# Mission Statement (revised in January 2021)

**As a global corporation continually striving to be the world's largest and most respected international manufacturer of turning centers, machining centers, mill turn centers, grinders, and processing automation, we will:**

Enable our customers to maximize their advantages and excel in their respective markets by continually striving to provide innovative, accurate, and trouble-free machines, automation systems, and digital technology at competitive prices;
Increase our customers' productivity and efficiency through our latest developments in technology as manifested by our increasingly accurate and progressive manufacturing capabilities;
Support our customers with our knowledgeable and responsive sales, applications, and service personnel.

**As befits a worldwide corporation, we will:**

Foster a fair and open corporate culture, utilizing appropriate management initiatives;
Play hard and be dynamic to enrich our private lives, study continuously and be open to advance professional career, and work together and be innovative to bring innovation to workplace;
Respect each other's opinions and continually develop through friendly competition.

**As profitability is a goal of all healthy business organizations and in keeping with the true nature of the machine tool industry, we will:**
**Work to increase the value of our company, the investment of all shareholders knowledgeable of the true nature of the machine tool industry, and the prosperity of our partners;**

Always remember that the pricing of our products and services is an integral factor of the prosperity and perpetuity of the corporation;
Generate suitable profits to ensure the cash flow necessary to provide for the healthy operation of our corporation, research and development, stable customer services, employee training and development, and, the maintenance of safe and efficient manufacturing facilities.

**As an industry leader and responsible corporate citizen, we will:**

Contribute our fair share to our local community and society;
Conserve environmental resources at all times to preserve the global environment;
Incorporate the highest standard of ethics while still encouraging an aggressive approach to our business activities.

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Environment
Social
Governance
Guidance for Collaborative Value Creation

This Integrated Report was created by referring to the "Guidance for Collaborative Value Creation" by Ministry of Economy, Trade, and Industry of Japan and "The International <IR> Framework" by the International Integrated Report Council.

## Integrated Report 2020
Contents



Please click on ▶ to find related videos on our website.
https://www.dmgmori.co.jp/corporate/en/ir/ir_library/annual_report.html

DMG MORI's value creation: **Story 1**

# DMG MORI's development amidst transforming demands

**Social challenges**

2000

Development of infrastructure
Industrialization of society
(Mass production of cars, tel. communication equipment, electrical products)

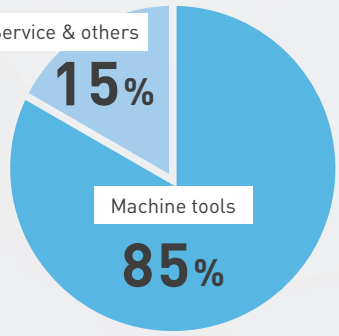
2010

Expansion of global producti
Operator shortage
Progression of connectivity

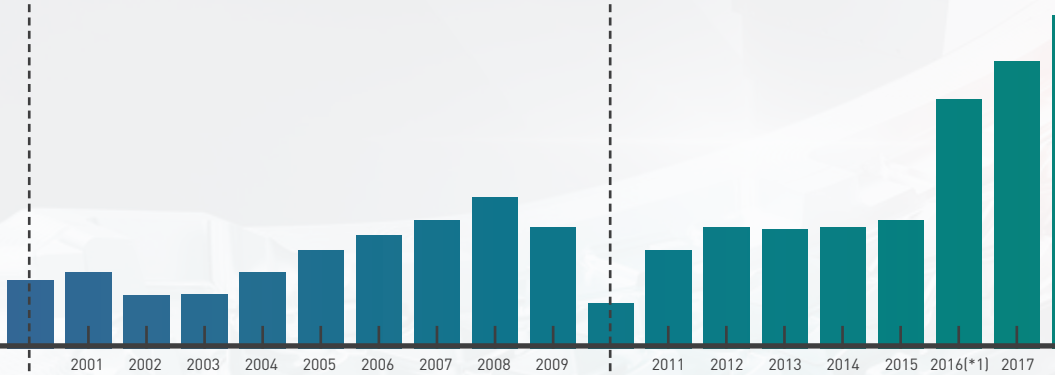
**Response to increasing supply**

**Process integration & effi**

**Development of DMG MORI's sales ratio**




**DMG MORI's turnover**



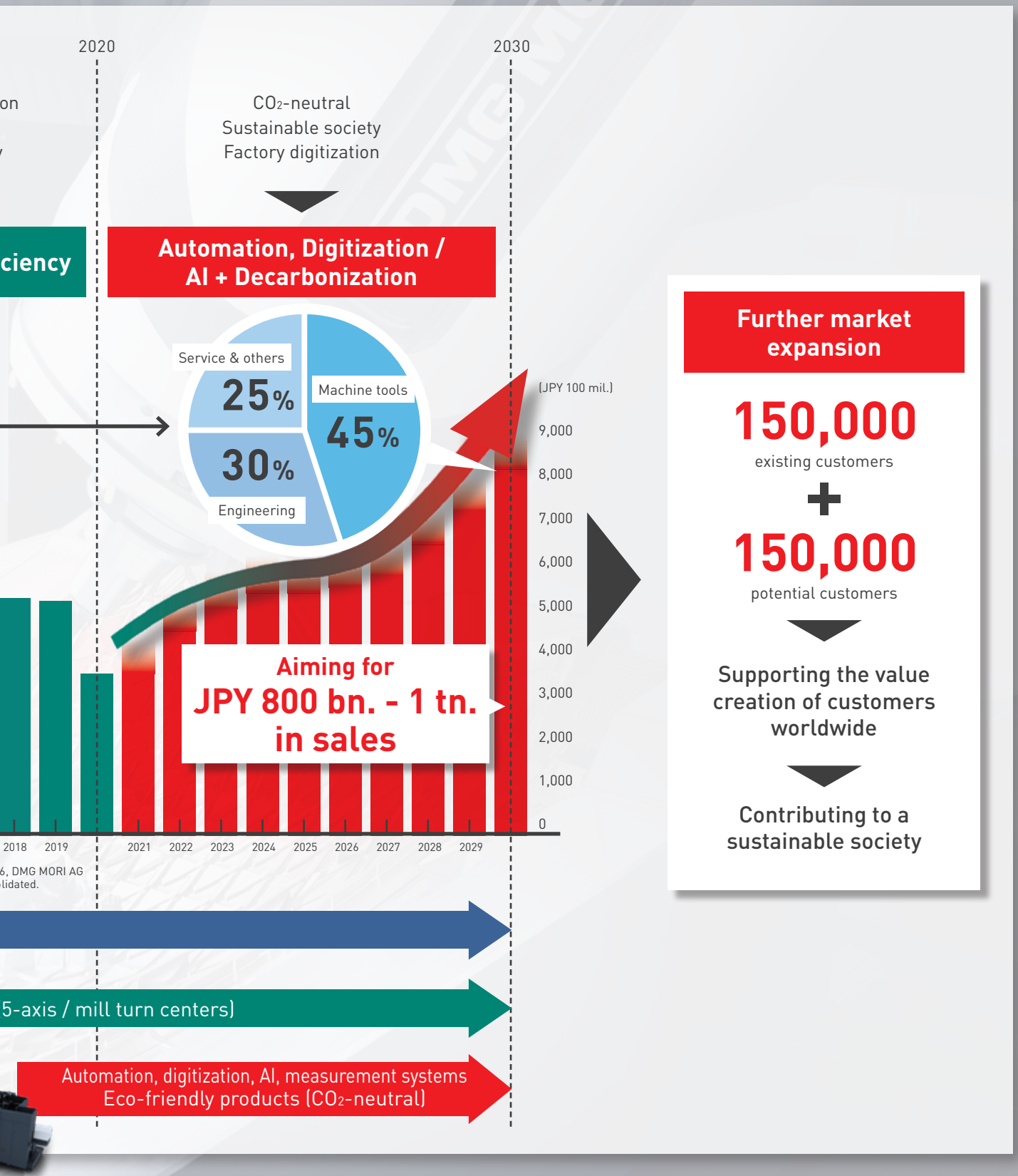

(*1) Starting from FY201
has been fully consc

**DMG MORI's product evolution**

Improving machine performance

Process integration (

DMG MORI continuously evolves its business model and improves its products and services in response to major societal changes.
We will continue to aim for further growth by providing products and services that reflect the demands of society.



DMG MORI's value creation: **Story 2**

# Why customers choose DMG MORI

## The foundation of DMG MORI's services

Diversity

**Number of employees (consolidated):**

**approx. 12,000 / 43 countries**

+

Integration of European and Japanese advantages

Europe

**Creative Thinking**

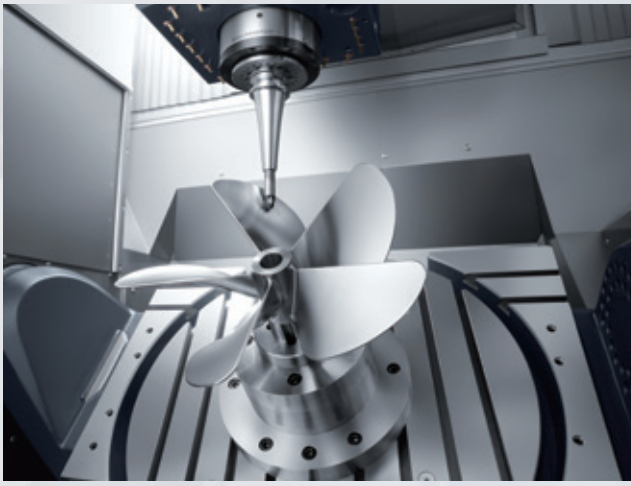
Japan

**Precise Implementation & Refined Customer Service**

**Close communication to identify customers' needs**

+

**High precision & high rigidity**



**Extensive product lineup, supply system, and software**

DMQP

DMG MORI QUALIFIED PRODUCTS

We support customers' production processes by providing DMG MORI certified peripheral equipment and spare parts.

