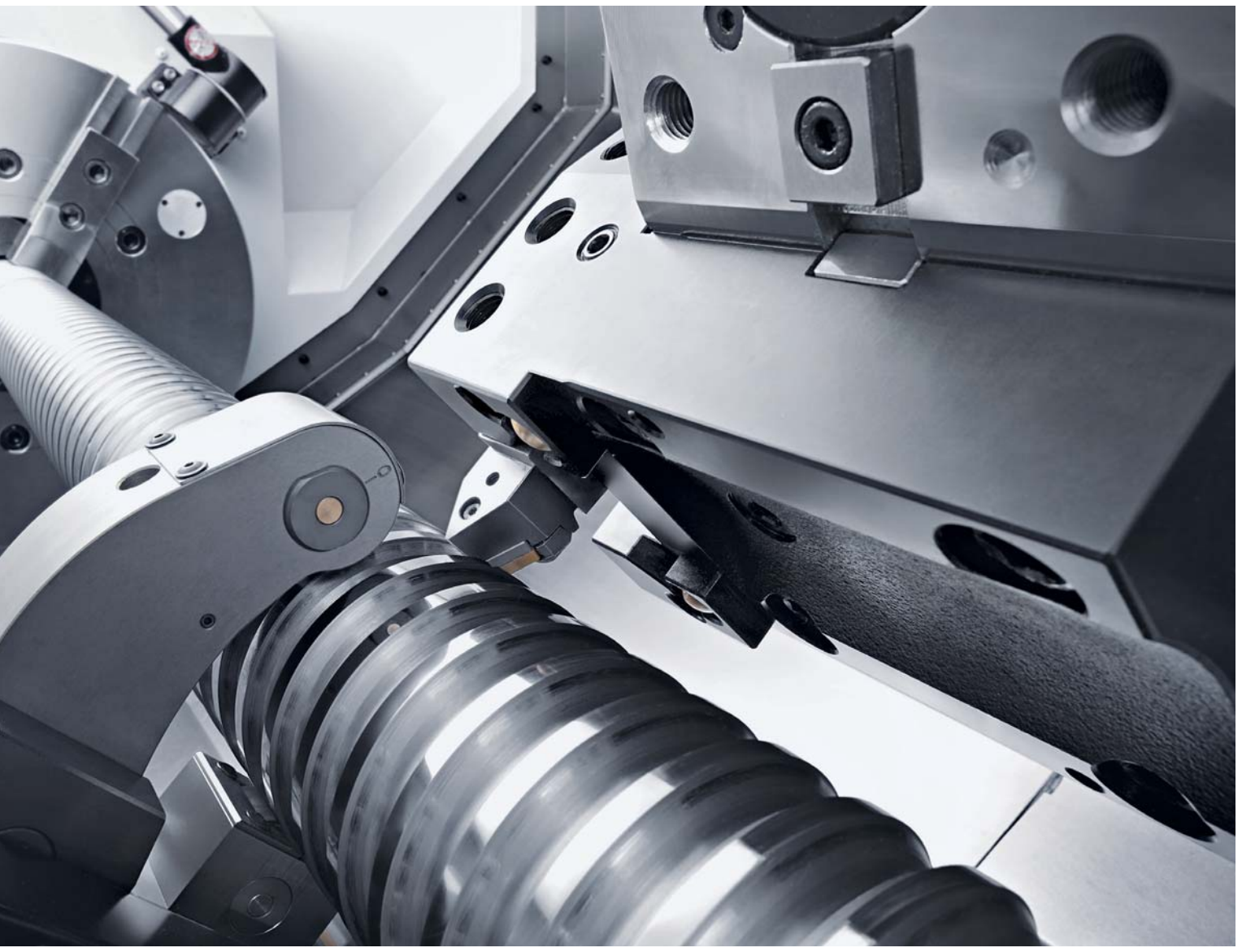
NZX 4000 | 3000 –
Highly efficient 5-axis turning centers capable of up to ø 11.2 in. spindle drilling depths for the machining of large and long workpieces.

NZX 4000 | 3000 HIGHLIGHTS

_ **Sturdy and stable heavy machining** thanks to wide flat guide ways
_ **4-axis machining of long shaft parts** with a large diameters: turret-1, Y-axis, turning and milling; turret-2, turning; number of tool stations: 12 (turret-1) & 8 (turret-2)
_ Turret-1, **milling power comparable to that of a SK40 machining center**: 14.8 / 10.1 hp. via BMT® technology
_ 3 spindle drills: ø 5.7 / ø 7.3 / ø 11.2 in. (A / B / C)
_ Long drilling bars for deep-hole drilling*
_ Up to 2 NC steady rests in parallel use*

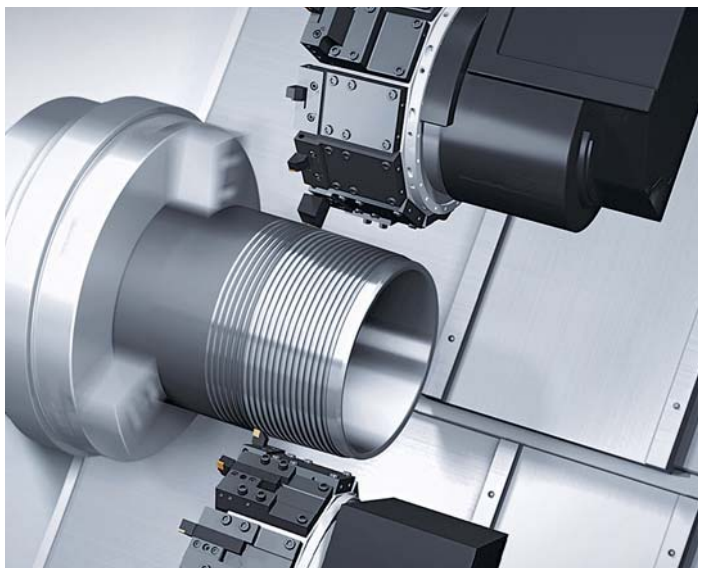
*Optional

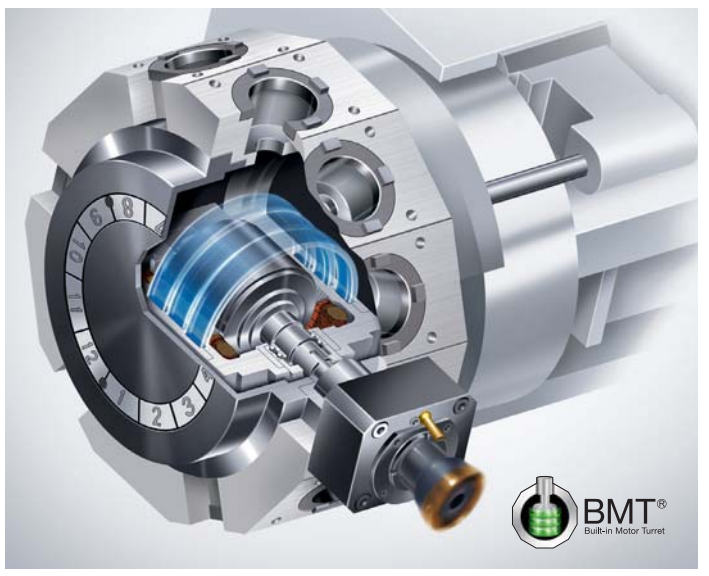
TECHNICAL DATA
turning diameter, max.: ø 26.0 in.; turning length, max.: 118.1 in.; main spindle, max.: 2,000 / 1,500 / 1,000 rpm. (A / B / C); jaw chucks: 15–24″; number of turrets: 2 (Y-axis only available for turret-1); speed of driven tools (turret-1), max.: 3,500 rpm.



The NZX 4000 | 3000 offers efficient, heavy machining of large workpieces up to ø 26.0 in. and 118.1 in.

Ideal for the oil and gas industry: big drilling – spindle drilling up to ø 11.2 in.





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

Geiger Fertigungstechnologie GmbH

Productive and flexible with NZX automatic turning machines.

For many years Geiger has been running efficient automated production lines with dependable NZX machines from DMG MORI.

Rainer Krausz, Production Manager, and Dieter Neller, Technical Manager, are responsible for developing optimal production lines for the most sophisticated products.

ø 7.9 × 39.4 in.

Crankshaft / Automotive
Material: S45C
Production time: 40 min.

ø 1.6 × 98.4 in.

Ball screw drive / Machine construction
Material: SCM440
Production time: 14 min. 10 sec.

_____Over 50 years, **Geiger Fertigungstechnologie GmbH** has grown into a major supplier of superior turning and milling parts. As a Tier-2 supplier, the Pretzfeld-based company produces mainly **high-quality automotive components**, including injectors for Bosch. Geiger has achieved "Preferred Supplier" status with the Bosch Group through the dedication of its 350 highly skilled employees and a steadfast focus on **innovative manufacturing**. Numerous **NZ** and **NZX Series double-spindle automatic turning machines** from DMG MORI ensure excellent production quality, while supplemental **robotics and strategic production links** provide optimal **efficiency** for automotive parts manufacturing. Geiger has successfully combined mass production and flexibility by using **dual-spindle machines from DMG MORI**. The company's two most recent production lines incorporated a total of **30 NZ 1500 and 1500 NZX** machines. "With every job, we reevaluate our ways of thinking to find the most appropriate manufacturing solution," says Dieter Neller, Technical Manager at Geiger. In production workflows, the dual-spindle design is a practical option because of the **easy setup**. "It allows us to better respond to changes in the component than would be possible with more complex multi-spindle turning machines," adds Rainer Krausz. DMG MORI machines address the complex balance between operation and process flow with easy, flexible machine options.

Geiger Fertigungstechnologie GmbH
Espachweg 1, D-91362 Pretzfeld
www.geiger-pretzfeld.de

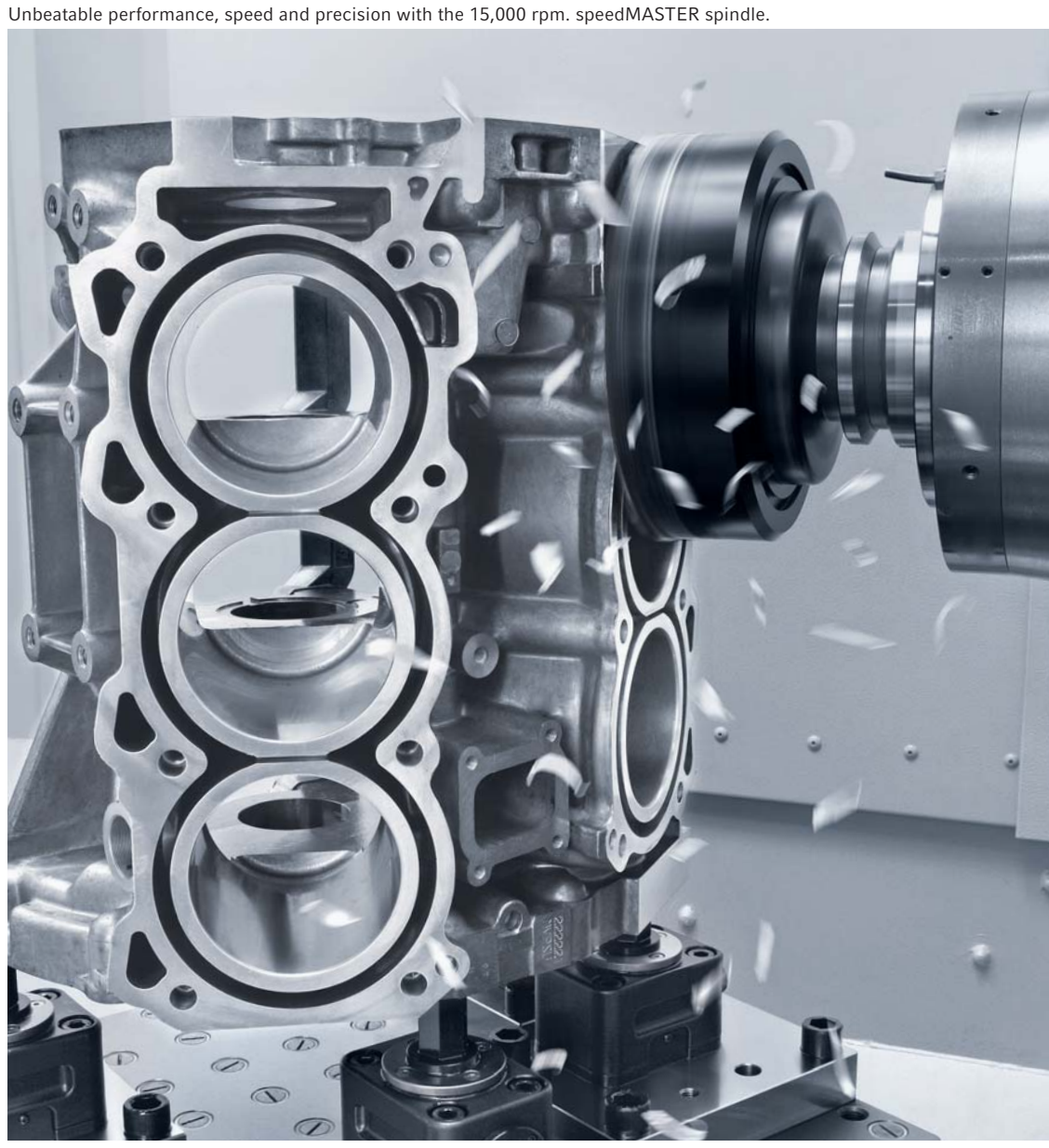
GEIGER
FERTIGUNGSTECHNOLOGIE
Ein Unternehmen der KAP Beteiligungs-AG

NHX HORIZONTAL MACHINING

NHX Series – Local production for a global market.

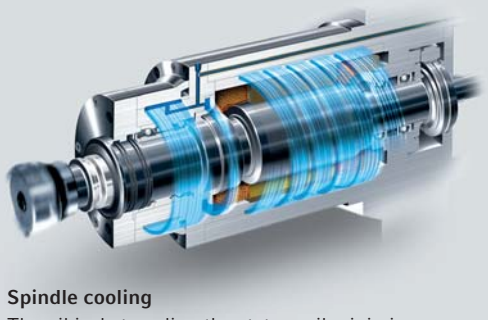
With **21 locations worldwide** and production capacity for over 20,000 machines per year, DMG MORI is truly a global player with a local focus. Regional manufacturing ensures uniform high-quality products and services for all of our valued customers. The NHX Series is built in **4 of our newest facilities** and final assembly takes place in Iga, Japan for all NHX machines from the **NHX 4000 to 10000**. The **NHC Series** (incl. NHC 4000 and NHC 5000) for China, an adaptation of the NHX, is produced in **Tianjin, China**. In 2015, the NHC Series will be expanded to include the #50-models NHC 5500 and NHC 6300. For the **US market**, DMG MORI has expanded its Davis, California facility to produce the **NHX 4000, NHX 5000 and NHX 6300**. Our European market will continue to be served by DECKEL MAHO Pfronten in Germany, where the NHX 4000 and NHX 5000 are manufactured.