**Quick response and support system**

### Direct sales & services network

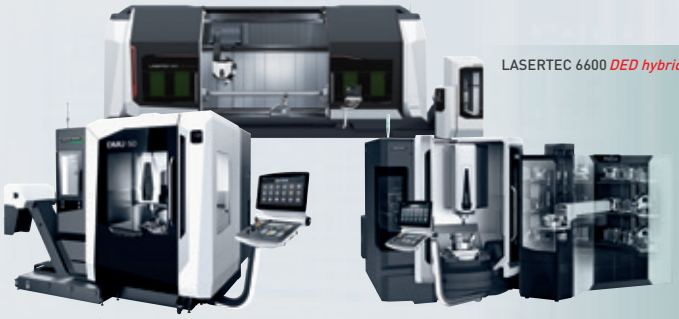
We precisely identify customers' needs and deliver our products and services through our broad direct sales and services network.

### Excellent engineering

Our experienced engineers provide customers with the optimal solutions, including automation.

With our diverse human resources and integrated European-Japanese corporate culture as a solid foundation, DMG MORI offers one-stop support throughout the complete manufacturing process of customers - starting from product purchase to after-sales service and maintenance. This has earned the trust of our customers and has given us a competitive advantage within the industry.

High-speed, high-accuracy & reliable machine tools to meet a wide range of machining demands from customers.



LASERTEC 6600 *DED hybrid*

DMU 50 3rd Generation

DMU 65 monoBLOCK + PH Cell

DMG MORI offers one-stop machining solutions to its customers - from process integration with 5-axis & mill turn centers to the latest additive and ultrasonic manufacturing machines.

## Worldwide sales and service locations

Extensive network allows quick response to inquiries and service requests from customers.

## Long-term support for over 20 years

We support our customers throughout the complete product lifecycle - as seen in the quick delivery of spare parts. By this we can gain the continuous trust of our customers.

**Provided by DMG MORI digital technologies**

**Quality that fulfills all demands**

Quality

**Impeccable pricing throughout product lifecycle**

Cost

**Quick response and extensive support**

**Spare parts shipment within 24 hours**

Delivery

DMG MORI's value creation: **Story 3**

# DMG MORI's value creation process

## INPUT
**Resources of our business foundation**

### Human capital

Management leadership ▶P.59

Diverse human resources with 12,000 employees in 43 countries ▶P.16

### Intellectual capital

Know-how as the market leader ▶P.13

Comprehensive technical capability of R&D, Production, Engineering, and Software ▶P.30

### Manufactured capital

14 production locations worldwide ▶P.31

In-house manufacturing and flexible supply chain ▶P.32

### Social and relationship capital

Global branding ▶P.27

Global supply chain, overseas direct sales and services network ▶P.35

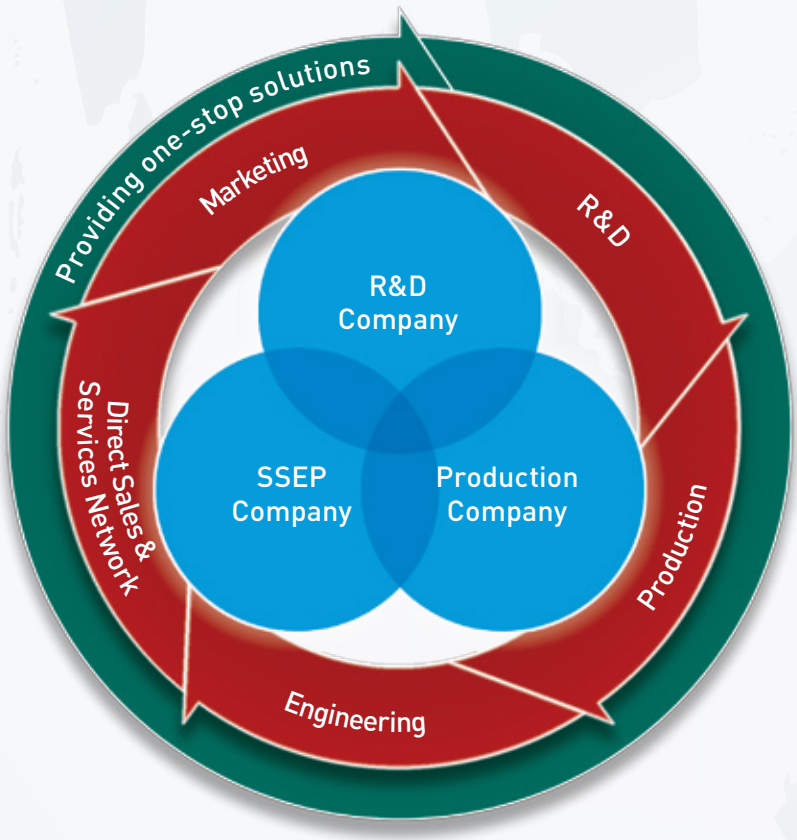
### Financial capital

Profit generation (sales and operating income) based on high value-added propositions ▶P.69

Capability of cash generation ▶P.72

Proactive investment

## DMG MORI's Value Chain



DMG MORI meets to realize the needs of society and continuously creates value by investing resources throughout its value chain.

## OUTPUT
**Value creation through business**

Improving customers' productivity and solving labor shortage

DMU 340 Gantry　NHX 5500 + CPP system

Realizing high mix-low volume production by new machining methods

LASERTEC 125 *DED hybrid*　ULTRASONIC 50

Promoting digitization of customers' factories with software solutions

Technology Cycles

*my* DMG MORI strengthens communication with customers and maintenance & service


## OUTCOME
**Social values**

Market share over 10% (Global No. 1)

Approx. 150,000 customers worldwide

Economic return by FCF generation

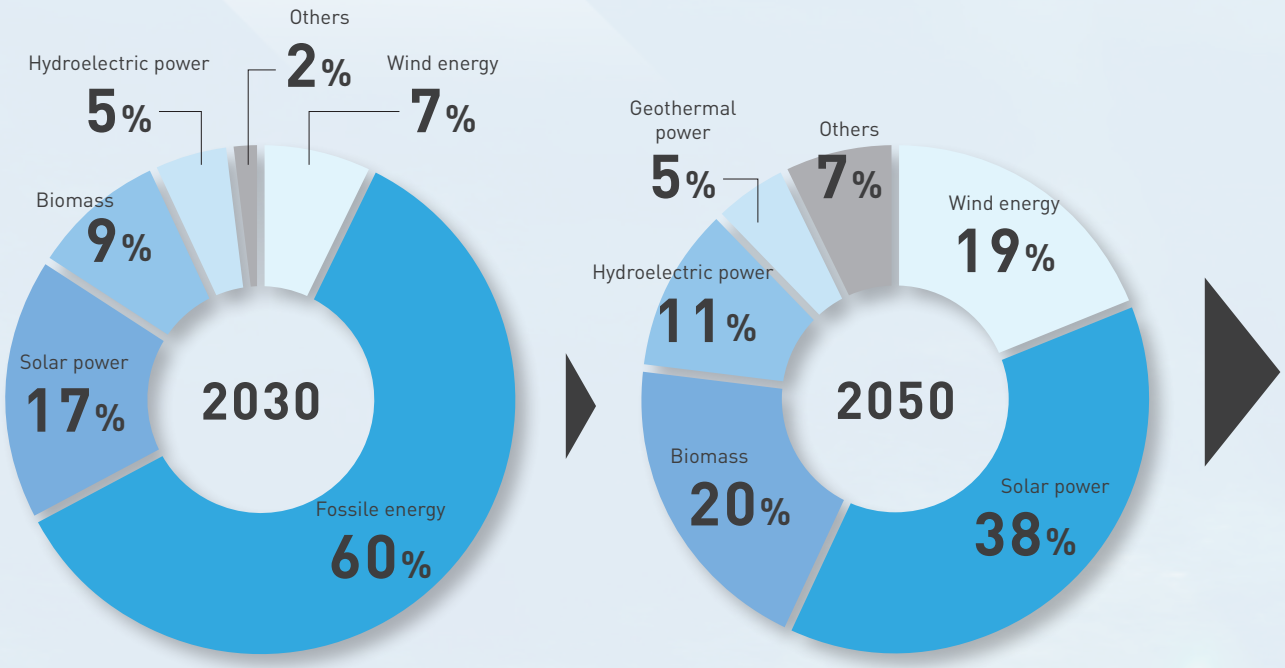
Quick response to decarbonization, aging population & other societal changes