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

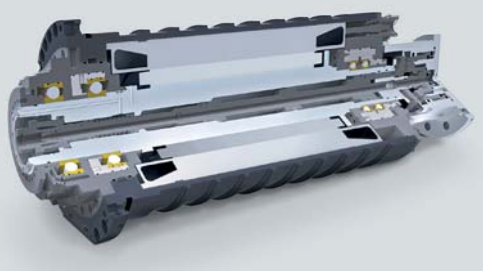


speedMASTER from DMG MORI – #40 Universal milling spindle with 10,000-hour or 18-month warranty.

Impressive performance already with the base model, standard for 2nd GENERATION NHX Series:
_ 15,000 rpm., 81.9 ft./lbs. & 28.1 hp. (40% DC)
_ High torque (optional): 15.000 rpm., 147.5 ft./lbs. & 61.7 hp. (40% DC)
_ High speed (optional): 20,000 rpm., 88.5 ft./lbs. & 46.9 hp. (40% DC)



Spindle cooling
The oil jacket cooling the stator coil minimizes heat distribution within the spindle.



Tool clamping
New tool clamps with constant clamping force up to 500 million cycles.

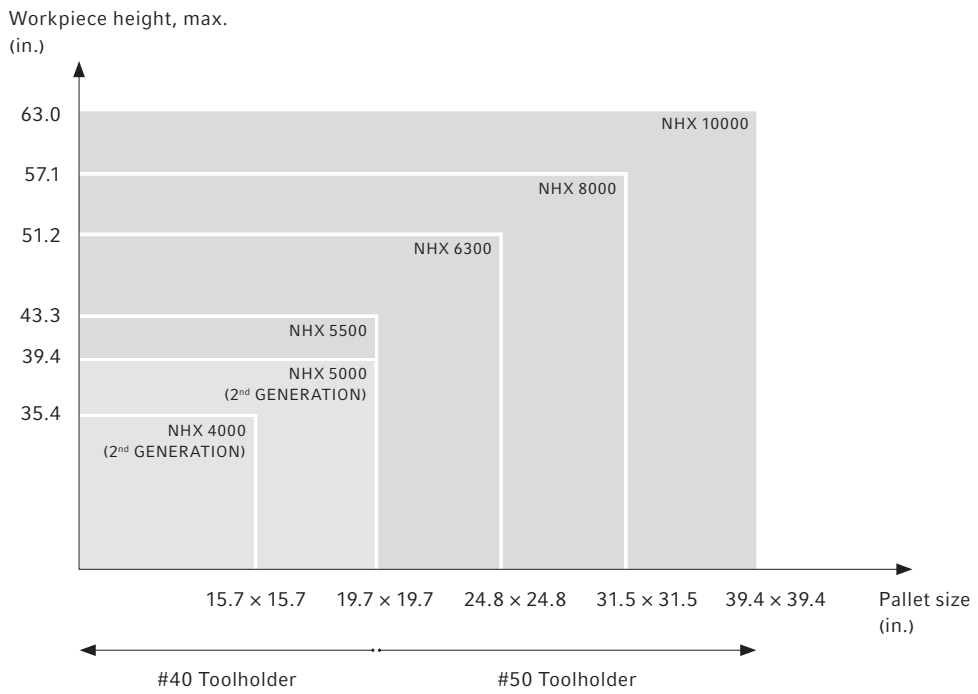
Maximum service life and precision
_ Large spindle bearings for longer service life
_ Optimized sealing - no cooling lubricant penetration
_ Consistently tight tool clamping for best repeat precision

MAGNESCALE – greatest precision with a magnetic measuring system featuring 0.0000004 in. (standard).

Magnescale
SPEED X PRECISION
FROM DMG MORI

more about Magnescale
ON PAGE 15 →

NHX Series

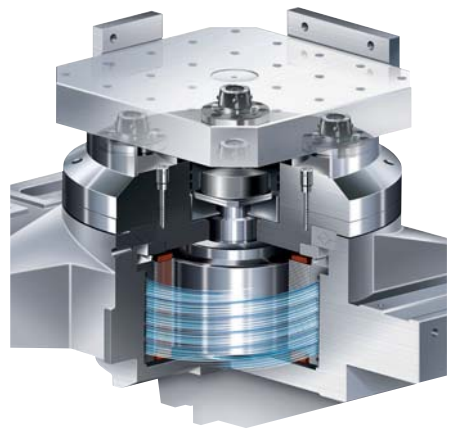


DDM® technology – Direct Drive table (optional)

DDM® Direct Drive Motor

_ Up to 100 rpm. for fast positioning: 0.8 sec. on the NHX 4000, 1.54 sec. on the NHX 5000; 2.09 sec. on the NHX 6300

Direct transfer of drive force through the table drive without gears
_ No gears = no backlash
_ Maximum transfer efficiency and speed
_ Wear-free for reduced maintenance and longer service life



LOCAL PRODUCTION

ASIA

IGA Campus – Iga City, Japan

The IGA campus in Japan is 861,112.8 ft.² and DMG MORI's largest production facility.

Approx. 861,112.8 ft.² of production area with output capacity for 300 machines / month.

› #40: NHX 4000, NHX 5000
› #50: NHX 5500, NHX 6300, NHX 8000, NHX 10000

Tianjin Factory – Tianjin, China

Local production of NHC machines in China for China.

Approx. 236,806.0 ft.² of production area with output capacity for 100 machines / month.

› #40: NHC 4000, NHC 5000
› #50: NHC 5500 (ab Q4/2015), NHC 6300 (ab Q4/2015)

NORTH AMERICA

DMG MORI Manufacturing USA – Davis, California

Local production of NHX machines for regional customers at the factory in Davis, California.

Approx. 220,660.2 ft.² of production area with output capacity for 100 machines / month.

› #40: NHX 4000, NHX 5000
› #50: NHX 6300

EUROPE

DECKEL MAHO Pfronten – Pfronten, Germany

Local production in central Europe: DECKEL MAHO Pfronten in Germany.

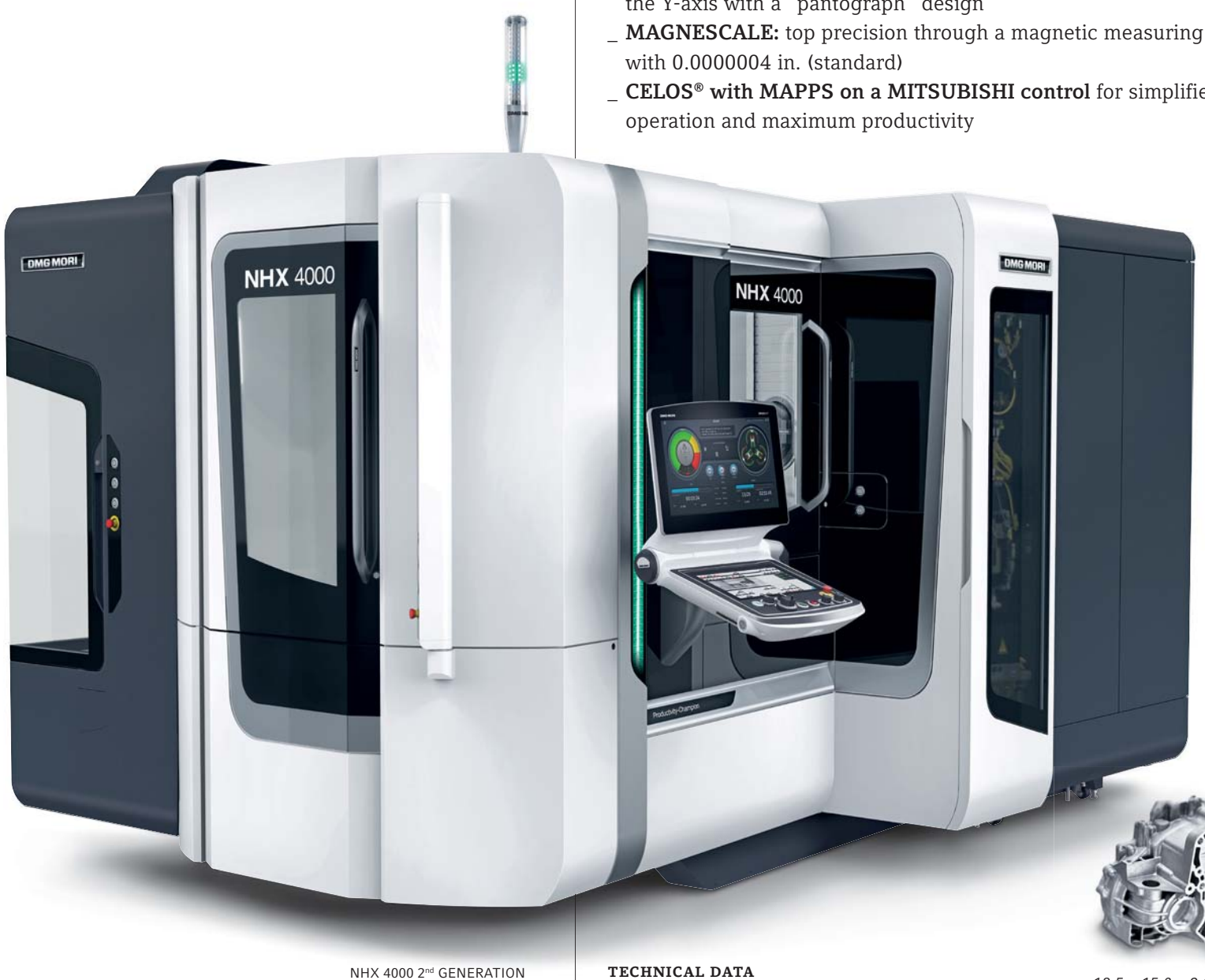
Approx. 807,293.2 ft.² of production area with output capacity for 1,500 machines / year.

› #40: NHX 4000, NHX 5000

NHX 4000, NHX 5000
2nd GENERATION / #40 toolholder
Horizontal machining centers with unmatched stability, precision and dynamics

NHX 4000 / NHX 5000 2nd GENERATION HIGHLIGHTS

_ **High dynamics** for fastest chip-to-chip times of 2.2 sec.: 1.2 / 1.2 / 1.2 g (NHX 4000) or 1.1 / 1.2 / 1 g (NHX 5000)
_ Up to 3,779.5 ipm. rapid traverse, 2,362.2 ipm. (standard); 35% greater dynamic stability
_ **Maximum performance thanks to the new speedMASTER spindle**
_ **Direct Drive table (DDM®) as optional equipment for up to 100 rpm.**
_ **Optimal chip flow** due to steeper work area walls and durable lining of the Y-axis with a "pantograph" design
_ **MAGNESCALE:** top precision through a magnetic measuring systems with 0.0000004 in. (standard)
_ **CELOS® with MAPPS on a MITSUBISHI control** for simplified operation and maximum productivity



NHX 4000 2nd GENERATION

TECHNICAL DATA
travel (X / Y / Z): 22.0 / 22.0 / 26.0 in.;
workpiece dimensions, max.: ø 24.8 × 35.4 in.;
table load, max.: 881.8 lbs.; pallet size:
15.7 × 15.7 in.; tool interface: ISO40

18.5 × 15.0 × 9.1 in.

Gearbox / Automotive
Material: Al SiMg-T6
Production time: 10 min.

ø 13.8 × 12.8 in.

Bearing flange / Machine construction
Material: 42CrMo4
Production time: 26 min.

DMC H HORIZONTAL MACHINING

DMC H *linear* – Highly dynamic linear drive technology with up to 3,937.0 ipm. for maximum consistent precision.

Swivel rotary table with a swivel angle of 225° – highly productive 5-axis machining in one setup.

The comprehensive design of DMC 60/80 H *linear* horizontal machining center makes it a highly productive and flexible solution for any job. Linear drives in all main axes, up to 3,937.0 ipm. rapid traverse and max. 32.8 ft./s² acceleration deliver the highest dynamics with unparalleled precision. Other impressive features include unrestricted crane loading (for machines with a pallet changer), unobstructed work area viewing and optimal accessibility to the fluid box – for unmatched ergonomics and productivity.

DMC 60 H *linear*
Compact 185.1 ft.² footprint for machines with a pallet changer and chip conveyor

DMC 60 H *linear* HIGHLIGHTS

- **Productive –** linear drives in all axes with up to 3,937.0 ipm. rapid traverse, 32.8 ft./s² acceleration, and 2.5 sec. chip-to-chip times
- **Precise –** consistent precision through linear drives, circular shape accuracy of max. 0.0002 in., and roundness of max. 0.0002 in.
- **Flexible –** NC rotary table or swivel rotary table for 5-axis simultaneous machining
- Compact wheel magazine for parallel setup on 2 wheels

19.7 × 11.8 × 9.8 in.

Crankcase / Automotive
Material: AlSi8Cu3
Production time: 24.5 min.

TECHNICAL DATA
travel (X / Y / Z): 24.8 / 31.5 / 33.5 in.; rapid traverse: 3,937.0 / 3,937.0 / 3,937.0 ipm.; spindle speed: 12,000 rpm.; power: 26.8 hp.; torque: 81.1 ft./lbs.; workpiece size: ø 31.5 × 40.6 in.; workpiece weight: 1,322.8 lbs.; tool magazine: 40 (63 / 123 / 183 / 243 / 303) slots

linear DRIVE

- Greatest dynamics and consistent precision
- 5-year warranty

ZBG Zerspanungstechnik

Maximum quality in the shortest time thanks to linear drives.

Three new DMC 60 H *linear* machines at ZBG produce challenging motorcycle parts quickly time with exceptional quality.

Compared to horizontal centers with ball screw spindles, the DMC 60 H *linear* saves ZBG 20 - 25% in production time per part.

In the last 20 years, **ZBG Zerspanungstechnik Bruck GmbH** has grown into a major supplier for customers in the automotive and motorcycle industries. **BMW, Audi and KTM** are just three of the major players who entrust their value chain for key supply parts to ZBG specialists. The company relies on its 200 professionals to produce and assemble **complex engine and chassis components**.

The ZBG motto is "**high precision, quality and flexibility,**" which they accomplish with modern high-tech machine tools - including **three new DMC 60 H *linear*** machines. The decisive factors in acquiring the DMG MORI machines was their excellent workpiece geometry, surface quality and high productivity characteristics, says Markus Forster, CEO of ZBG: "The DMC 60 H *linear* allowed us to **reduce production time by up to 25% without sacrificing quality.**"

ZBG Zerspanungstechnik Bruck GmbH
Sandmühlweg 8, 92436 Bruck i. d. Opf.
Tel.: +49 (0) 9434 / 201 - 0
Info@zbg.de, www.zbg.de

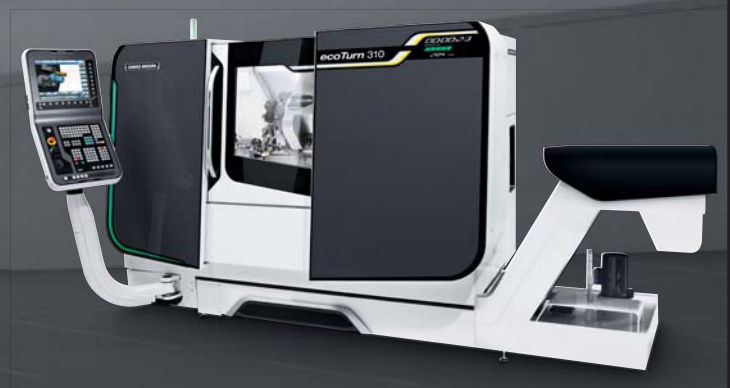
Zerspanungstechnik Bruck GmbH

Nº 1 – 2015

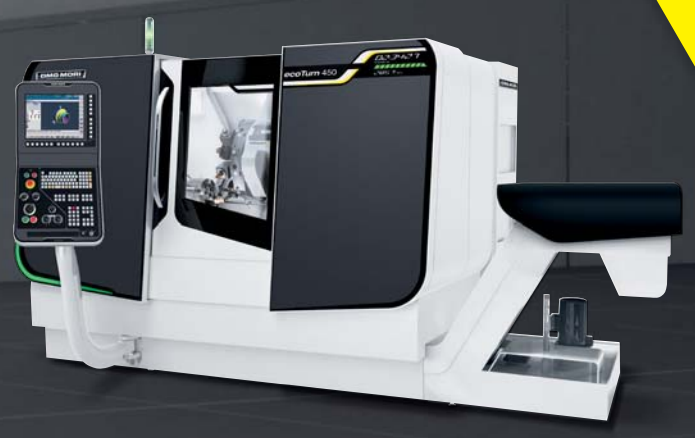
ECOLINE

Highest functionality, best price!

TURNING TECHNOLOGY



ecoTurn 310



ecoTurn 450

ecoTurn 510

The complete ECOLINE Series at a glance

ecoTurn 650

MILLING TECHNOLOGY

ecoMill 50

ecoMill 70

ecoMill 635 V

ecoMill 1035 V

MILLTAP 700

ECOLINE

HIGHEST FUNCTIONALITY, BEST PRICE!

Turning technology: *ecoTurn*

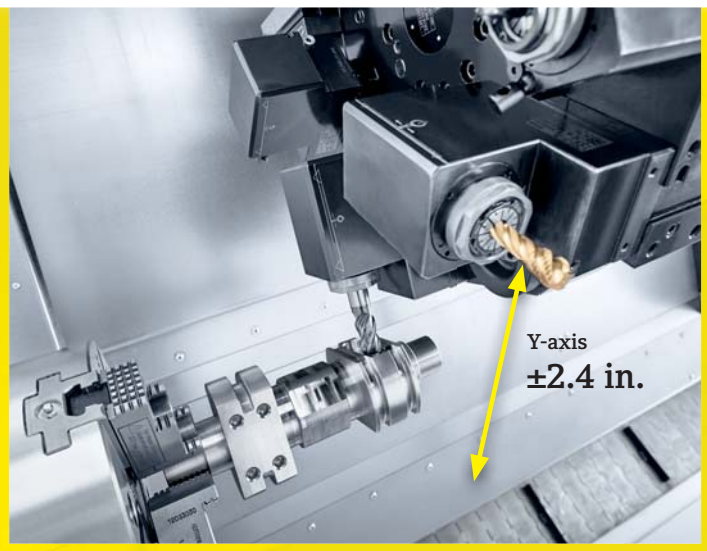
Start 2015 with the *ecoTurn* Series featuring turning diameters of ø 7.9–23.6 in.

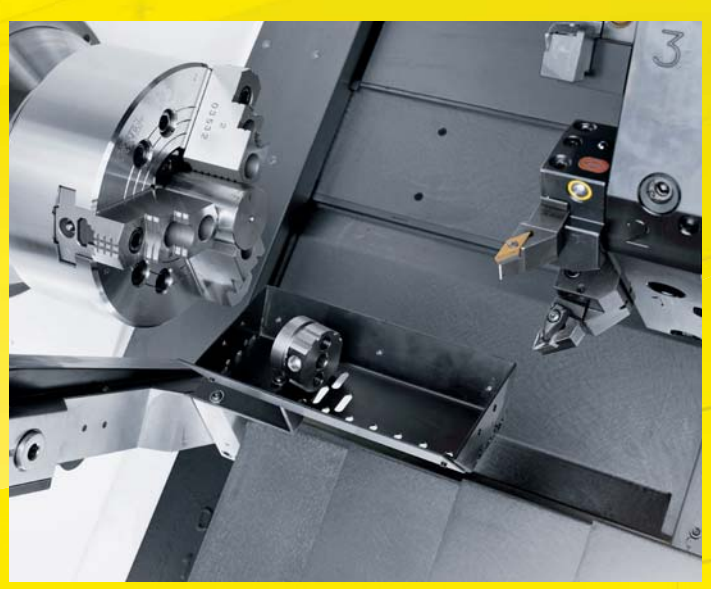
HIGHLIGHTS

- **Highly dynamic, fast servo turret** with VDI 30*/40/50 capacity with up to 12 optional driven tool slots and 6 optional block tool slots (not available for *ecoTurn* 310)
- **Large optional bar capacity** from ø 2.6 to 4.3 in.
- **Automation interface** for fast manufacturing
- Hollow clamping cylinder (comes standard)
- Double row ball bearings for maximum stability
- **3D control technology with SLIM*line*®:**
  – Operate 4.5 on a SIEMENS 840D solutionline control
  – MAPPS IV on a MITSUBISHI control*
  (only available for *ecoTurn* 450)
- **DMG AUTO*shutdown***:** Intelligent standby control for efficient power management during machining idling

* Optional

More flexibility for complex turning / milling operations with a Y-axis with ±2.4 in.* (available for *ecoTurn* 510).





Workpiece pick-up device (part of bar package).

ecoTurn 310
Standardized technology with 1,181.1 ipm. rapid traverse & up to 2.6 in.* bar capacity

Chuck diameter: 8.3 in.*
Toolholder: VDI 30

ecoTurn 450
Large ø 15.7 × 23.6 in. work area on a compact 52.7 ft.² footprint

Chuck diameter: 8.3–12.4 in.*
Toolholder: VDI 40

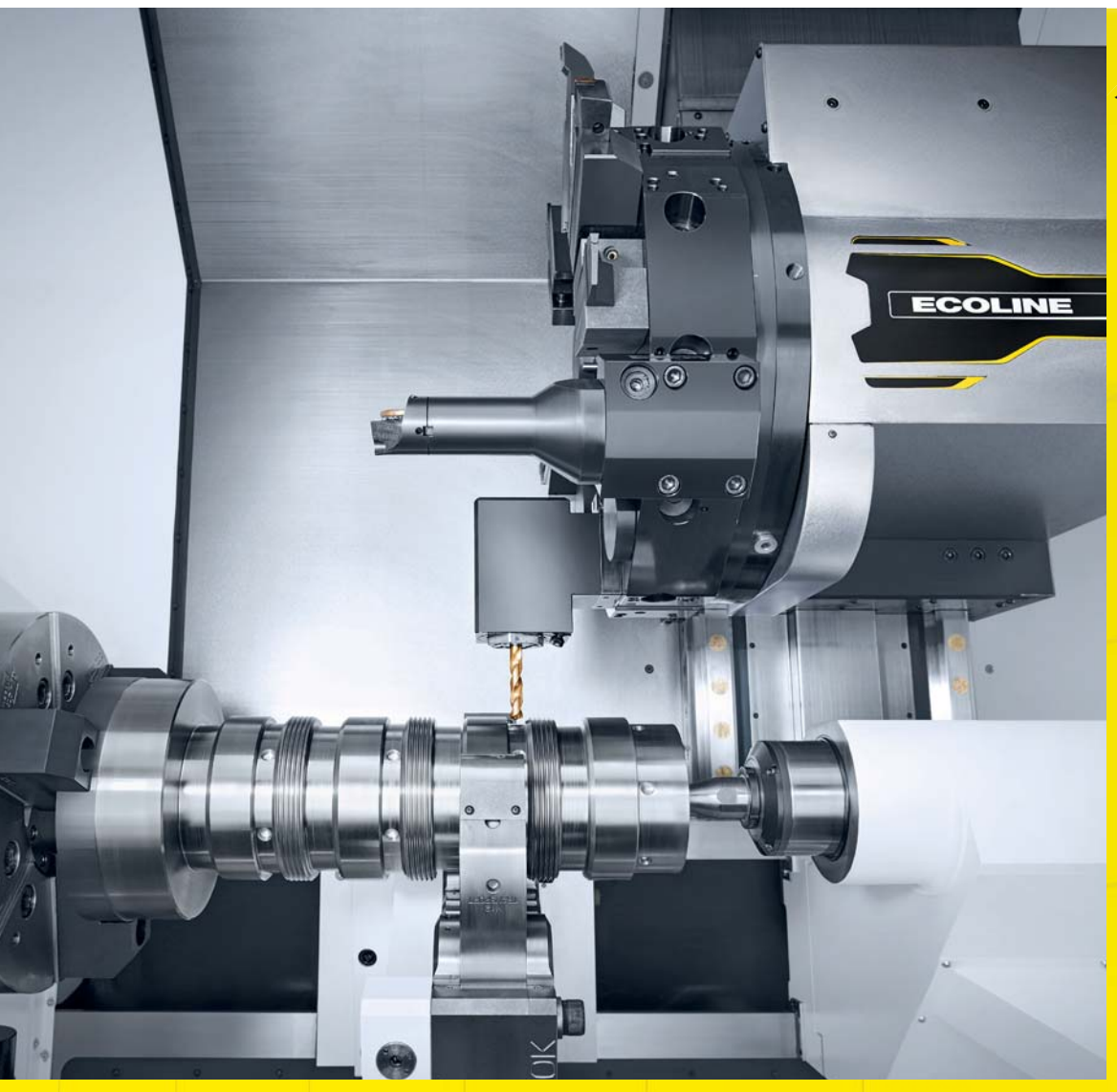
Bestseller! Over 3,200 machines installed worldwide since 2007!

MADE BY DMG MORI IN THE USA

	Operate 4.5 platform on a SIEMENS 840D solutionline control	HEIDENHAIN CNC PILOT 640	MAPPS IV on a MITSUBISHI
ecoTurn 310	•	○	
ecoTurn 450	•	○	○
ecoTurn 510	•	○	
ecoTurn 650	•	○	

• Standard ○ Optional

Optional dynamic VDI 50 servo turret for the *ecoTurn* 650, featuring up to 12 driven tool stations and 6 block tools.



VDI 50 machining examples	
Chuck size	ø 15.7 in.
Raw material dimensions	ø 11.8 × 39.4 in.
Material	Steel (C45)
Production time	25 min. (per batch)
Roughing	Cutting speed (Vc) 7,086.6 ipm., feed rate f = 0.02 in./rev. & 0.4 in. cutting depth
Finishing	Cutting speed (Vc) 11,023.6 ipm., feed rate f = 0.005 in./rev.
Driven drill ø 0.6 in.	Cutting speed (Vc) 4,724.4 ipm., feed rate f = 0.005 in./rev.
Trailing steady rest (from the turret)	
Approx. 40% removal rate	

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

ø 1.4 × 1.4 in.

Nozzle

***ecoTurn* 310**
Material: Steel
Production time: 6 min. 12 sec.
Industry: Machine construction

ø 5.9 × 1.0 in.

Drive wheel

***ecoTurn* 510**
Material: Aluminum
Production time: 9 min. 57 sec.
Industry: Machine construction

ø 4.7 × 15.6 in.

Coupling rod

***ecoTurn* 450**
Material: Stainless steel (14305)
Production time: 48 min.
Industry: Machine construction

ø 19.7 × 15.7 in.

Drive shaft

***ecoTurn* 650**
Material: Steel (C45)
Production time: 55 min.
Industry: Machine construction

ecoTurn 510

Unbeatable quality and impressive performance with a VDI 40 turret and Y-axis*

Chuck diameter: 9.8 – 12.4 in.*
Toolholder: VDI 40

ecoTurn 650

Impressive 1,475.1 ft./lbs. of torque and 2,250 rpm. without gears for high-precision, backlash-free C-axis machining*

Chuck diameter: 12.4 – 19.7 in.*
Toolholder: VDI 40

Technical data

		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 15.7	ø 18.3	ø 23.6
Longitudinal travel (Z)	in.	17.9	23.6	41.3	45.2
Toolholder	VDI	30	40/BMT	40	50
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 8.3* / ø 9.8* / ø 12.4*	ø 9.8* / 12.4*	ø 12.4* / ø 15.7* / ø 19.7*

*Optional

More information online:
ecoline.dmgmori.com

ECOLINE

HIGHEST FUNCTIONALITY, BEST PRICE!

Milling technology: *ecoMill, ecoMill* V and MILLTAP

3- up to 5-sided and 5-axis simultaneous machining: the ecoline milling series offers you endless possibilities!