**A corporate group continues to create value**

DMG MORI's value creation: **Story 4**

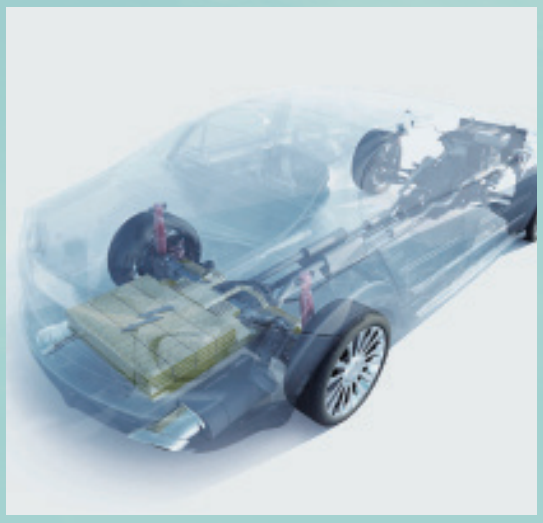
# Towards a decarbonized society

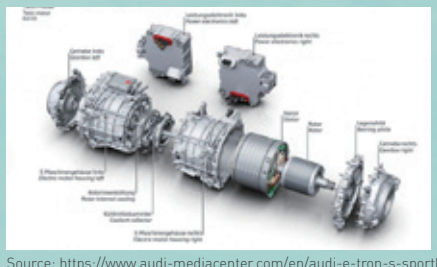
## Primary energy supply structure in a 100% renewable energy scenario




Source: Enerugī Keikaku 2050 Kōsō (A Vision for Energy Plan 2050). Jufuku, 2019.

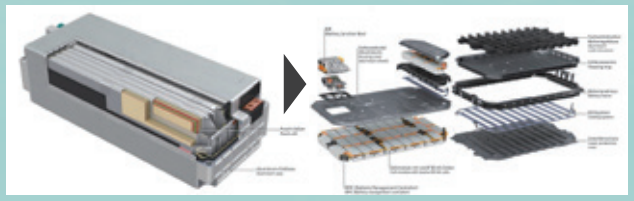
## Electric vehicles





EV motor

Source: https://www.audi-mediacenter.com/en/audi-e-tron-s-sportback-13105

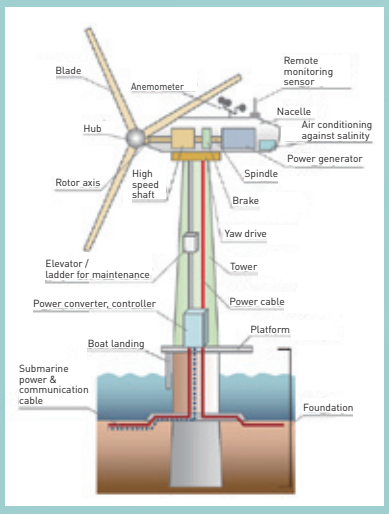


EV battery

Source: https://www.audi-mediacenter.com/en/audi-e-tron-sportback-12270

We are accelerating our efforts towards a global decarbonized society as a measure against climate change.
DMG MORI's machine tools will be the answer to the rising demand for complex parts
that are required in sustainable technologies such as electric vehicles and offshore wind power generation.

## Main components of offshore wind power generation systems




Source: NEDO Renewable Energy Technology White Paper, 2nd Edition, Chapter 3, Wind Power

## Value Chain for manufacturing in the offshore wind power generation industry

| Value Chain | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Nacelle | Power generator | High speed shaft | Spindle bearing | Spindle | Nacelle base | Nacelle cover | Control system | Yaw system | Yaw bearing |
| | Hub | Hub | Blade bearing | Pitch drive | | | | | | |
| | Power converter | Transformer | Switch gear | Cable | | | | | | |
| | Blade | Structural materials | Blade root | Lightning rod | | | | | | |
| | Tower | Steel material for tower | Bolt | Flange | Elevator | Ladder | Control system | | | |
| | Foundation structure | Steel material for foundation | Monopile | Transition piece | Jacket | | | | | |
| | Electric power supply | Cable | Offshore power generation plant | Foundation for offshore substation | Land cable | Land substation | | | | |
| | Installation work | Installation of windmill (crane vessel) | Installation of foundation (SEP vessel, cable layer) | | | | | | | |
| | Operation, Maintenance, Decommissioning | Maintenance & removal decommissioning of wind turbine (crane vessel) | Maintenance & removal decommissioning of foundation (SEP vessel, SOV) | Maintenance & removal decommissioning of submarine cables | Safety inspection, etc. | | | | | |

**Offshore wind power generation system**

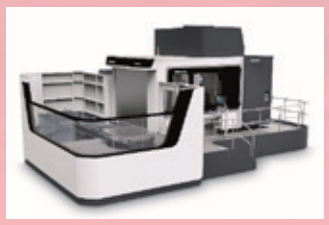
**Number of parts: >20,000 per wind turbine**

### Parts

- ▶Increasing demand for high accuracy parts
- ▶High product mix
- ▶$CO_2$-neutral

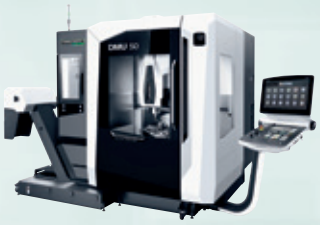
### Machine tools in demand

- ▶5-axis, mill turn centers
- ▶Automation
- ▶$CO_2$-neutral machine tools



# Mission of DMG MORI's business

DMG MORI has a competitive advantage not only in its 5-axis and mill turn centers, but also in its capability to provide automation and digitization solutions. This will help customers improve their productivity throughout the factory.
5-axis and mill turn centers make it possible to finish machining in one-chucking and facilitate process integration. This leads to higher demand for automatic loading / unloading and measurement of workpieces. The automated operations require monitoring by collected sensor data, and AI helps us analyze big data accumulated from past experiences. Lessons learned from the data contribute to further improvement of machine tools and peripheral equipment, and ultimately improve the productivity of the entire machining process. This is how a positive cycle is generated.



5-axis
Mill turn center
Technology integration

Big data
Analysis & use

Learn and develop

One-chucking
Automation

IoT
Sensing
Measurement

# DMG MORI's Digital Factory

Consulting business
Higher operation efficiency of the entire factory

IoT, monitoring / machine people, material tools, fixtures peripheral equipment

Higher production efficiency

Installation and education business

# Competitive advantages of DMG MORI

## Directly connected to customers through extensive sales & services network

Covering 137 locations in 43 countries, DMG MORI possesses the largest direct sales and services network in the industry. By directly delivering added value to factories, we are helping customers to find solutions suitable for their business.

### DMG MORI's headcount in engineering and services

| | |
|---|---|
| Sales | Approx. 1,100 |
| R&D | Approx. 1,300 |
| Engineering | Approx. 1,000 |
| Service | Approx. 1,900 |
| Parts | Approx. 300 |
| Administration (EG / SS) | Approx. 1,600 |

Approx. **7,200**

## Technological innovation of machine tools precisely capturing societal needs

We will evolve our business by the use of advanced technologies respond to major changes in our society, such as the improvement of quality of life, the emergence of electric vehicles and AI.

## Building platforms by software and IoT

We have built an integrated production system that not only delivers machines, but also the matching peripheral equipment and software to customers worldwide.