HIGHLIGHTS

- **12,000 rpm. inline spindle comes standard**
- **Compact C-frame design** for optimal floor space utilization
- **3D control technology with SLIM*line*® interface** featuring the 4.5 Operate platform on a SIEMENS 840D solutionline control
- **DMG AUTO*shutdown**:** Intelligent standby control for efficient power management during machine idling

* Optional

***ecoMill* HIGHLIGHTS**

- Maximum efficiency - **NC swivel rotary table with digital drives for 5-sided machining**
- Reduced idling: **944.9 ipm. rapid traverse**
- Tool magazine for **16 / 32 tools** with a fast double gripper (32 slots for *ecoMill* 70 comes standard, optional for *ecoMill* 50)
- Thermally stable mineral cast bed – four-point support

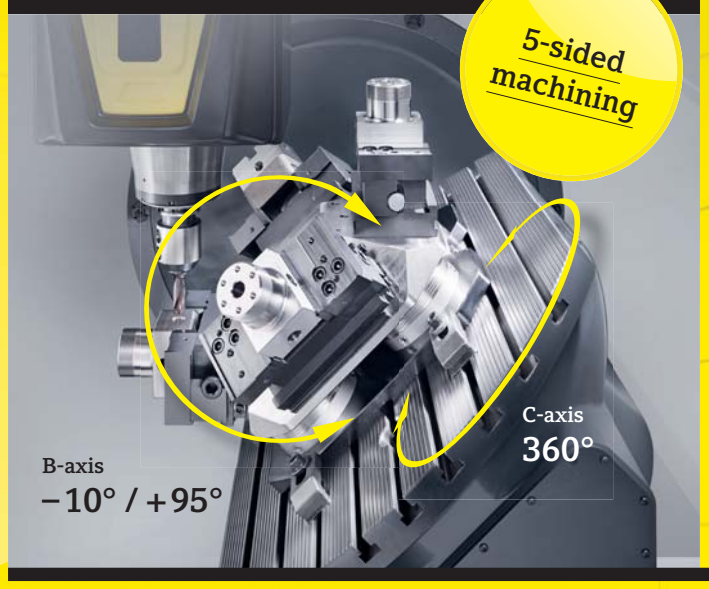
***ecoMill* V HIGHLIGHTS**

- Reduced idling: **1,181.1 ipm. rapid traverse**
- Tool magazine for **20 tools** (optional 30) with fast double gripper
- Thermally stable mineral cast bed - three-point support

5-sided machining with a NC swivel rotary table for maximum shape and position tolerances (0.0002 in.**)

ecoMill 50
- Permitted table load 440.9 lbs.
- Clamping area ø 24.8 x 19.7 in.
- Swivel range -5° to + 110°

ecoMill 70
- Permitted table load 771.6 lbs.
- Clamping area ø 31.5 x 24.4 in.
- Swivel range -10° to + 95°



** With direct path measuring system

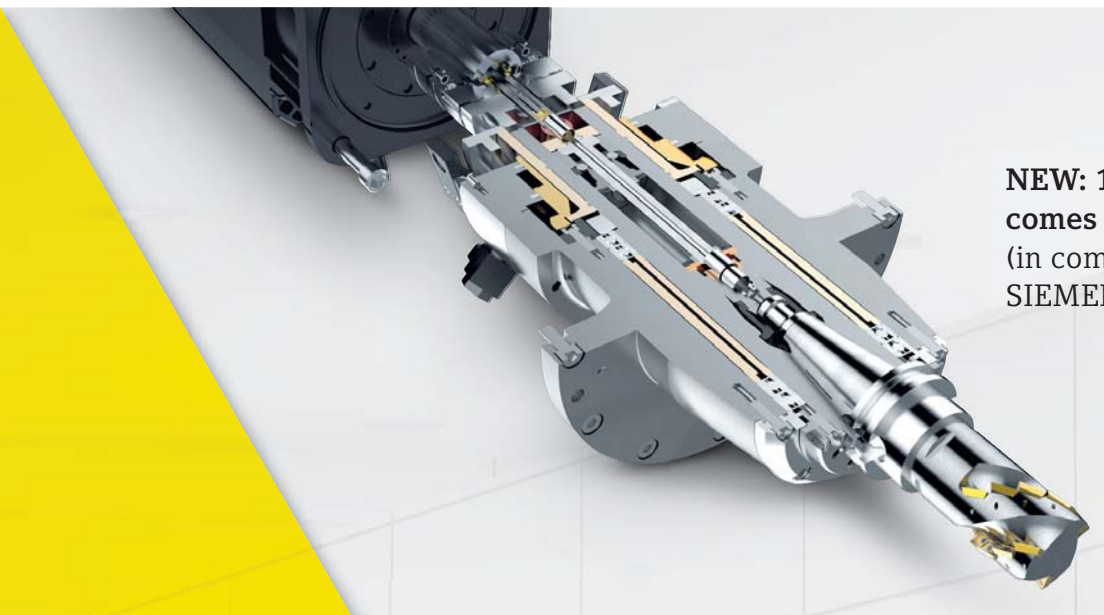
***ecoMill* 50**
Patented NC swivel rotary table for exceptional precision

***ecoMill* 70**
Maximum precision and surface quality through 5-sided machining in one setup

***ecoMill* 635 V**
Space-saving, innovative C-frame design and X-axis in the table

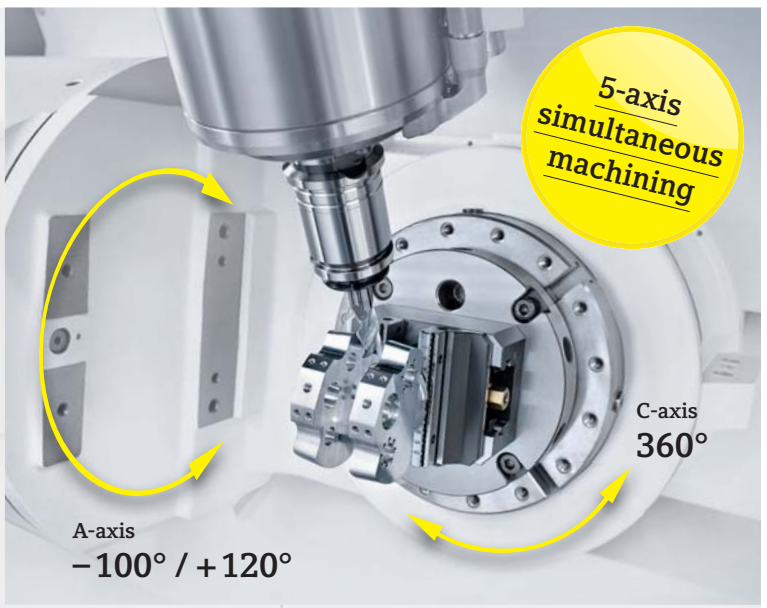
	Operate 4.5 platform on a SIEMENS 840D solutionline control	HEIDENHAIN TNC 620
***ecoMill* 50**	•	○
***ecoMill* 70**	•	○
***ecoMill* 635 V**	•	○
***ecoMill* 1035 V**	•	○
MILLTAP 700	•	

• Standard ○ Option



NEW: 12,000 rpm. inline spindle comes standard
(in combination with a SIEMENS 840D solutionline control)

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



***ecoMill* 635 V / *ecoMill* 1035 V**

_ Sturdy C-frame design with optimal chip flow
_ 0.0002 in.** positioning accuracy

MILLTAP 700 HIGHLIGHTS – FAST AND PRECISE

› Patented tool changer with **0.9 sec. tool change time and chip-to-chip time < 1.5 sec.**
› **High axis acceleration of 59.1 ft./s², 2,362.2 ipm. rapid traverse** and size 35 linear guides
› Dynamic main spindle with 10,000 rpm. (air cooled) and 24,000 rpm.* (water cooled)
› **Direct path measuring system in X / Y / Z*** for best repeatability and consistent accuracy
› Removal volume with a 10,000 rpm. spindle: **12.2 in.³ (steel), 122.1 in.³ (aluminum)**
› Operate 4.5 platform on a SIEMENS 840D solutionline control

***ecoMill* 1035 V**
High-quality ball screw spindles and roller-guided linear roller guideways

MILLTAP
Comprehensive customization options, including 5-axis high-performance machining center with 24,000 rpm.

Technical data

		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.	12,000	12,000	12,000	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 slots		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	degree	–5 / +110	–10 / +95	–	–	–100 / +120

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

Workpiece handling
Autonomous operations with fast cycle times, small footprint, and high production capacity

MORE ON PAGE 45 →

Fast and dynamic 3D controls for all ECOLINE machines.

The right 3D control technology for every job.

No matter what the job, make no compromises in power and flexibility of your machine controls - because time is money. **ECOLINE offers the right 3D control technology for any application** backed up by the **fastest systems**. Whatever you require, we provide only the best hardware and **software solutions** for your entire process chain - from a drawing to your finished workpiece.

All ECOLINE information available at

→ *www.ecoline.dmgmori.com*

SLIM*line*®
with MAPPS IV* on MITSUBISHI

- 15″ TFT monitor with 3D workpiece simulation
- Memory: 50 MB (6 GB optional)
- Programming: ISO & dialogue functionality
- HELP button for fast programming support

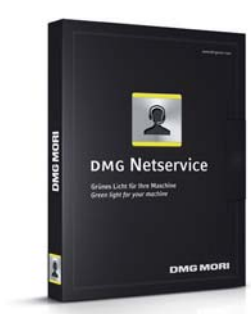
*Optionally available for the *ecoTurn* 450

SIEMENS 840D solutionline
consistent user interface for all DMG MORI machines

YOUR ADVANTAGES

- The same high-tech control functionality that is offered on all premium DMG MORI machines
- Cost savings through one-time machine operator training
- Greater functionality and utilization of machine operators across all DMG MORI machine tools

Powertools for ECOLINE



DMG Netservice
Via the online **DMG MORI Service Hotline**, expert support is always available.

DMG Service Agent**
Maintenance planning and material ordering support to **minimize machine downtime**.

DMG MORI Messenger**
Web-based software for **live machine status** information. Accessible **via your smartphone or iPad**.

SLIM*line*®

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

ShopMill / ShopTurn comes standard

15˝ TFT monitor with 3D workpiece simulation

Memory: 5 MB + 4 GB

Scratch-resistant surface

All common turning / milling cycles included

Comes standard

MDynamics**

Best surface quality, fast adaptation, quick milling operations

Block processing time: 1.5 ms

Flexible programming:

1. ShopTurn / ShopMill
2. ProgramGuide: innovative cycle programming
3. DIN / ISO: intuitive G-code support

DMG MORI SMART*key*®

Personalized authorization – custom access privilege by user

** Optional

DMG MORI SMART*key*®

Personalized authorization with DMG MORI SMART*key*® assigns custom access privilege to each user. Access privileges are organized by machine operation (operating modes) and control operation (access level).

24/7 SERVICE HOTLINE
DMG MORI
+1 (855) 364-6674

ECOLINE HEADQUARTERS IN WINTERTHUR, SWITZERLAND

ECOLINE from DMG MORI – ECOLINE production near you.

ECOLINE

- ECOLINE based at our Global Headquarters in Winterthur, Switzerland
- Uniform global production and quality standards
- Local production near you
- Fast delivery and minimized shipping costs
- No global currency market exposure – domestic currency advantage

All new ECOLINE information available online at:
www.ecoline.dmgmori.com

PRODUCTION FACILITIES & DMG MORI TECHNOLOGY CENTERS

UNITED STATES

DMG MORI
Davis, United States

PRODUCTION:
ecoTurn 450*
* available April 2015

EUROPE

DMG MORI
Seebach, Germany

PRODUCTION:
MILLTAP 700

DMG MORI
Bielefeld, Germany

PRODUCTION:
ecoTurn 650

DMG MORI
Pleszew, Poland

PRODUCTION:
ecoTurn 310
ecoTurn 450
ecoTurn 510
ecoMill 50
ecoMill 70
ecoMill 635 V
ecoMill 1035 V

DMG MORI
Ulyanovsk, Russia

PRODUCTION:
ecoTurn 310
ecoMill 50*
ecoMill 635 V
ecoMill 1035 V
* available March 2015

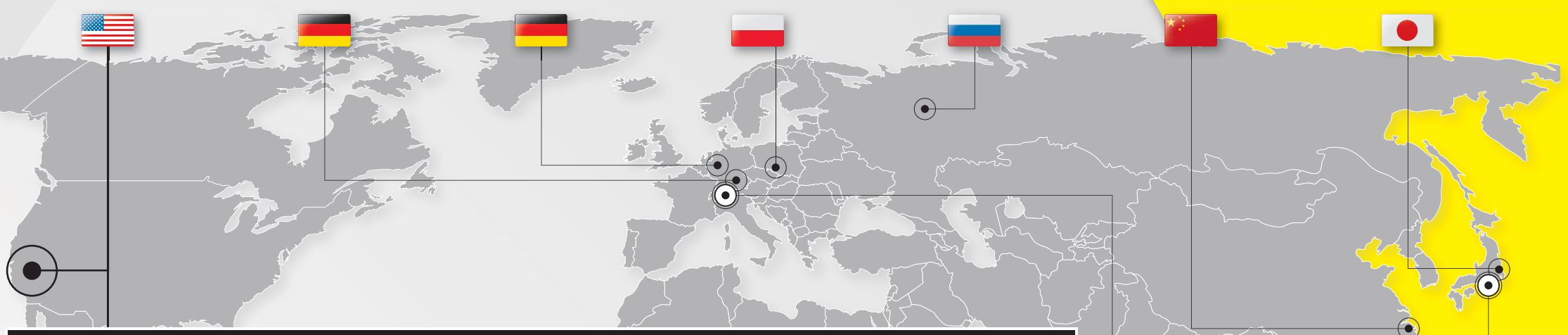
ASIA

DMG MORI
Shanghai, China

PRODUCTION:
ecoTurn 310
ecoTurn 450
ecoTurn 510
ecoMill 50
ecoMill 635 V
ecoMill 1035 V
MILLTAP 700

DMG MORI
Chiba, Japan

PRODUCTION:
ecoTurn 450*
MILLTAP 700
* available April 2015



DMG MORI SEIKI MANUFACTURING USA, INC. 3805 Faraday Ave., Davis, CA 95618 USA

- Approx. 1,200,000 ft.² campus
- More than 236,000 ft.² of production area
- Greater than 77,000 ft.² of R&D facilities
- Production capacity for over 100 machines/month
- Fully automated manufacturing plant
- No coolant used for cast iron production
- 100-hour run test for every machine
- Easy access to major west coast shipping ports
- Onsite design, analysis, and R&D
- Customer-focused Technology Center

Mr. Adam Hansel
President of DMG Mori Seiki Manufacturing USA, Inc.
Phone: +1 (530) 746-7400
ahansel@dmgmori-usa.com

Global Headquarters & ECOLINE Headquarters

DMG MORI
Winterthur, Switzerland
Phone: +41 58 611 5000

Global Headquarters

DMG MORI
Tokyo, Japan

30 US

ECOLINE spare parts at an unbeatable price – for longer machine service life:

- 7 Spare Parts Center on 3 continents
- Over $200 million worth of spare parts inventory with > 95% availability
- More than 260,000 unique items in stock
- Original spare parts directly from the manufacturer
- New and refurbished parts available
- DIN ISO 9001 & AEO-F certified
- Order via our 24 / 7 Service Hotline

Nº 1 – 2015

DMG MORI Systems

Comprehensive system expertise for optimal productivity

TECHNOLOGY
Our core competency

MACHINES
Compact, robust & innovative

AUTOMATION
Perfect solutions

PERIPHERALS
Customization

Image:
Car cylinder head production line using 10 NHX 5000 machines with automatic loading / unloading for efficient automated manufacturing.

A STRONG PARTNER FOR YOUR MANUFACTURING SYSTEMS

DMG MORI Systems – the future is automation.

Silvio Krüger
Managing Director
Contact: DMG MORI Systems
Antoniusstraße 14, D-73249 Wernau
Phone: +49 (0) 7153 / 934 – 150
Email: silvio.krueger@dmgmori.com

Dr. Bingyan Zhao
General Manager
Contact: DMG MORI SEIKI
Manufacturing USA
Phone: +1 (847) 593-5400
Email: bingyan.zhao@dmgmori.com

In the "**Industry 4.0**" age, **automated manufacturing processes** are more important than ever. Effectively merging these real and virtual production elements requires **continuous fluid communication** between systems, machines and components.

360° system expertise for our customers

DMG MORI Systems meets the challenges of tomorrow with a comprehensive range of services, including technology, machine tool and automation solutions for **different workpieces and batch sizes.**

Process reliability and unmatched productivity

Our uniquely comprehensive service offerings, which include system design solutions, machine and process technology, as well as **turnkey projects**, ensure that our customers can effectively manage future production demand. Also, to better serve customers, we are building a new Technology Center in **Wernau, Germany** that will focus on tool and presetter technology, control design and project management. Combined with the expansion at our DMG MORI Davis, California Campus, the world just became smaller for automation solutions.

More information about automation and DMG MORI Systems services available online at

→ *www.dmgmori.com*

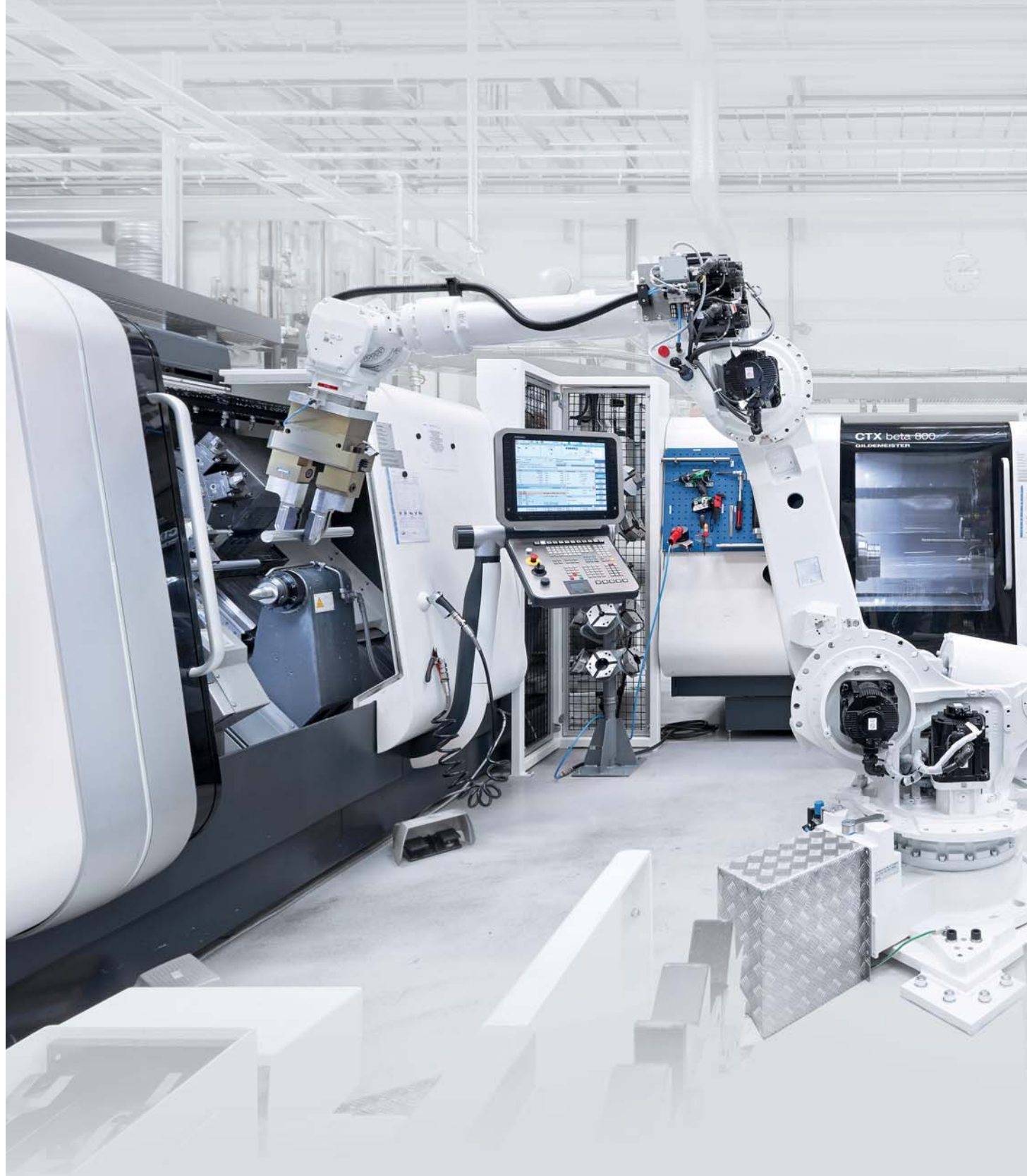
+++ **NEWS**TICKER +++
DMG MORI Systems

+ 68 projects

+ 14 completed projects in the 1st quarter of 2015 (2 in Wernau)

Effective turnkey solutions from one source.

As a global supplier of machine tools, DMG MORI has years of experience in **technology development and automation**. Along with our engineering expertise and our strong supplier network, we always develop the right solutions for our customers. DMG MORI stands for the absolute reliability of your production.



DMG MORI Systems – perfect materials flow and fast cycle times.

- **EXCEPTIONAL WORK-PIECE FLEXIBILITY**
- **IMPRESSIVE MACHINING PERFORMANCE**
- **PARALLEL MANU-FACTURING PROCESSES**
- **EFFICIENT SYSTEMS**
- **ADAPTIVE PROGRAMMING**

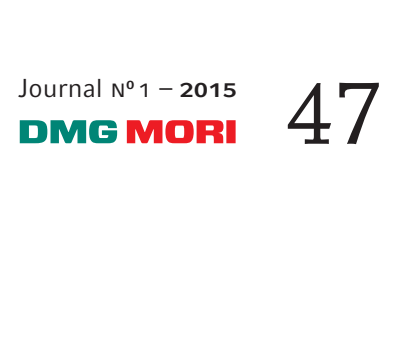
DMG MORI SYSTEMS

DMG MORI Systems – custom automation for any industry.

We offer complete automation solutions, from planning to implementation, with our modular system that can be adapted to any production environment!

SEGMENT 1 MACHINE-INTEGRATED AUTOMATION

› Integration with the machine
› Universal production



FACTORY SOLUTIONS

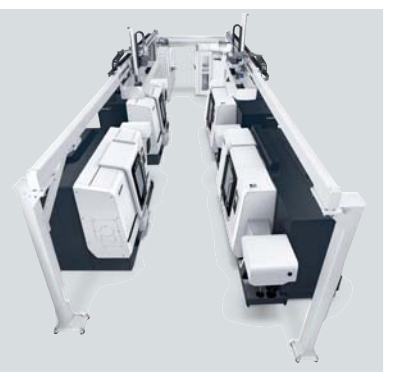
SEGMENT 2 STANDARD AUTOMATION

› Tool & workpiece handling solutions
› Upper transfer & robotic solutions

SOLUTIONS FROM DAVIS, CALIFORNIA

SEGMENT 3 FLEXIBLE MANUFACTURING CELLS

› Implementation of custom manufacturing processes with automation solutions for various machine groups and third-party products



SOLUTIONS FROM DAVIS, CALIFORNIA

SEGMENT 4 PRODUCTION LINES

› Planning, simulation and implementation of turnkey options based on **DMG MORI line-type** solutions

SOLUTIONS FROM DAVIS, CALIFORNIA

DMG MORI SYSTEMS HIGHLIGHTS

_ DMG MORI Systems is the efficient combination of **technology, machinery, automation and peripherals**
_ We **plan, simulate, and implement** your turnkey solution
_ **Our core competencies are**: control design, tool layout, clamping arrangement, machine tool and automation organization
_ We offer **state-of-the-art machine design concepts for mass production**
_ Comprehensive project management = **one contact for all your needs**
_ Expert partner for **peripheral machines and tool integration**

Xylem processed on a flexible manufacturing cell for dirty water pump shafts - roughing, turning, milling, grooving and finishing. Thanks to automatic measurement adjustment, additional quality control is not required.

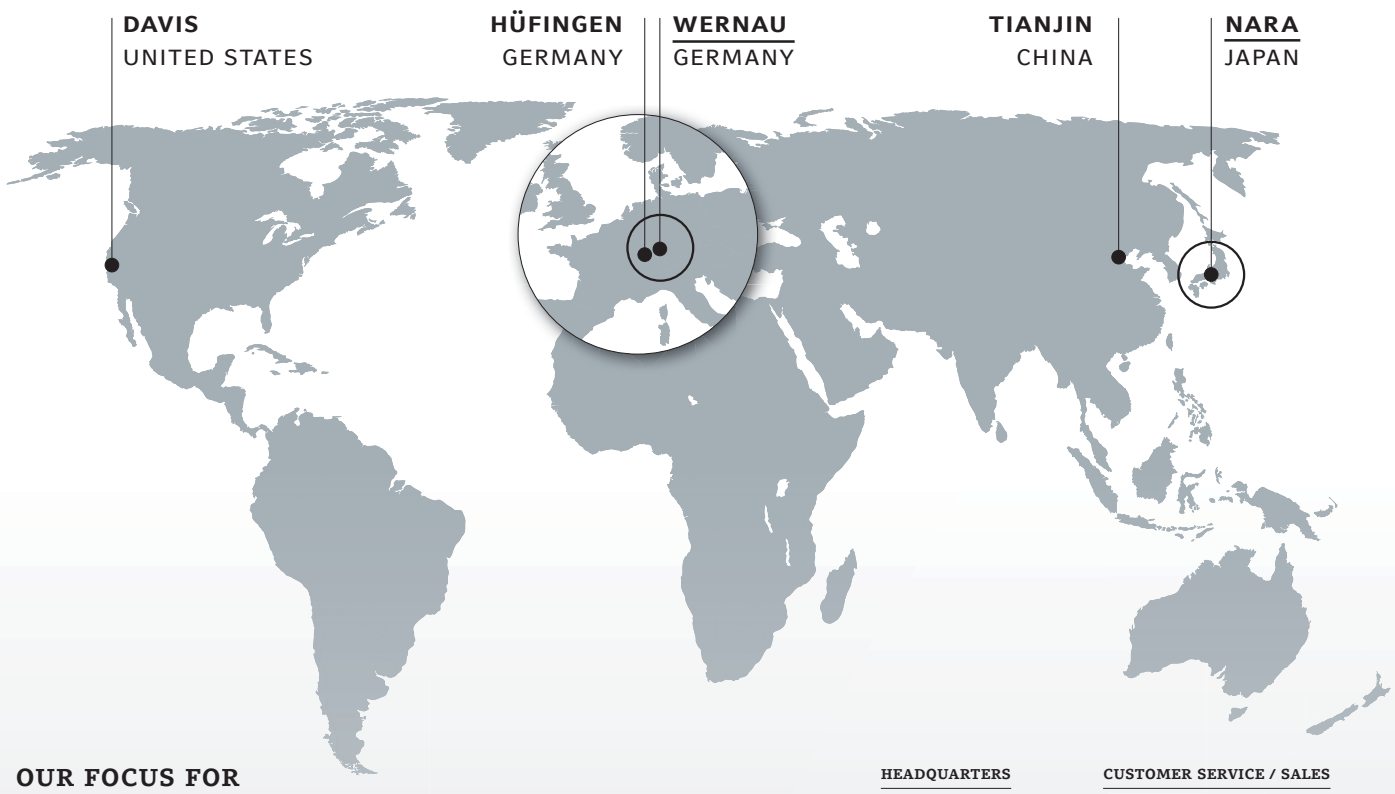
» **HIGH SYSTEM AVAILABILITY > 95 %**
» **GREATEST OUTPUT**
» **COMPACT FOOTPRINT**
» **FAST CYCLE TIMES**

A STRONG PARTNER FOR YOUR MANUFACTURING SYSTEMS

New Technology Center – the effective combination of our systems expertise.

With DMG MORI Systems GmbH, the combined company has concentrated its **expertise in comprehensive system solutions**, ranging from standard automation to flexible manufacturing cells and even complete production lines. Our competitive advantage lies in the perfect coordination of technology, machine tool and automation. DMG MORI Systems' **complete product line** guarantees **the most reliable and efficient manufacturing possible**.

DMG MORI Systems – worldwide presence in key global markets.



OUR FOCUS FOR YOUR SUCCESS!

_ Global presence with operations in all key markets
_ Decades of experience and innovative leadership in machine tool production

HEADQUARTERS
WERNAU
NARA

ADDITIONAL LOCATIONS
DAVIS
HÜFINGEN
TIANJIN

CUSTOMER SERVICE / SALES
WERNAU: EUROPE, CHINA, SOUTH AMERICA
NARA: ASIA, EXCLUSIVELY CHINA
DAVIS: NORTH AMERICA

We are your expert partner from start to finish.

Production planning
› Process analysis
› Technology planning
› Simulation

Production logistics
› Automation planning
› Material flow analysis
› Layout planning

Start-up support
› Training
› Process visualization
› Back-up strategy

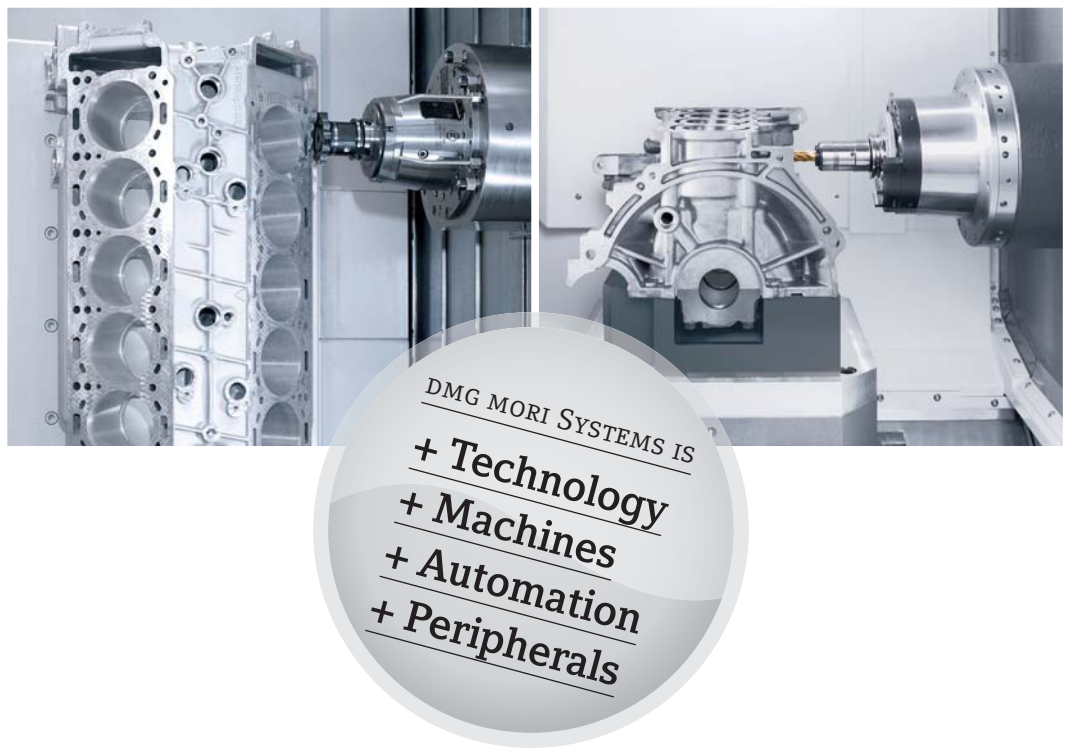
DMG MORI in Wernau: the new technology center for tool and device technology, control design and project management. **Completion in early 2016!**

NEW TECHNOLOGY CENTER IN WERNAU

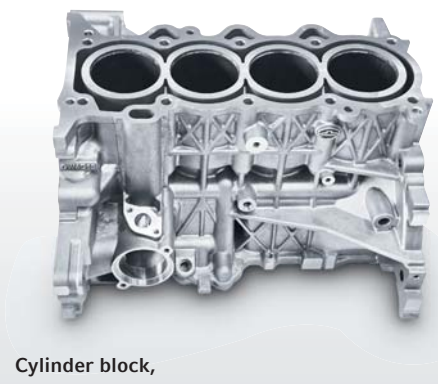
_ **505,903.8 ft.² total area**
_ **"Transparent factory" with a 129,166.9 ft.²** production area
_ **Fully climate controlled** to 69.8° F ±1 K
_ **6 central cooling emulsion lines**
_ **Central extraction** for emissions-free machining
_ **4,843.8 ft.² measuring area** for cmk & cpk certification

COMPREHENSIVE TURNKEY SOLUTIONS FROM DMG MORI SYSTEMS

You have the workpiece ...