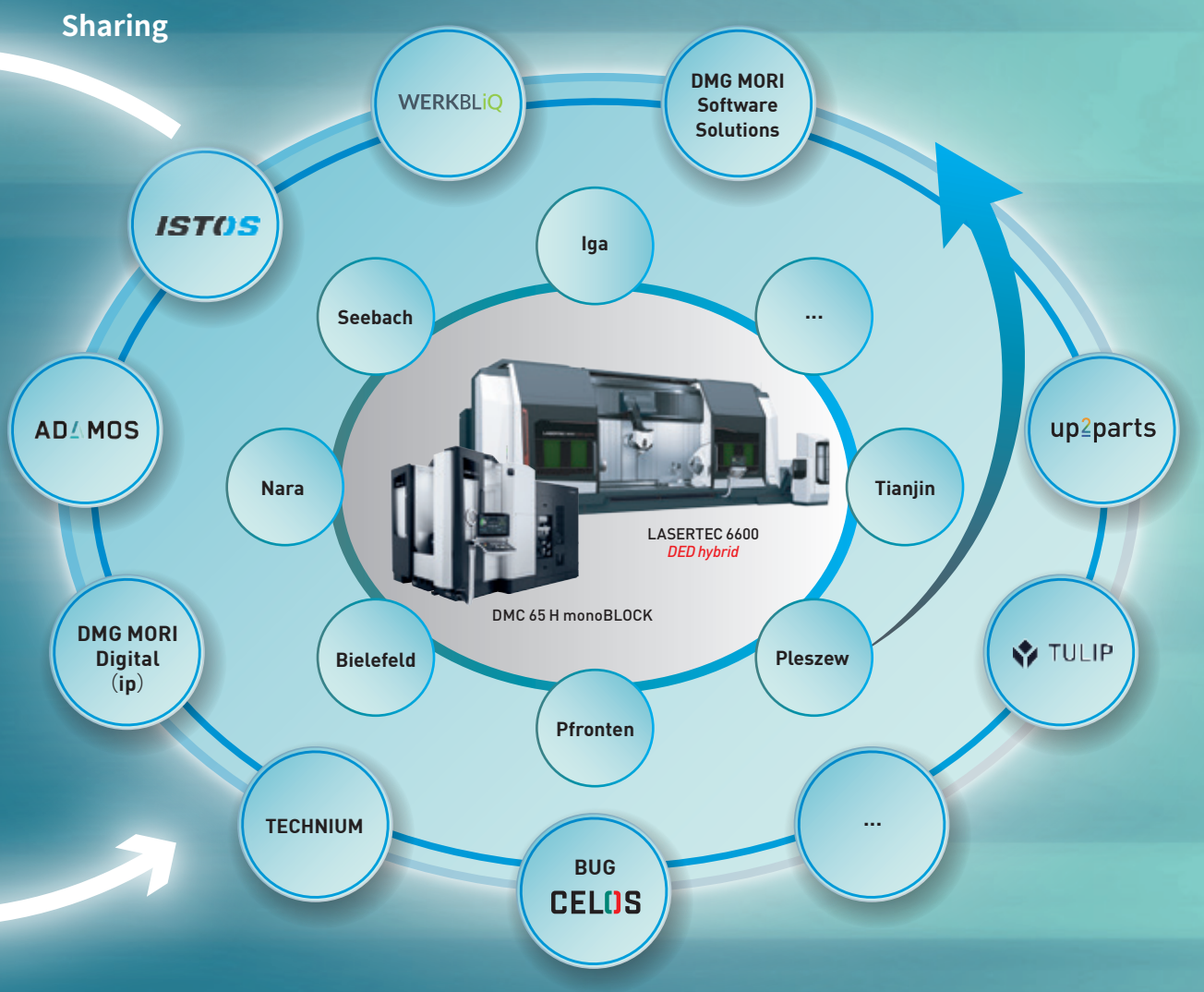
### DMG MORI's headcount in production

| | | |
|---|---|---|
| Production | Approx. | 2,800 |
| Quality Control | Approx. | 400 |
| Purchasing | Approx. | 800 |
| Administration (Production) | Approx. | 800 |

Approx. **4,800**

**Total**

Approx. **12,000** employees



# Diversity in DMG MORI

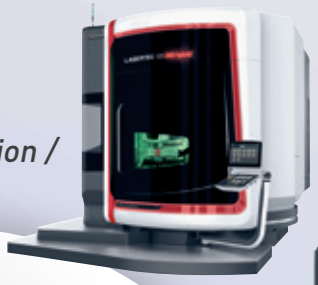
## *Order composition ratio for process integration / advanced technology machines*

Since the 2010s, DMG MORI has been quick to respond to the demand for process integration. As a result, our representative 5-axis, mill turn centers and other advanced-technology machines are a driving force for growth.

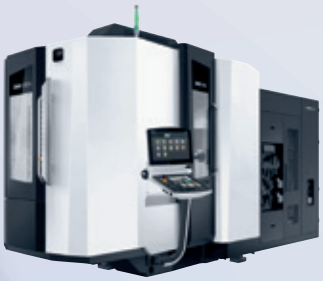
*5-axis / mill turn centers & advanced technology machines*

**68%**

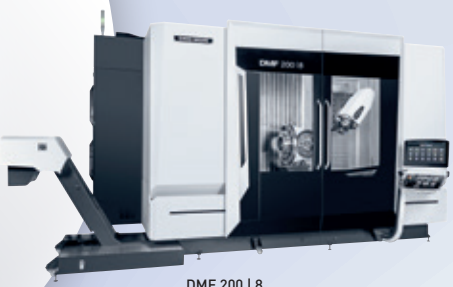
GLOBAL LEADER



LASERTEC 125 *DED hybrid*



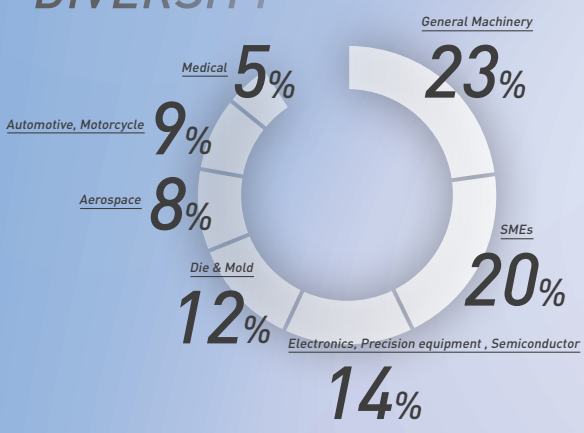
DMC 65 H monoBLOCK



DMF 200 | 8

NTX 2500 2nd Generation

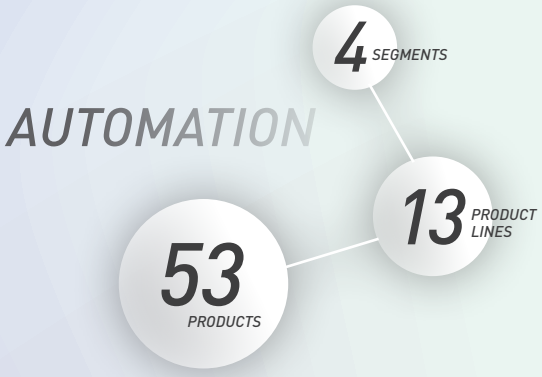
## DIVERSITY




### *Balanced customer base*

DMG MORI's products are broadly accepted by customers from diverse industries. We maintain business relationships throughout the whole manufacturing industry and thereby contribute to the development of our industrial society.

## AUTOMATION




### *DMG MORI's automation solutions*

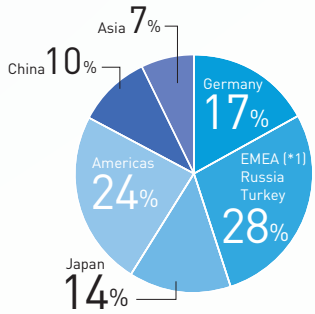
As a response to the rising demand for flexible automation of factories, we are offering a total of 53 automation solutions to our customers.

DIVERSITY

## *Global customer base*

The machine tool industry is inevitably affected by demand fluctuations caused by unpredictable macroeconomic changes and capital investment trends. However, DMG MORI has stabilized its business by a solid customer base around the world.

- We will lead our business to sustainable growth by expanding our customer base from developed markets to promising emerging markets such as China and Southeast Asia.



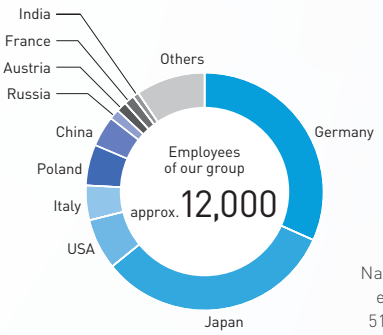

(*1) Europe, Middle East and Africa

HUMAN RESOURCES

## *Multinational workforce*

DMG MORI's workforce consists of approx. 12,000 employees in 43 countries (location base) of various languages, nationalities, genders and fields of specialty. In every field and level of our group, employees with different backgrounds cooperate closely with respect for each other.

- Our diverse employees help DMG MORI capture customers' needs and drive technological innovations.




Nationality of employees: 51 countries

AUTOMATION

## *Diverse Automation Solutions*

We improve each customers' productivity by providing tailored automation solution based on the selected combination of our machines with peripheral equipment such as handling and measurement equipment and production management systems.

- As a result of the persistent labor shortage and recent global pandemic, we see an increasing demand for automated production systems. DMG MORI can offer customers 53 different types of automation solutions that can be delivered within the shortest lead times.

DIGITIZATION

## *Optimized factory operation with digital innovation*

We provide various platforms and software solutions that digitally connect whole manufacturing processes — upstream and downstream — in order to optimize production efficiency.

- By connecting machines to the network via MESSENGER, customers can monitor operation status in real time, collect and analyze data, and automatically create reports.
- WERKBLiQ helps customers to digitally manage maintenance and service for their machines and peripheral equipment.

MESSENGER ISTOS WERKBLiQ TULIP

# DMG MORI in 2020


2020

## January

- Pfronten Open House


## May

- The 118th Annual General Meeting of DMG MORI AKTIENGESELLSCHAFT (virtual meeting)


## April

- Start of digital run-off

## March

- The 72nd Annual General Meeting of Shareholders
- Tokyo Global Headquarters switching to $CO_2$-neutral electricity

## June

- Start of Technology Fridays
- Start of DMG MORI Online Seminars
- Release of LASERTEC 30 DUAL *SLM* (Japan)


## August

- Release of LASERTEC 6600 *DED hybrid* (laser metal additive manufacturing machine)

## November

- JIMTOF online
- DMG MORI Online Technology Days
- Establishment of "System Solution Center" as new addition to Digital Twin Showroom
- Race start of DMG MORI SAILING TEAM (Vendée Globe 2020-2021)

## July

- Opening of Digital Twin Showroom "Iga Global Solution Center"

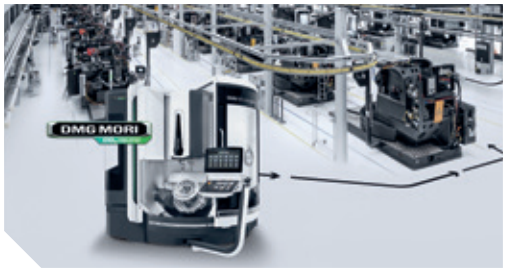
## October

- Online GDS (Global Development Summit)
- DMG MORI Digital Event (Europe)
- Tianjin Online Open House (China)

## September

- Operation start of monoBLOCK Excellence Factory at Pfronten (Germany)
- Establishment of "T Project Co., Ltd."

T Project





# Message from group CEO


Masahiko Mori

**DMG MORI Group CEO**
**DMG MORI CO., LTD. President, Dr. Eng.**
**DMG MORI AG Chairman of the Supervisory Board**


## Summary of year 2020

Due to the spread of COVID-19 from early spring, 2020 was a year in which we were exposed to rapid changes in the economic environment, and our ability to respond to the crisis had been tested. In the financial crisis of 2008, 12 years ago, we recorded operating losses of JPY 26.9 bn. and net losses of JPY 34.6 bn. due to delays in responding to a changing economic environment. In 2020, however, we could continue to offer direct support to our customers despite all the travel and other restrictions. This was made possible by our direct sales and services network covering 137 locations in 43 countries, and by our continued efforts for digitization.

In 2020, we opened new ways of marketing. The Digital Twin Showroom provides convenient access for our customers to information on our cutting-edge products and technology such as our high-speed & high-accuracy 5-axis machining centers, mill turn centers, and full turnkey projects. In addition, our in-person open house event series, "Technology Fridays", was born, where we invited small groups of customers every Friday. Also, by early actions for cost reductions we could significantly lower the break-even point. These measures bore fruit and resulted in operating income of JPY 10.7 bn. as well as net income of JPY 1.7 bn.

Our mission is to help our 150,000 existing and further 150,000 potential customers, who are the foundation of the manufacturing industry, maintain and improve their production worldwide. I am proud that we could achieve our mission despite all the challenges. I am also convinced that this new environment will encourage our customers to shift even more to process integration, automation, and digitization, and lead to higher recognition of our efforts in these fields.

In line with the worldwide efforts to cope with climate change, DMG MORI started to deliver $CO_2$-neutral products from January 2021 for the first time in the machine tool industry. I believe that in 2020 we could once again strengthen the foundation for sustainable growth by demonstrating our competence in dealing with changing economic circumstances, customers' demand, and societal expectations.

## Financial Summary 2020

In addition to the continued effects from the US-China trade conflict since the second half of 2018, the spread of COVID-19 had a significant impact on the demand for machine tools in 2020. Consolidated order intake dropped by 31.7% year-on-year to JPY 279.7 bn. The machine order backlog at the end of the fiscal year 2020 dropped to JPY 96 bn., down JPY 50 bn. and 34.2% year-on-year. The decline in order intake led to lower sales revenues in 2020 with JPY 328.3 bn., down JPY 157.5 bn. and 32.4% year-on-year. Our strategy focusing on 5-axis and mill turn technologies and full turnkey projects contributed to an improvement of the ratio of gross income to sales revenues. We reduced personnel costs and exhibition costs by shifting to digital marketing. Such efforts led to the operating income of JPY 10.7 bn. and represents a consolidated operating income margin of 3.3%. The acquisition of additional shares in DMG MORI AKTIENGESELLSCHAFT, Germany (hereinafter "AG"), reduced the net financial costs by JPY 0.4 bn. from the previous year, as the amount of the recurring compensation to minority shareholders of AG decreased. On the other hand, the net income attributable to the owners of the parent dropped by 90.3% to JPY 1.7 bn. from the previous year. This is because the effective tax rate surged to 66.8% due to net loss of some group companies.

Exchange rate (AR Yen) 121.8 / EUR

| | | |
|---|---|---|
| Consolidated order intake | JPY 279.7 bn. (2019: JPY 409.4 bn.) | EUR 2,296 Million |
| Machine's order backlog | JPY 96.0 bn. (2019: JPY 146.0 bn.) | EUR 788 Million |
| Sales revenues | JPY 328.3 bn. (2019: JPY 485.8 bn.) | EUR 2,695 Million |
| Operating income | JPY 10.7 bn. (2019: JPY 37.3 bn.) | EUR 88 Million |
| Operating income margin | 3.3% (2019: 7.7%) | — |
| Net income attributable to the owners of the parent | JPY 1.7 bn. (2019: JPY 18.0 bn.) | EUR 14 Million |

## Order intake

The consolidated order intake has been declining continuously since its peak in the 1st quarter 2018 (Jan.-Mar.). Due to the US-China trade conflict in 2019 and the worldwide spread of COVID-19 since early spring 2020, the consolidated order intake fell to JPY 279.7 bn. in 2020, down by 31.7% from the previous year. The order composition between the Japanese and overseas markets remained unchanged from 2019 at 14% and 86%, respectively. However, the regional breakdown of orders from overseas saw some changes in 2020. While Europe accounted for still 45% (54% in 2019), orders from Americas increased to 24% (18% in 2019) and from China and Asia to 17% (14% in 2019). We observe a growing demand for production of EV-related products including batteries, chemical processing equipment and drive components, renewable energy, clean engine, agricultural machinery, 5G communication devices, as well as medical and semiconductor production equipment.

## Sales revenues

Sales revenues decreased by 32.4% to JPY 328.3 bn. In particular, the 2nd quarter 2020 (Apr.-Jun.) saw the largest drop in sales due to delays in shipment and final acceptance. Our sales and service engineers had to postpone customer visits by respecting lockdown regulations and travel restrictions that came into effect worldwide. Given this background, DMG MORI introduced digital run-offs, remotely connecting our factories with customers via high-resolution video imaging. The acceleration of digitization is another example of our novel efforts to cope with the new environment. The travel restrictions have been gradually relaxed since then, but not to fully lifted yet, so that some acceptance inspections are still pending.

## Financial position

Free cash flow was in deficit at JPY 5.2 bn. mainly due to lower down-payment driven from sluggish order intake and continued capital expenditures for an expansion of production capacity and productivity at the Pfronten factory in Germany. In order to cover necessary funds by shifting from short-term to long-term capital, we raised hybrid capital of JPY 70 bn. Our equity ratio rose to 35.2% from 23.6% at the end of 2019, net debt amount declined by JPY 11.1 bn. to JPY 64.4 bn., and net debt equity ratio improved to 35% from 61% at the end of 2019.

## Research and Development

R&D expenses are strictly measured for effectiveness, but development of advanced technologies including integrated machines and additive manufacturing, automation and digitization are the drivers of our future growth, and we have continued to strengthen corresponding R&D activities. In 2020, we launched new products in our additive manufacturing range: LASERTEC 30 DUAL *SLM* which increases productivity by 70% and LASERTEC 6600 *DED hybrid* for large workpieces.

In the automation field, we added automated guided vehicles (AGV) using 5G technology to our existing portfolio of 53 standardized systems. In practical use, the new AGV allows for increased flexibility of equipment placement combined with safe and accurate material conveyance. In addition, we have introduced an automatic chip removal system with AI (Artificial Intelligence) and non-contact on-machine automatic measurement system using the latest sensing devices with an alliance of Nikon Corporation. These technologies are contributing to the improvement of cutting accuracy and productivity for customers.

## Outlook for fiscal year 2021

Demand for machine tools has moderately recovered since the economic bottom in the 2nd quarter of 2020 (Apr.-Jun.). DMG MORI's consolidated order intake also marked the lowest point in the 2nd quarter (JPY 57.2 bn.) and recovered to JPY 73.3 bn. in the 4th quarter. Our customers are increasingly interested in our focal fields, process integration, automation, and digitization, and related inquiries show a significant increase in number. However, due to the resurgence of COVID-19 since the end of 2020, the lead time from inquiries to order intake tends to be longer than usual. We believe that the ongoing vaccination campaigns will bring a positive turn in the economic climate and in our order intake, both in the 2nd half of 2021. We expect an annual consolidated order intake of JPY 380 bn. in 2021 (36% up year-on-year).

On the other hand, the sales and operating income should remain stable at JPY 330 bn. and 11 bn. respectively. Because of the modest order backlog at the end of 2020 (JPY 96 bn.), we will strive to secure more orders and receive payments by year-end. However, with an average order intake-to-shipment lead time of 5 months, the order intake recovery in the 2nd half will not translate into sales revenues until 2022. We intend to continuously and strictly exercise cost control and maintain the break-even point at JPY 302 bn., the same level as the previous year.

We plan a full year dividend per share of JPY 20, with each JPY 10 for the first half and second half, which is the same as in 2020. Our dividend policy is to pay stable dividends even in economic down-cycles in combination with approx. 30% of payout ratio during up-cycles after consideration of free cash flow and the repayment of interest-bearing debt. We believe that we are in the early stages of demand recovery and we will assess the pace of such recovery in order intake and profits. At this early stage, we plan to maintain the same level of dividend per share for 2021.

## Sustainable Management Policy (ESG / CSR)

DMG MORI values its relationships with society and strives to satisfy all stakeholders' interests. As a measure against global climate change and for decarbonization, DMG MORI achieved carbon neutrality in the process of procurement to delivery (upstream Scope 3). It is a milestone, which no competitor has achieved yet. Starting January 2021, all machines are delivered carbon-neutral, bearing our "$CO_2$ Neutral" Logo. We believe these initiatives will help our customers to achieve $CO_2$ neutrality within their own supply chain, thereby providing us with a strategic advantage.