In addition to our wide range of machine tools, we have proven expertise in technology applications, material flow and peripheral requirements. **We develop production lines that are tailored to your needs.**



Cylinder block,
machined on a DMC 80 H *linear*

Dimensions: 15.7 × 14.2 × 7.1 in.
Material: AlSi9Mg
Production time: 23 min.

Cylinder head,
machined on a DMC 60 H *linear*

Dimensions: 22.0 × 13.4 × 8.3 in.
Material: AlSi7Mg
Production time: 20 min.

Drive train transmission housing,
machined on a DMC 60 H *linear*

Dimensions: 14.8 × 13.6 × 12.4 in.
Material: AlSiMg-T6
Production time: 8 min.

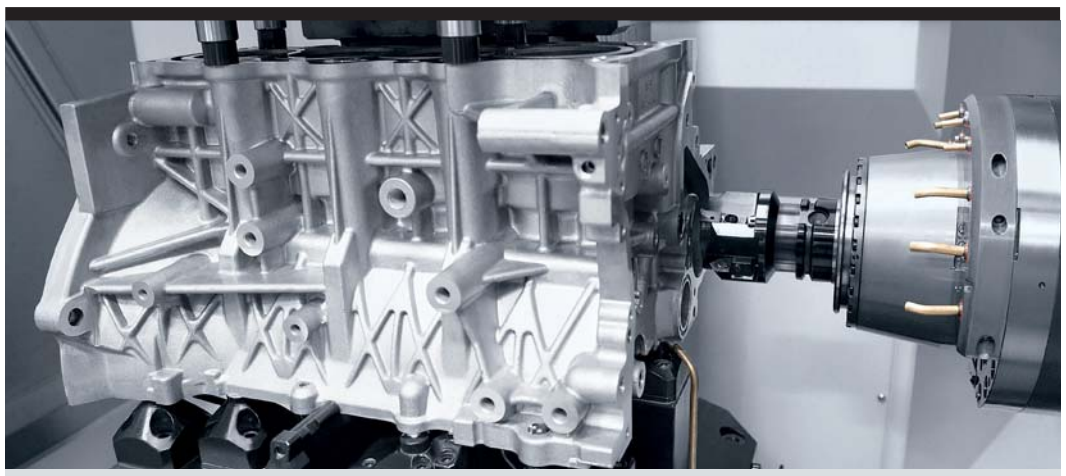
Crankshaft,
machined on a CTX gamma 2000 TC

Dimensions: 6.9 × 30.5 in.
Material: 42CroMo4
Production time: 180 min.
single-part production from a batch

... we have the right production line for you.

TECHNOLOGY

"We plan the entire technology design concept according to your requirements"



HIGHLIGHTS

_ Strong partner for tool & device technology (raw parts, voltage adapter, offset voltage)
_ Technology Center for control technology / host computer systems
_ Simulation of machining processes
_ Years of experience in systems solutions
_ Heavy-duty operations & unmatched workpiece precision

MACHINES

"We offer highly productive machine tools from the World market leader for your serial production operations"

HIGHLIGHTS

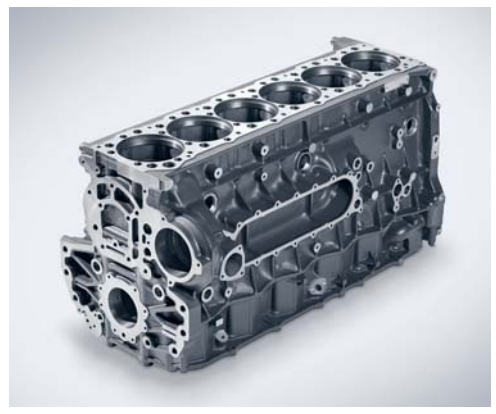
_ Compact, space-saving design
_ Precise & reliable through sturdy construction
_ Impressive dynamics via linear drives
_ Unrivalled 5-axis expertise
_ Flexible loading options (front / top loading)
_ Maximum precision with chip-to-chip times under 2.5 seconds

SEGMENT 4 PRODUCTION LINES

FPT Industrial Argentina S.A.

Maximum efficiency through comprehensive production lines.

Workpieces are loaded at the setup point. In the foreground is a turning station.



FPT Industrial Argentina S.A. produces 15,000 truck cylinder blocks and heads per year with their advanced production line.

For FPT Industrial Argentina S.A., DMG MORI Systems developed a turnkey project with 13 DMC machining centers.

_____As a company that specializes in complex, fully automated production solutions, **DMG MORI Systems** installed a production line for **FPT Industrial Argentina S.A.** in Córdoba, which manufactures **15,000 cylinder heads and blocks per year for truck engines. 11 DMC 125 H duoBLOCK®** and **2 DMC 160 H duoBLOCK®** machines make up the core of the integrated system. **DMG MORI Systems** developed the solution as a **turnkey project** - including tool selection, workpiece coordination, as well as turning station layout. In addition, the **device design concepts** also come from the same source and can, therefore, accommodate 2 types of parts for **in-process measurement** of cylinder drillings with corresponding **NC programming**. "Running time for cylinder heads and blocks are only 20 to 23 minutes," says Factory Manager Jose Scigliana in regards to their **expanded production capacity**. The **sophisticated machining requirements for camshaft and crankshaft drillings** is addressed with long-tool machining. For these drill rods, **DMG MORI Systems** developed a loading station at the setup point. Jose Sciglianas is pleased: "The production line is **efficient** and meets our **high-quality standards.**"

FPT Industrial Argentina S.A.
Ruta 9 km 695, CP: X5925XAD, Ferreyra,
Córdoba, Argentina
www.fpindustrial.com

AUTOMATION + PERIPHERALS

"Custom modules and control design concepts for your production system"

"We integrate all critical ancillary functions for every turnkey solution."

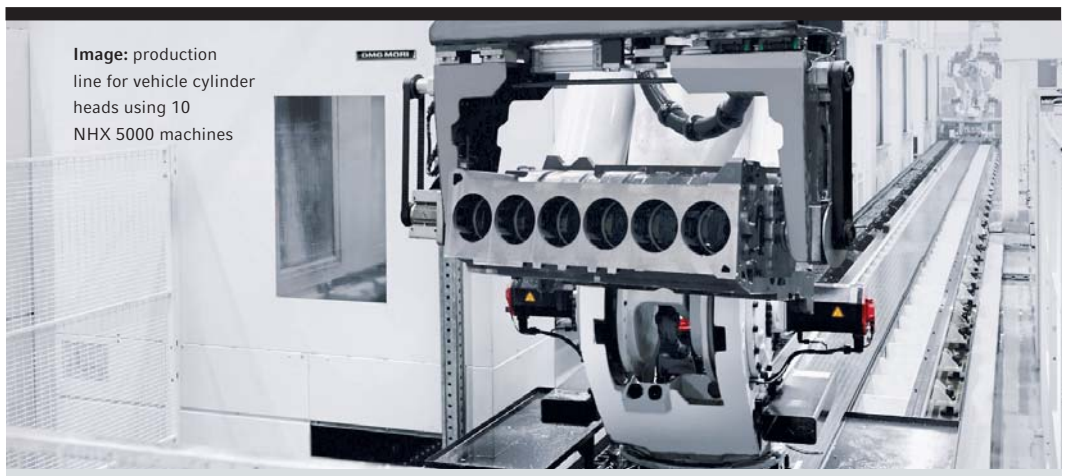


Image: production line for vehicle cylinder heads using 10 NHX 5000 machines

HIGHLIGHTS

_ Modular design concepts for any requirement
_ Load capacity up to 881.8 lbs.
_ Linear gantries for every application (incl. I- & H-loader concepts)
_ Robotic systems (5- to 7-axes)
_ Workpiece buffer (circular strokes, paternoster, stacked cells, decoupling modules)
_ Gripper attachment for tasks in different axes
_ Individual cell control

HIGHLIGHTS

_ Measuring & leak testing machines
_ Honing machines
_ Rinsing machines (interim and final)
_ Cleaning boxes for dry and wet machining
_ Screw and marking stations
_ Assembly stations
_ Deburring station

SEGMENT 1 MACHINE-INTEGRATED AUTOMATION

Up to 40% higher machine utilization!
The new compact rotary storage solution with a 226.0 ft.² footprint.

DMC 65 monoBLOCK®
with RS6 rotary storage

RS6 ROTARY STORAGE

_ **6 pallets in the system**
_ **Easy access** to the work area, setup point and tool loading station
_ Compact 226.0 ft.² footprint
_ Maximum pallet size is **19.7 × 19.7 in.**
_ Maximum workpiece size & weight is **ø 24.8 × 19.7 in.** and **1,102.3 lbs.**
_ Also available as a **milling / turning version**

RS6 rotary storage

DMC 65 monoBLOCK® HIGHLIGHTS

_ Up to **180 tool magazine slots***
_ **Highest process reliability** thanks to tool measuring in the work area and tool breakage control*

RS 6 available ***June 2015***

* Optional

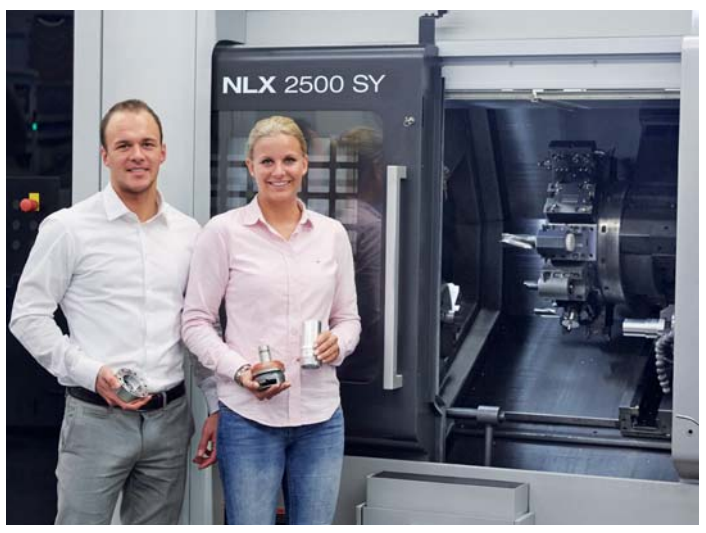
Automated production – efficient and flexible.

SEGMENT 2 STANDARD AUTOMATION

Karl-Heinz Maske & Söhne GmbH

To increase capacity and productivity, Maske recently invested in a NLX 2500 with WH 10 top workpiece handling.

The NLX 2500 handling system is designed for max. 26.5 lbs. workpieces



Maik Maske, son of CEO Michael Maske, and his sister Melanie Maske: "Automated production for small to large series jobs is a competitive advantage for us."

Workpiece handling for reliability and greater productivity.

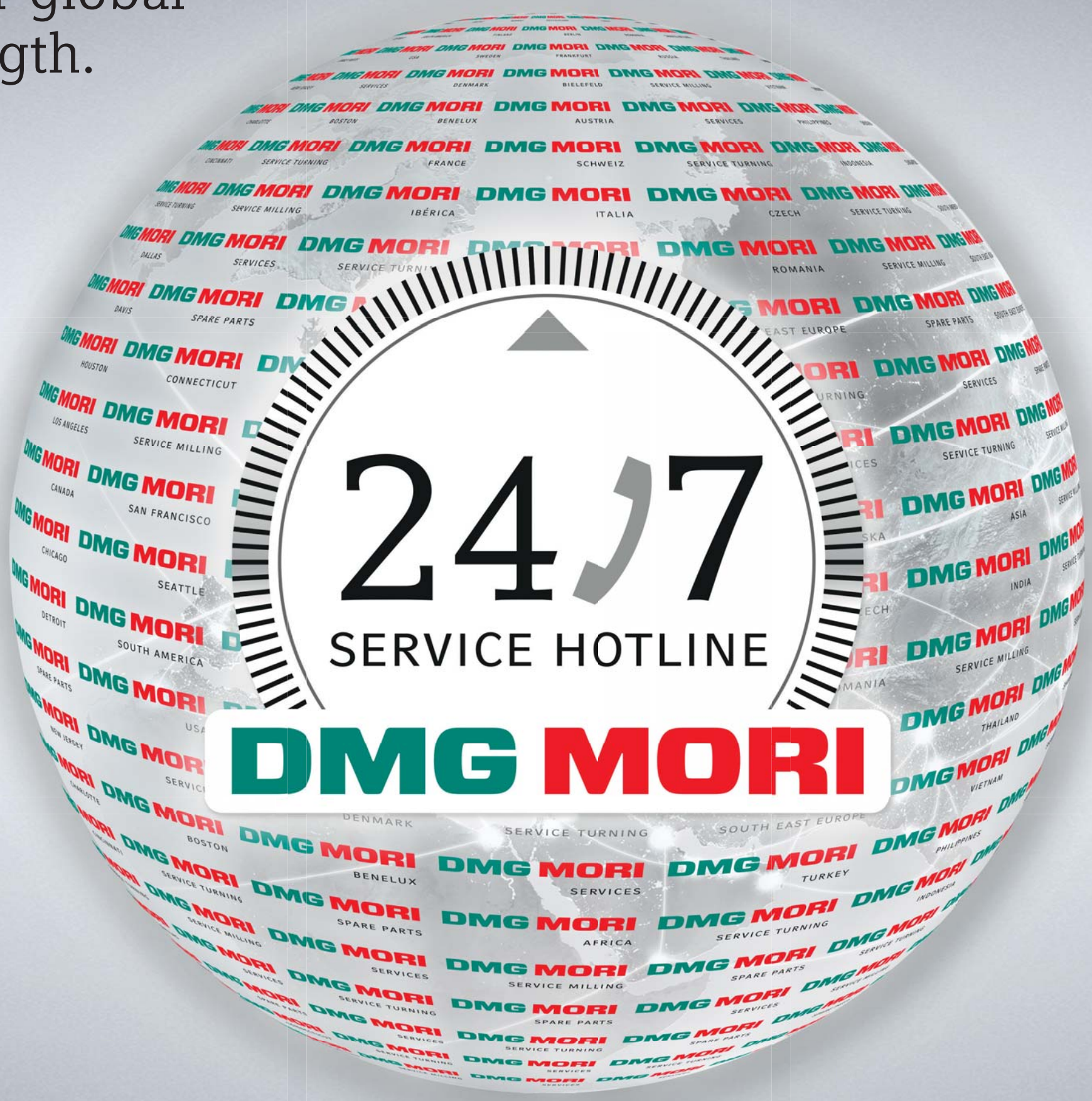
Since 1967, **Karl-Heinz Maske & Söhne GmbH** has stood for **excellence in metal processing**. The Bönningstedt-based job shop, along with 90 dedicated employees, produces complex parts for many high-growth industries, including **medical technology, aerospace and mechanical engineering**. The company also supports clients with parts development. For many years, Maske has partnered with **DMG MORI** to grow their machining capabilities – it currently operates **60 machines from DMG MORI** – in order to expand capacity and remain technologically current. The company most recently purchased one **NLX 2500 machine with a WH 10 top workpiece handling system**. "We've been using handling systems to increase **capacity and productivity**," says Maik Maske, son of CEO Michael Maske, about **automation from DMG MORI Systems**. With capacity for up to 26.5 lbs. workpieces, the handling system is well suited for Maske's broad parts portfolio while **unmanned production** of small and large series jobs gives the company an added **competitive advantage**. "The automated NLX 2500 is so efficient that we can take orders that would otherwise go to foreign companies." says Maik Maske.