DMG MORI has also strived to enhance employees' quality-of-life. We have adopted the "DMG MORI Health Management Policy" as part of our commitment to health management under the corporate philosophy of "play hard, study continuously, and work together". In 2020, the number of annually used paid holidays rose by 4 days year-on-year to 25.9 days per employee in average. The average annual working hours have been strictly controlled as well and reduced by 204 hours year-on-year to 1,806 hours per person.

In terms of corporate governance, we appreciate diversity and focus to diversify career backgrounds, nationality, and gender of our directors. With the approval from shareholders on March 29th, we will increase the ratios of external directors to 40%, non-Japanese directors to 20%, and female directors to 10%, respectively.

With the above mentioned measures, DMG MORI is committed to continuously enhance our corporate value and satisfy all stakeholders.

## Highlights

# DIGITAL INNOVATION

### 2020 Digitization Initiatives

In 2020, we were unexpectedly forced to limit our travels worldwide. DMG MORI took this opportunity to further advance digitization of machining processes and the entire supply chain, including sales, delivery and after-sales service. We have reinforced our digital and physical customer support system.

1

## Digital Twin Showroom

***Full Computer Graphics of Global Solution Center***
***Highly realistic images give a real sense of immersion***

Our Digital Twin Showroom allows customers to visit our showroom anytime from anywhere and search and experience products and technologies of their interest.


2

## Online Technology Days

***DMG MORI***
***Online Technology Days -***
***Our first online exhibition held***
***in November 2020***

With physical exhibitions being restricted, we decided to offer similar contents to our customers online - visits to our Digital Twin Showroom, overviews of our newest products, and various online seminars.

# Experience new values and industry trends



## 3 Online seminars

### *Wide range of online seminars made available*

DMG MORI's experts are offering online seminars tailored to customers' specific needs. Customers can take seminars of interest at anytime from anywhere. The new digital service has been well received by a high number of customers.

## 4 Technology Cycles

### *Application software to make complicated and advanced processes quicker and easier*

With DMG MORI's application software, customers can easily create advanced machining programs with the help of conversational automatic programming. We additionally offer our Technology Cycles, total software solutions that significantly shorten the total machining lead time.

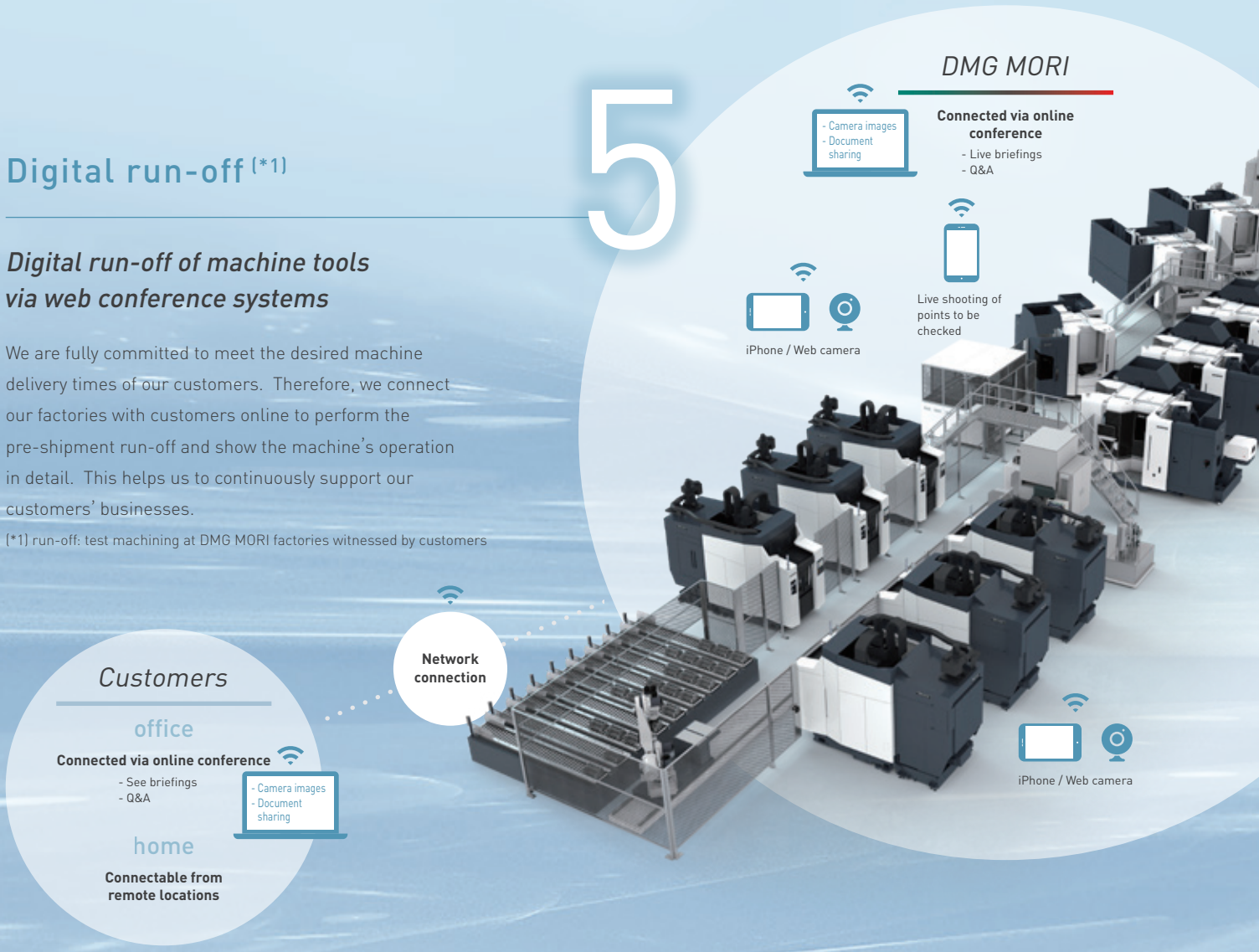

*50 Technology Cycles* Handling ▶ Machining ▶ Measuring ▶ Monitoring

## 5 Digital run-off (*1)

### *Digital run-off of machine tools via web conference systems*

We are fully committed to meet the desired machine delivery times of our customers. Therefore, we connect our factories with customers online to perform the pre-shipment run-off and show the machine's operation in detail. This helps us to continuously support our customers' businesses.

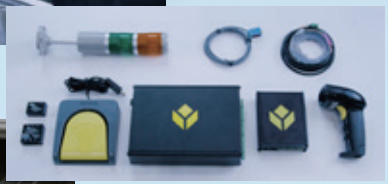
(*1) run-off: test machining at DMG MORI factories witnessed by customers




## 6 TULIP

### *Promoting factory digitization by user-friendly, cloud-based platform to create manufacturing app*

TULIP is a low-code manufacturing app platform that enables people on the shopfloor to easily create applications. TULIP contributes to the digitization of tacit knowledge, the transfer of know-how, and the improvement of operation efficiency and quality.




7

## *my* DMG MORI

### *Communication platform connecting DMG MORI and customers*

Our exclusive customer portal "*my* DMG MORI" enables members to digitally manage their manuals, drawings and machine information, and to make service requests easily online. It realizes a sustainable working environment.

8

## Digital Academy

### *Effective combination of e-Learning and on-site machining training Full utilization of rich digital contents*

Our customers can access Digital Academy to receive machining trainings from skilled engineers and start operation of newly installed machines easily.

# Marketing

In response to the increasing demand, we have established a combination of digital and on-site events for our customers. We are now offering online exhibitions and virtual tours through our Digital Twin Showroom, and on-site exhibitions for a small number of customers.

## Digital Twin Showroom

DIGITAL

We opened "Digital Twin Showroom" on our website in July 2020, which replicates the real Iga Global Solution Center and System Solution Center with the digital twin technology (*1). With a 360-degree panorama view, the full CG Digital Twin Showroom (4K image quality) takes the visitors to a digital world that provides a real sense of immersion and makes them feel like they are actually walking around the showroom. It is easily accessible anytime from anywhere and provides visitors with the newest information about our machines, peripheral equipment, automation solutions and online seminars.

(*1) Technology that creates a virtual copy of real-world machines and equipment and enables simulations based on the digital data.

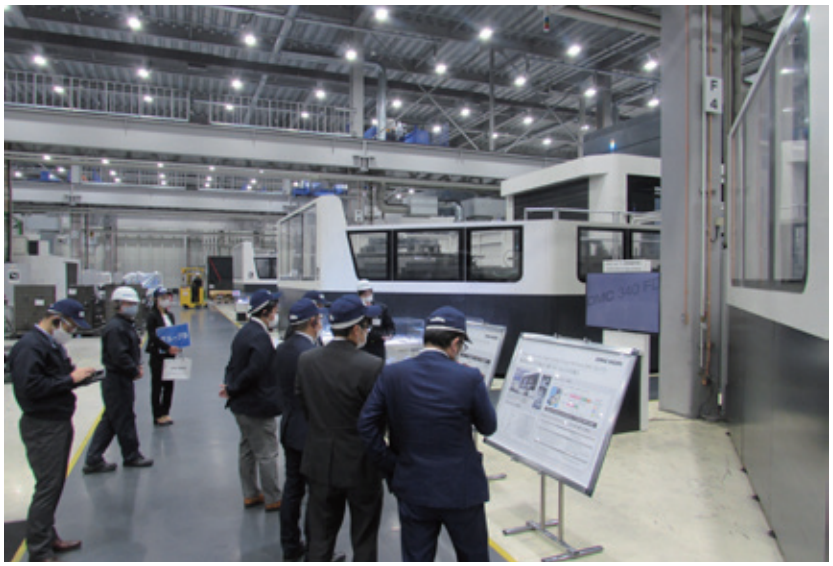
## Online Exhibition

DIGITAL


The spread of COVID-19 led to the cancellation of major exhibitions worldwide. Instead, we held the online exhibition "DMG MORI Online Technology Days" in Japan on November 2020. The online exhibition was easily accessible from web browser and included contents such as online seminars, our Digital Twin Showroom and introductions to our newest products. It was well received by a high number of customers.