Karl-Heinz Maske & Söhne GmbH
Ellerhorst 8, D-25474 Bönningstedt, Germany
info@cnc-maske.de, www.cnc-maske.de

Nº 1 – 2015

LifeCycle Services

Local presence
is our global
strength.



+++ Over 2,500 certified service technicians +++ 24/7 Service Hotline +++ Spare parts availability > 95 % +++

LifeCycle Services – more than just a machine

Dr. Maurice Eschweiler
Managing Director of Services
DMG MORI SEIKI
AKTIENGESELLSCHAFT

Kevin Bowers
General Manager
National Service
DMG MORI SEIKI USA

Machine availability is a key indicator of productivity and efficiency. We focus on the **building blocks** that most influence machine availability – quality spare parts service, highly trained technicians available around the clock, free 24/7 Service Hotline, secure online support, expert training, and preventive maintenance.

In order to **address your individual needs**, we have developed modular products and services that are highly customizable.

Whatever you need, we are here to help. And, with more than 145 locations worldwide – we are always nearby. **Local presence is our global strength!**

Green light for your production – we support you around the clock.

Our goal is maximum machine utilization.
We have cultivated a comprehensive global manufacturing service support network to facilitate the most effective partnerships possible.

YOUR ADVANTAGES:

1 TOP SPARE PARTS SERVICE
2 QUALITY SERVICE FROM THE MANUFACTURER
3 FAST ONLINE SERVICE
4 STATUS MONITORING AND ERROR PREVENTION
5 TRAINING & DEVELOPMENT

1. Top spare parts service

- Global availability > 95%
- Over 260,000 different parts, including 1,000 spindles in stock
- Original spare parts direct from the manufacturer

Top quality, immediately available for fast delivery

2. Quality service support from the manufacturer

- 24/7 Service Hotline: available around the clock
- 60% of issues resolved over the phone
- 2,500 certified Service Technicians nearby
- DMG MORI Spindle Service

Expert personnel with DMG MORI know-how are always available

Expert support around the clock.

24/7 SERVICE HOTLINE
DMG MORI

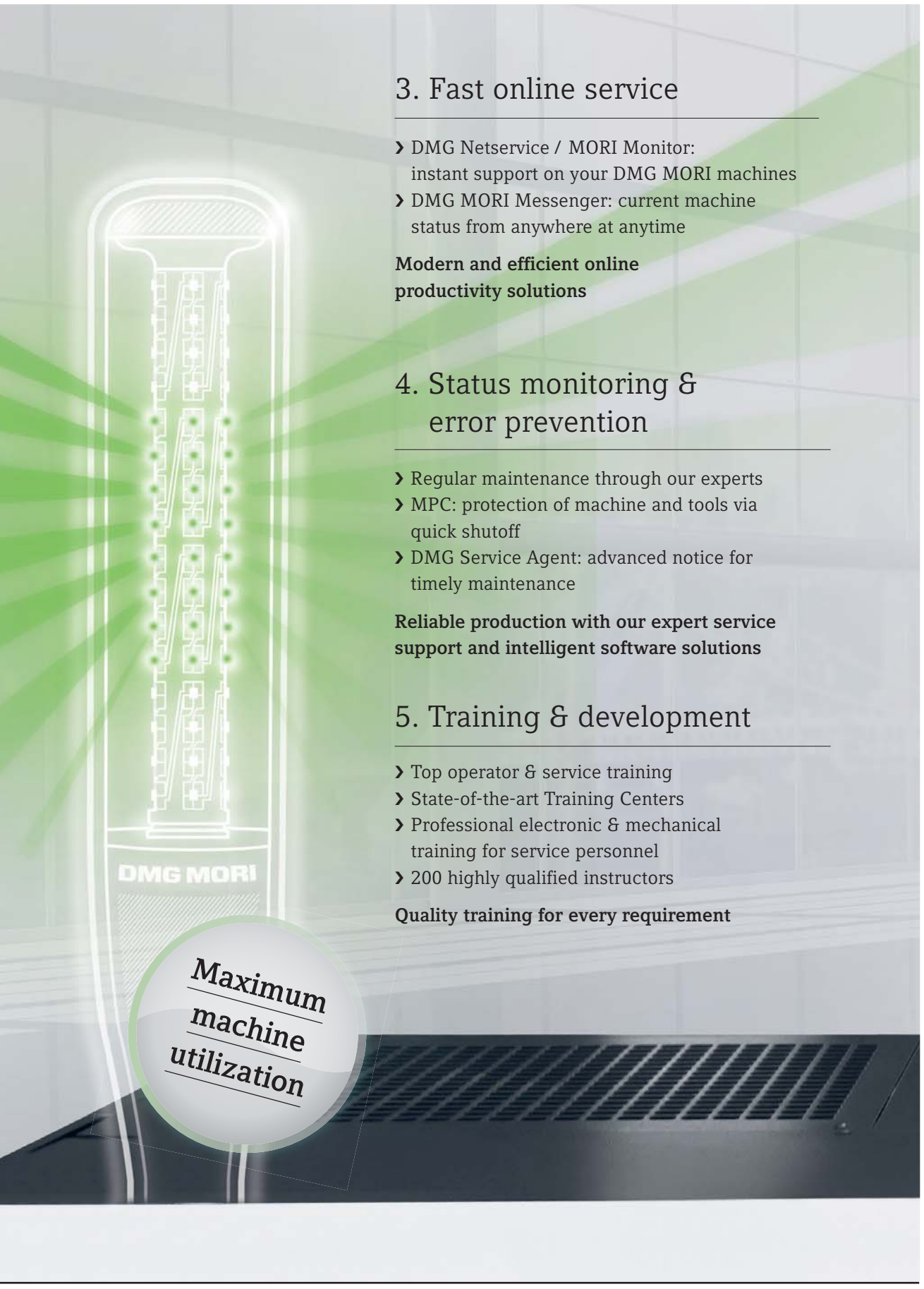
United States: (855) DMG-MORI *(364-6674)*

Minimum downtime thanks to fast, professional service.

As a manufacturer of high-quality light alloy wheels, **RONAL GROUP** relies on precision die-cast aluminum tools and molds. Since 1990, the RONAL subsidiary **ALRON Lda.** of Murtede, Portugal, has been producing these molds. The 74-employee company also uses **CNC technology from DMG MORI.** "Machine precision and reliability are critical to our daily operations," says João Romão. As head of servicing at ALRON, he also places equal importance on the quick, expert **service support from DMG MORI:** "Our machine downtime has been minimzed." João Romão also praises the **DMG MORI Service Hotline** as a great tool for dealing with day-to-day issues. **"Technical problems can often be quickly addressed over the phone,"** he explains. The service staff identify problems quickly and provide simple solutions. João Romão is also impressed with the **fast spare parts delivery:** "DMG MORI delivers from Germany within 20 hours."

ALRON Lda.
Zona Industrial de Murtede
3060-372 Murtede, Portugal

RONALGROUP



3. Fast online service

› DMG Netservice / MORI Monitor: instant support on your DMG MORI machines
› DMG MORI Messenger: current machine status from anywhere at anytime

Modern and efficient online productivity solutions

4. Status monitoring & error prevention

› Regular maintenance through our experts
› MPC: protection of machine and tools via quick shutoff
› DMG Service Agent: advanced notice for timely maintenance

Reliable production with our expert service support and intelligent software solutions

5. Training & development

› Top operator & service training
› State-of-the-art Training Centers
› Professional electronic & mechanical training for service personnel
› 200 highly qualified instructors

Quality training for every requirement

ALRON Lda.

Left to right: Fernando Silva (Head of Tooling Production), João Romão (Manager of Maintenance and Facilities) & Andreas Dusold (Managing Director).

ALRON Lda. manufactures molds for high-quality light alloy wheels produced by RONAL GROUP.

DMG MORI Spare Parts – global spare parts availability with local service.

Fast delivery: Orders are **centrally processed** and items are sent from the **nearest Spare Parts Center**. Our **global network ensures that you receive your shipment as quickly as possible**.

7 Spare Parts Centers for the fastest possible delivery.

1 GERMANY
Global Parts Center
Geretsried

2 JAPAN
Global Parts Center
Nara

3 UNITED STATES
American Parts Center
Dallas

4 RUSSIA
Russian Parts Center
Moscow

5 INDIA
Indian Parts Center
Chennai

6 THAILAND
Thailand Parts Center
Ayutthaya

7 CHINA
China Parts Center
Shanghai

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

HIGHLIGHTS

_ **Global logistics network** for all markets
_ Over $ 260 million of inventory & **spare parts availability > 95%**
_ **More than 260,000** unique items in stock
_ **Original spare parts** directly from the manufacturer
_ New & refurbished parts available
_ **Order via 24/7 Service Hotline TEL: (855) 364-6674**

USED MACHINES

DMG MORI Used Machines

Buyback: new for old – your old machine may be worth more than you think!

We will make you an offer that you cannot refuse! DMG MORI Used Machines buys your old machine for an unbeatable price! And, if you buy a new DMG MORI machine at the same time, we will apply the buy-back value towards your purchase.

Your advantages
- Binding fair market value quote
- Fast & easy payment
- Professional machine removal by our service team
- Attractive financing options

Robert Dolan
National Sales Manager
Pre-Owned Machines
DMG MORI USA
Phone: (847) 593-5400
Email: rdolan@dmgmori-usa.com

Receive an offer today!

→ *www.dmgmori.com*

Sale: machines immediately available – updated daily on CNC Scout.

Find your ideal production solution via our online inventory of immediately available machines:

→ *cnc-scout.dmgmori.com*

Mobile devices equipped with QR-code recognition software will be directed to all available offers.

DMG MORI ACADEMY

Meeting the Challenge of "upskilling"

As the machine tool industry continues to incorporate more cutting edge technology, the DMG MORI Academy prepares the workforce by continuously updating its training classes and making them available to our employees, distributors and customers.

"Machine specific training plays a key role in every machine order we receive and we rely on the DMG MORI Academy to deliver this service to our customers" said Marlow Knabach, Executive Vice President. This underscores the fact that since its inception, the DMG MORI Academy has become the "go to" resource for all DMG MORI instructor led and online classes.

In 2013, the DMG MORI Academy received a unique distinction when it was accredited by the National Institute for Metalworking Skills (NIMS). NIMS is recognized by the US Department of Labor and the machine tool industry as the standard of excellence for credentialing manufacturing skills. DMG MORI Academy went through an especially rigorous evaluation by NIMS. The results of that evaluation accredited the DMG MORI Academy with Machine Programing and Operation Level I but it also was the first and, to date, the only education or training entity to earn the NIMS accreditation focus for Machine Maintenance, Service and Repair Level III. In addition to being accredited by NIMS the DMG MORI Academy's training staff currently have received a combined total of 18 individual credentials from NIMS.

TOOL PRESETTING

UNO – adjustable for every requirement.

Quality tool presetting for an unbeatable price thanks to a thermally stable design, high-performance measuring systems and powerful software. UNO is extremely precise and delivers perfect results for tools up to 15.7 in. in diameter and 15.7 in. (optional 27.6 in.) in length.

UNO SERIES HIGHLIGHTS

_ New design, improved ergonomics
_ FEM optimized and thermally stable cast iron construction
_ Tailored configurations via modular design concept
_ Tool measuring with snap-gauge principle for max. diameter of 3.9 in.
_ 19″ monitor with 16:9 format & 45x magnification
_ LED signal lamp for quick status updates
_ Edge finder for easy axes positioning
_ Data connections via USB, LAN Ethernet & RS232
_ Optional tool identification using RFID

UNO manual

Manual

_ Intuitive menu navigation and control
_ Measurement functions for turning, milling & drilling tools
_ SK 50 HSK, VDI, Capto, etc. spindle adapters available
_ Manual fine adjustment of the axes

U.S. apprentices in a DMF 180/260 Mechanical Maintenance Training in Geretsried in Germany

Planning for the future

In 2012 DMG MORI launched an extensive apprentice program for Service Engineers and last year realized the ultimate milestone of transitioning the inaugural graduates to the DMG MORI Service team. The graduates are now providing DMG MORI customers with factory trained expertise to maintain DMG MORI machines with the shortest repair times possible.

With the success of the first group of graduated apprentices now full time Service Engineers, two more apprentice classes have been added; one in 2013 and another in 2015 with a fourth class planned to start in 2016.

The success of the program is clearly the result of the intensive training and education that each apprentice in the DMG MORI Apprentice program must complete. The program is competency based with specific standards that must be achieved and demonstrated throughout the program. The rigorous studies and experience include the following areas:

- Instructor led training classes at the DMG MORI Academy
- Factory training and experience in Japan and Germany
- Online training
- Hands on training in the field with experienced Service Engineers learning to repair, install and maintain DMG MORI machines.