## Technology Fridays: Open house seminars for a small number of customers

REAL

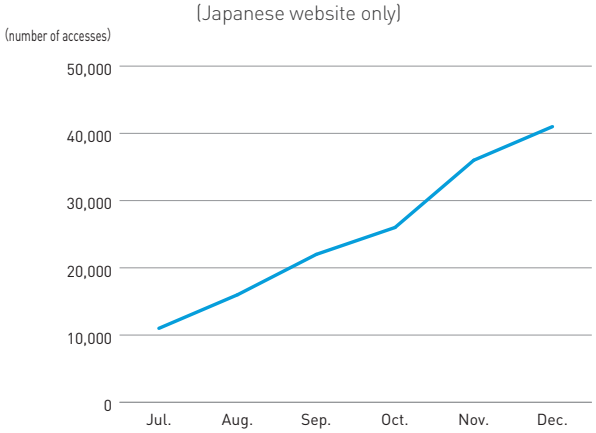


From June 2020, we started our new small-sized open house event series “Technology Fridays” at our Iga Campus and Tokyo Global Headquarters, as an alternative to the previous large-scaled events at our factories. Each Friday, we invite a small number of customers to technical seminars and cutting demonstrations with the newest products in our showroom.

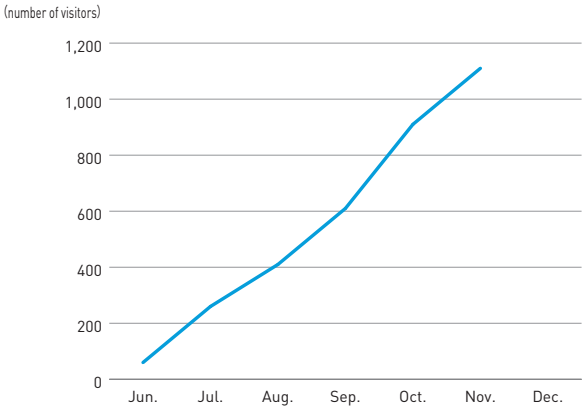
## Digital Twin Showroom access numbers / Technology Fridays number of visitors

DIGITAL × REAL

Digital Twin Showroom cumulative access numbers
(Japanese website only)




Technology Fridays cumulative number of visitors



# R&D

DMG MORI is committed to developing cutting-edge and efficient products that meet the needs of customers around the world, taking advantage of our strengths from Japan and Germany combined.

## R&D sites across the world

*approx. 1,300 developers*


Bielefeld (Germany) [Gildemeister]


Seebach (Germany) [DECKEL MAHO]


Stipshausen (Germany) [Ultrasonic Lasertec]


Pfronten (Germany) [DECKEL MAHO]

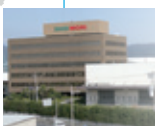

Tortona (Italy) [Graziano]


Bergamo (Italy) [Gital]


Pleszew (Poland) [FAMOT]


Davis CA (USA)


Taiyo Koki (Japan)

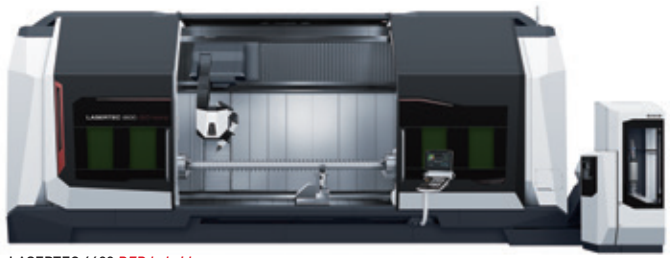

Nara Campus (Japan)


Iga Campus (Japan)


Magnescale (Japan)

## Advanced Technologies

Additive Manufacturing, laser processing and ultrasonic processing are referred to as Advanced Technologies. They are applied in fields not suited for conventional cutting, such as machining of complex shapes and new types of material. Their usage is constantly growing.


LASERTEC 6600 *DED hybrid*

**Sample workpieces**


Aerospace rocket nozzle

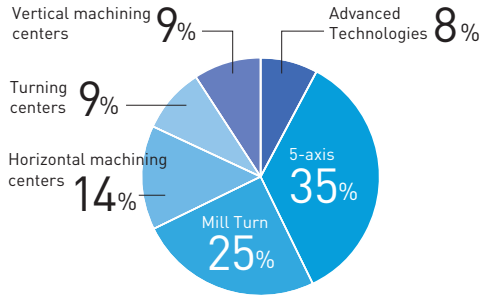

Industrial roller (coating)


Vacuum technology flange pipe (coating)

## 5-axis & mill turn centers

5-axis and mill turn centers achieve higher accuracy by machining the workpiece in one chucking; they also shorten production lead time by integrating multiple processes.

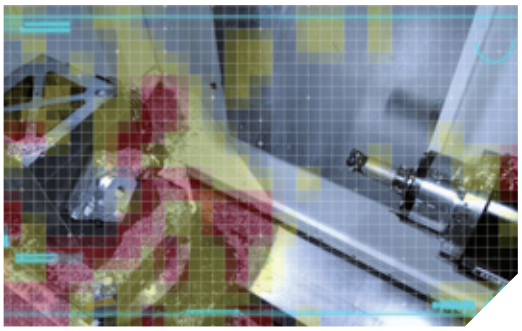
### Order composition by product type



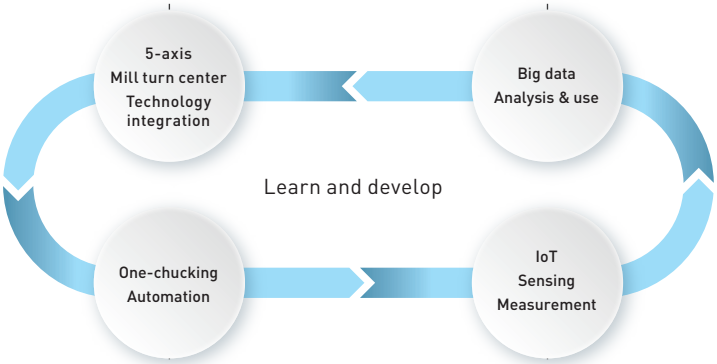

**60% of orders for process-integration machines**

## "AI Chip Removal" solution

We have developed a technology that analyzes camera images by AI to identify where and how much chips are accumulated, and automatically adjusts the spraying angle of the coolant nozzles. This AI-based automatic washing solution improves machining accuracy, while reducing the work for operators, previously responsible for frequent cleaning of the cutting area. Therefore, long-time unmanned operation becomes possible.



## Processes for productivity improvement




## Automation

DMG MORI conducts joint experiments together with NTT Communications Corporation to test a guideless self-driving robot (AGV robot) (*1) within a local 5G environment (*2).

WH-AGV

## Sensing & Measurement

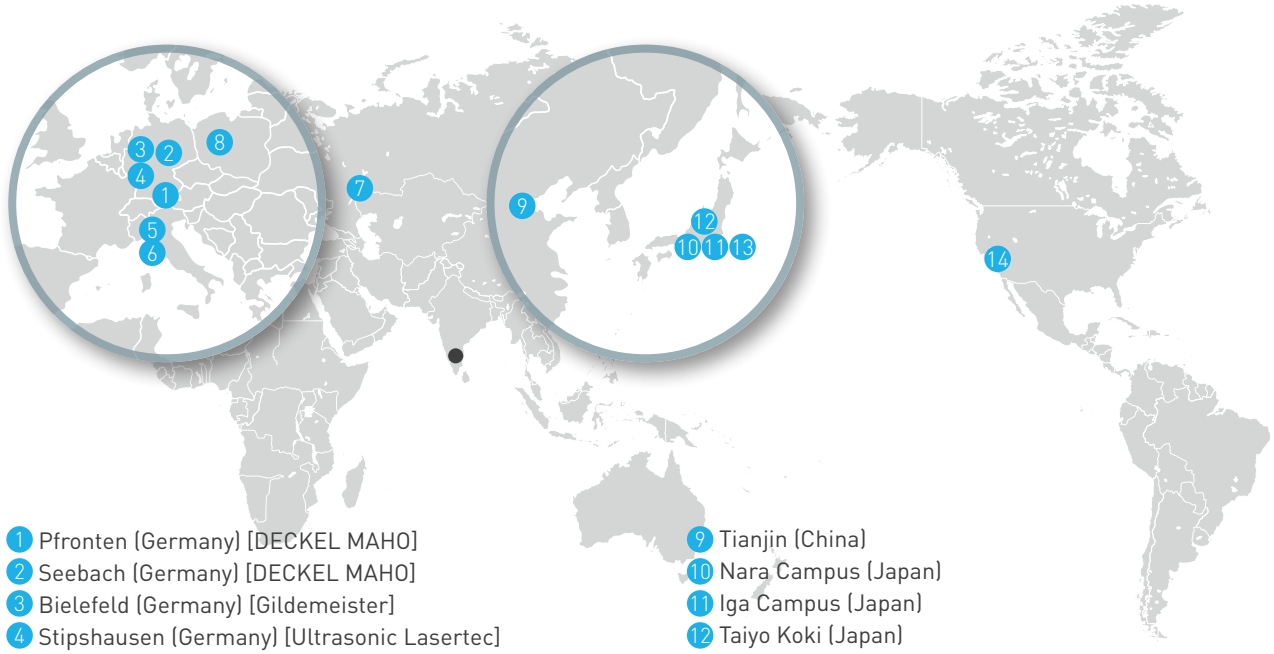
In collaboration with Nikon Corporation, DMG MORI developed a non-contact on-machine measurement system to automatically measure workpieces on the machine tool by state-of-the-art sensing technology.