→ **Over 700 machines installed worldwide**

UNO SERIES – NEW FEATURES

autofocus – for quick and efficient measuring of multi-point tools.

For automatic focusing on the cutting edge. Motorized spindle with easily accessible control cabinet and 24″ touchscreen comes standard.

automatic drive – fully automated measuring.

For fully automatic tool presetting & measuring (CNC controlled, 3 axes). Easily accessible control cabinet and 24″ touchscreen comes standard.

UNO autofocus

Semi-automatic

- Automatic focusing for measured cuts
- Best for tools with many peripheral cuts
- SK 50 spindle with autofocus
- Optional manual operation

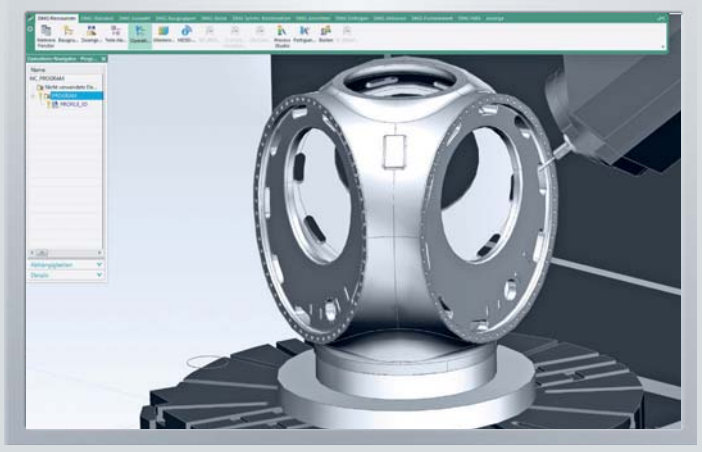
UNO automatic drive

Fully automatic

- Highest process reliability
- Automatic positioning and focusing for measured cuts
- Automatic measuring of even complex tools
- No special skills required

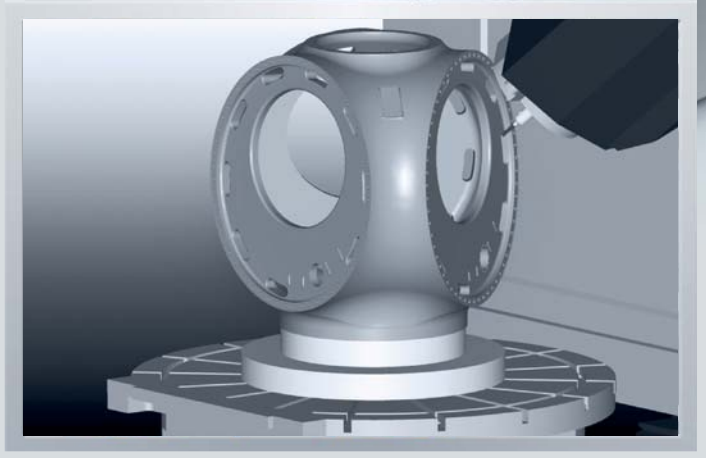
DMG PROCESS CHAIN

Fast and reliable production with certified CAD/CAM and unique **1:1 simulation.**



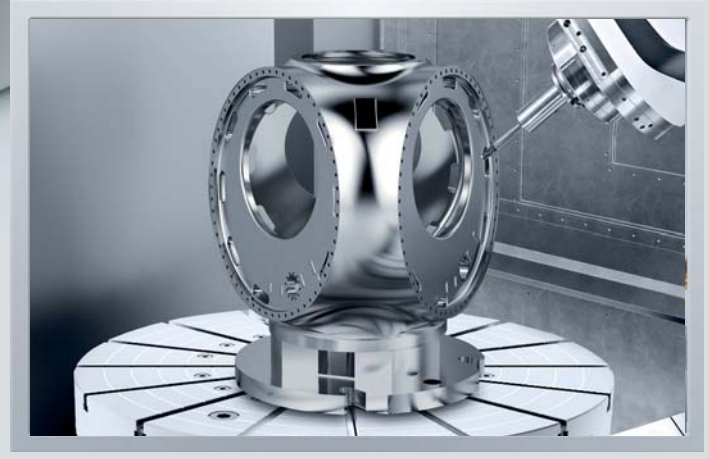
PROGRAMMING
SIEMENS NX CAD/CAM

All turning and milling production on your DMG MORI machines is supported by Siemens NX CAD/CAM. The program output via certified post processor guarantees feasible NC travels.



1:1 SIMULATION
DMG VIRTUAL MACHINE

Thanks to complete integration of the controller and an exact representation of the machine, a uniquely precise 1:1 machine simulation is possible. Collisions and programming errors are detected immediately.

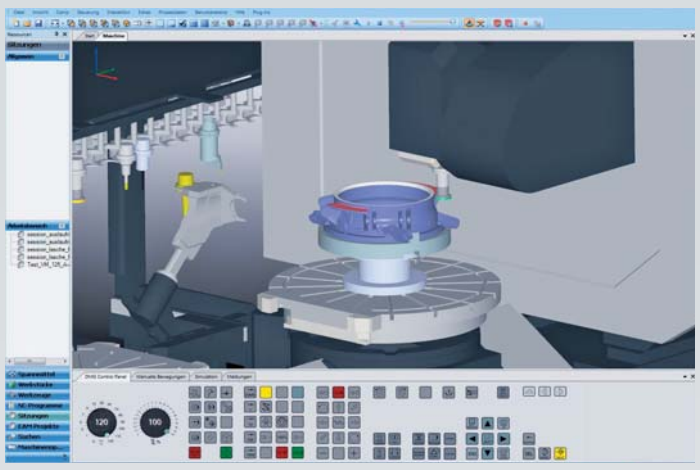


FINISHING
DMG MORI MACHINE TOOLS

The NC programs do not require manual adjustment and deliver 100% collision-free custom parts on your DMG MORI machine. Thanks to Siemens and DMG MORI, your manufacturing is now even safer and faster!

Airbus Defence and Space

The main benefit of DMG Virtual Machine for Wolfgang Simon, Head of Mechanical Production, is process safety: "When an NC program is entered on the machine, it must be ready to run."



Thanks to full integration of the real control, the entire manufacturing process (including tool changes) can be accurately simulated with DMG Virtual Machine.

Due to the high price of specialty alloys (image: engine outlet ring for Ariane 5 rocket), raw materials used by Airbus Defence and Space can cost over $100,000.

Perfect machining results thanks to unique **1:1 simulation** on a PC.

In 2014, EADS changed its name to Airbus Defence and Space. Today, the company's Ottobrunn factory develops and builds **engines for the Ariane 5 rocket**. High quality standards are met using advanced **CNC technology from DMG MORI** and **DMG Virtual Machine**, which precisely simulates manufacturing processes before production takes place on two **DMU 70 eVo *linear*** machines and one **DMC 125 FD duoBLOCK®** machine. The software produces a **1:1 visual representation of the real machine**, including accurate machine geometry and kinematics as well as the actual control (with real PLC).

The main benefit of **DMG Virtual Machine** for Wolfgang Simon, Head of Mechanical Production, is **process reliability**: "We deliver raw parts that cost more than $100,000. So, everything must be executed perfectly the first time." With simulation, **program feasibility can be ensured** so that any potential for **collisions during production are eliminated**. "When an NC program is entered on the machine, it must be ready to run," emphasizes Wolfgang Simon.

In addition to guaranteed process reliability, Airbus Defence and Space also gains productivity with **DMG Virtual Machine**, explains Simon: "PC-based program simulation completely eliminates the need for tool run-in and **minimizes setup time**." This equals significantly **greater machine utilization**. Program optimization also plays a critical role: "Because the simulator offers full access to ShopMill functionality of the Siemens control, we can truly optimize a program's total production time." With **DMG Virtual Machine**, the **ultimate competitive** advantage is guaranteed.

Airbus Defence and Space GmbH
Willy-Messerschmitt-Straße 1, D-85521 Ottobrunn, Germany
www.airbusdefenceandspace.com

JOB PREPARATION

Manufacturing Suite – exact program simulation.

Your advantages:
- Simple machine selection and exchange
- Precise DMG MORI machine models with standardized settings
- Offline evaluation of NC programs

HIGHLIGHTS

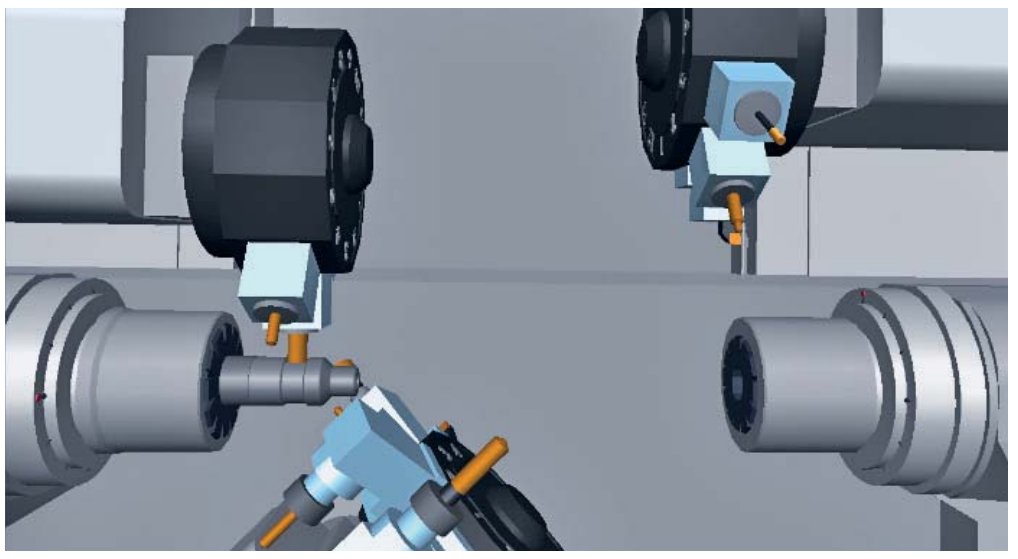
_ Short setup with easy machine configuration
_ Simple screen layout

postprocessor
_ Integrated standard template for every MORI SEIKI machine
_ Customizable post-template for a customer's specific NC programing requirements

NC simulation
_ NC program evaluation with parallel display
_ Collision detection and runtime display

JOB PREPARATION

DMG Programmer 3D Turning – 50% faster setup for multi-channel machines.



Your advantages:
- 50% reduced setup costs
- Avoid collision repair costs
- Enter NC programs automatically

HIGHLIGHTS

NEW: SPRINT 50 / 65 with 3 turrets & B-axis

Complete package tailored to the machine:
_ Program templates for different types of machining
_ Complete tool catalog for programming and simulation

Programming:
_ CAM turning, milling and drilling
_ Automatic structure generation
_ Synchronization marks manager

JOB MONITORING

Metalltechnik Vils GmbH

DMG MORI Messenger – keep a constant eye on your production.

With DMG MORI Messenger, Thomas Allgaier, a member of family-owned Metalltechnik Vils, can check the current status of his machines at anytime.

DMG MORI Messenger delivers critical machine information to smartphones or tablets and sends notification emails if a machine stops running.

We know the exact current status of our machines ...

- ✓ ... what is running on the machine
- ✓ ... its output level
- ✓ ... time in operation
- ✓ ... idle time
- ✓ ... error diagnosis
- ✓ ... status of automated operations
- ✓ ... level of productivity by machine

With its reputation for high-precision large components, Vils-based **Metalltechnik Vils GmbH** is an expert contract manufacturer for some of the most demanding industries, including machine tool and **automotive**. The company realizes its exceptionally high level of productivity with over 50 CNC machines operating in two normal shifts and one unmanned shift. "We aim to run the machines **around the clock,"** says Thomas Allgaier, a member of family-owned Metalltechnik Vils. The company focuses heavily on **planning and monitoring of production orders**, for which DMG MORI Messenger is a very useful resource. "We are able to display the current **machine status** on a large screen for all employees to reference." This is particularly helpful for **large parts manufacturing**, where an idle machine may go unnoticed due to the size of the factory.

For **unmanned operation, DMG MORI Messenger** also comes in handy, says Thomas Allgaier: "Our expert staff receives the current machine status via their **smartphone or tablet** and are immediately notified by email if a machine goes offline." This allows us to react quickly. **DMG MORI Messenger** also comes with comprehensive **analysis tools**. "The software gives us data on quantities produced, reason for a disruption, and actual machine runtime." explains Thomas Allgaier. All of these features ultimately help us **optimize production** and accurately project job costs.

Metalltechnik Vils GmbH
Allgäuer Str. 23, A-6682 Vils, Austria
www.metalltechnik-vils.com

METALLTECHNIK-VILS

GILDEMEISTER **ENERGY SOLUTIONS**

Generate your own energy – like many of our already satisfied customers.

Zimmer Group – a stable energy supply, independent of power companies and governments.

Zimmer Group uses tracking photovoltaic systems from GILDEMEISTER **energy solutions** to reduce its exposure to rising energy costs and turbulent energy policies. Plants in Rheinau and Haslach utilize 70 SunCarrier 22 tracking systems. Compared to fixed systems, tracking systems deliver up to 35% greater energy yields. In total, the system provides approximately 335,000 kWh annually – or, enough electricity to sustain 100 four-person households for a year.

With a strong focus on solar energy, Zimmer Group has established a clear path for the future. "We already anticipate reaching our goal of maximum energy autonomy, especially with a very manageable 10-year amortization schedule." says Bernd Kruzinna. In addition to the economic benefits, he is also pleased with the aesthetics: "The tracking SunCarrier 22 units are eye-catching and fit perfectly with the Zimmer Group campus atmosphere."

Rheinau location. 28 easily installed compact, tracking SunCarrier 22 units generate 135,000 kWh per year.

Zimmer Group
Im Salmenkopf 5
D-77866 Rheinau, Germany

Become your own energy supplier!
Contact us – we will develop a custom energy solution for you.

GILDEMEISTER **energy solutions**
T +49 (0) 931 250 64-120, energysolutions@gildemeister.com
www.energy.gildemeister.com

GILDEMEISTER
energy solutions

The GILDEMEISTER energy solutions Park at the new DMG MORI Global Headquarters in Winterthur generates electricity for the building and e-mobility fleet!

- The Energy Park covers 108,000 ft.^{2}
- Over 40 SunCarrier and 2 WindCarrier units provide electricity to the buildings and CellCube
- 330,000 kWh equals enough electricity to sustain 100 four-person households per year
- Energy independence - we produce 45% of our total energy needs
- E-mobility - free fuel for local employees and residents
- Saves 40,000 gallons of gasoline per year
- Quick charging in under 30 minutes

E-mobility is only as green as the energy that drives it. Show that your company is full of innovation and sustainable energy - with a quick charging e-filling station.

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DMG MORI

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