(*1) AGV robots are collaborative robots mounted on AGVs (Automated Guided Vehicles) that can navigate autonomously without relying on rails by technologies such as 3D sensors.
(*2) Different to 5G services provided by mobile phone companies, local 5G describes a 5G network built up by companies or communities for use inside their facilities and sites.

# Production

DMG MORI has production bases worldwide, with the biggest ones in Iga (Japan) and Pfronten (Germany). Our global presence allows us to produce machine tools closer to the end users, optimize transportation, secure short delivery time, and meet the diverse local needs.

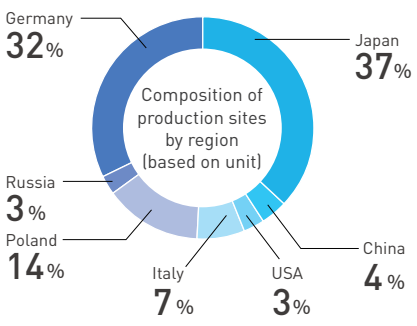
## Global Production Sites: 14 fully owned + 1 partner production




1 Pfronten (Germany) [DECKEL MAHO]
2 Seebach (Germany) [DECKEL MAHO]
3 Bielefeld (Germany) [Gildemeister]
4 Stipshausen (Germany) [Ultrasonic Lasertec]
5 Bergamo (Italy) [Gital]
6 Tortona (Italy) [Graziano]
7 Ulyanovsk [Russia]
8 Pleszew (Poland) [FAMOT]
9 Tianjin (China)
10 Nara Campus (Japan)
11 Iga Campus (Japan)
12 Taiyo Koki (Japan)
13 Magnescale (Japan)
14 Davis CA (USA)
● Lakshmi (India) [Partner]

## Our widespread production network

Our largest production sites are located in Japan and in Germany, while the remaining ones are spread across several European countries, the USA and China. By utilizing our global production span, we secure short delivery times and reduce transportation costs. Also, considering geopolitical risks, DMG MORI's diverse production network offers sustainable and safe operation, enabling continuous support towards our customers.



## Implementing advanced digital technologies at Pfronten Factory (Germany)

September 2020 marked the opening of the monoBLOCK Excellence Factory in Pfronten, Germany, DMG MORI's largest production site in Europe. The monoBLOCK Excellence Factory offers 4,000 ㎡ of space for line production by AGVs (Automated Guided Vehicles), which improved productivity by 30%. As a result, the annual production capacity has expanded from 600 to 1,000 units.

## In-house production for key components

### *In-house production of main components*

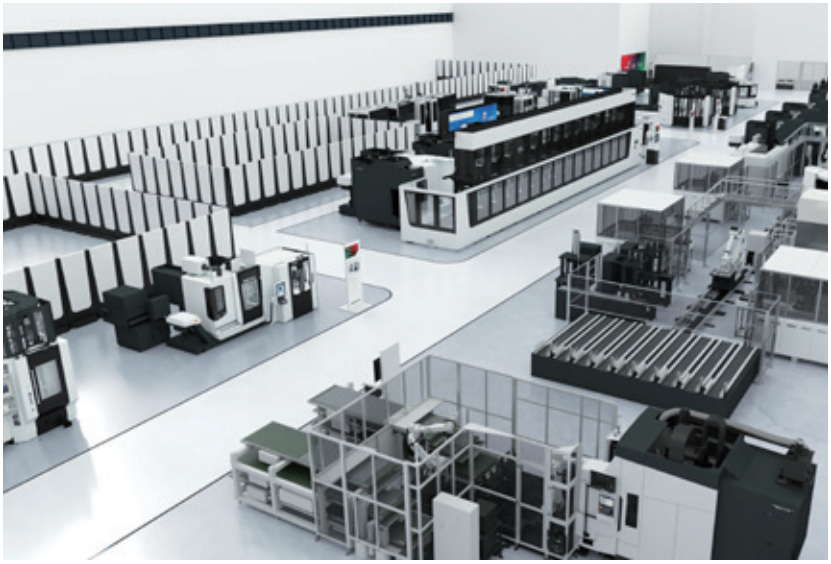

At DMG MORI, quality improvement and shorter lead times are in the center of our efforts, as is the shift to in-house production of key components for faster product development and stable parts supply. This applies to ball screws and ATCs, as well as spindles, which undergo an integrated production procedure from parts machining to assembly and quality control in our spindle plant. All our plants are promoting in-house production worldwide, including Japan and Germany.

# Engineering

DMG MORI provides peripheral and automation equipment alongside its high-accuracy / high-rigidity machine tools to generate additional value for customers by solving existing issues. This is supported by our engineering expertise, promoted through continuous education of our internal engineers and ultimately provided to our customers both digitally and physically.

## Automation System Solutions

DIGITAL × REAL



We observe a growing demand for automation of production processes by robots and other solutions to compensate for the lack of engineers and operators. Automation is made possible by connecting machines with peripheral equipment such as workpiece loading and measurement devices, and a production management system. DMG MORI has a system solution plant dedicated to assembling automation systems as turnkey projects to provide optimized solutions to customers. The System Solution Center inside our Digital Twin Showroom shows 16 accurate replications of different automation systems.

## Digital Run-off

DIGITAL × REAL

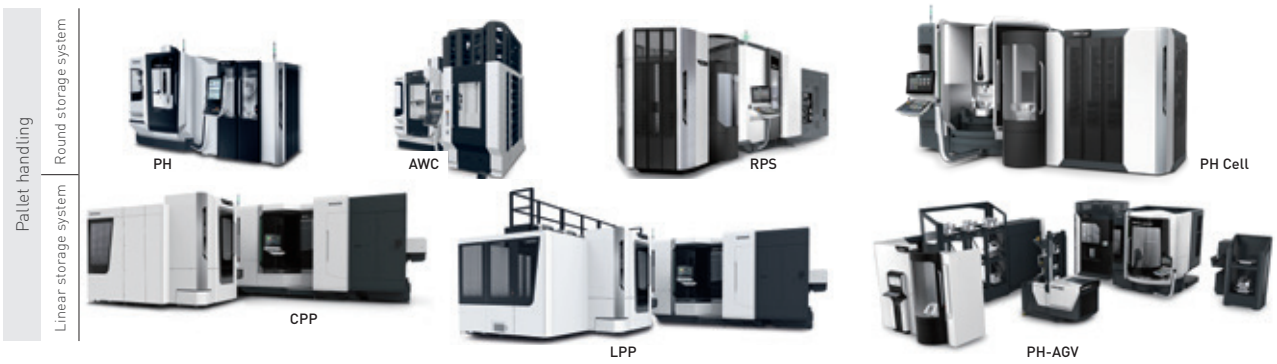
We successfully introduced digital run-off that connects our factories with our customers via web conferences. During the digital run-off, customers can verify their future machine's exterior appearance, the machining accuracy, the finished workpiece and system operation prior to the shipment to their plant. In recent years, we have received an increasing amount of orders for automation or complex systems instead of just standalone machines.
This makes run-off even more important as a way of checking these kind of complex operations. Therefore, we offer a convenient and safe way of connecting from afar and can adjust flexibly to customers' delivery schedule.

## Automation

Workpiece handling
- Gantry loader: GX / GX T, SR
- Robot: IMTR, Robo2Go, WH Cell, MATRIS, WH Flex

# 4 SEGMENTS 13 PRODUCT LINES 53 PRODUCTS

Pallet handling
- Round storage system: PH, AWC, RPS, PH Cell
- Linear storage system: CPP, LPP, PH-AGV



## 50 types of Technology Cycles

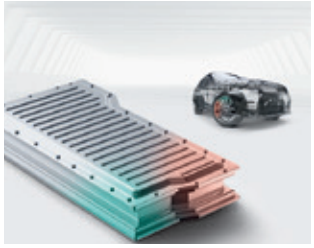
DIGITAL




Technology Cycles are solutions to perform complex machining easily and quickly. They assist handling, machining, measuring and monitoring to achieve the highest quality. We offer our customers the newest software conveniently through online updates.

## Excellence Centers

REAL



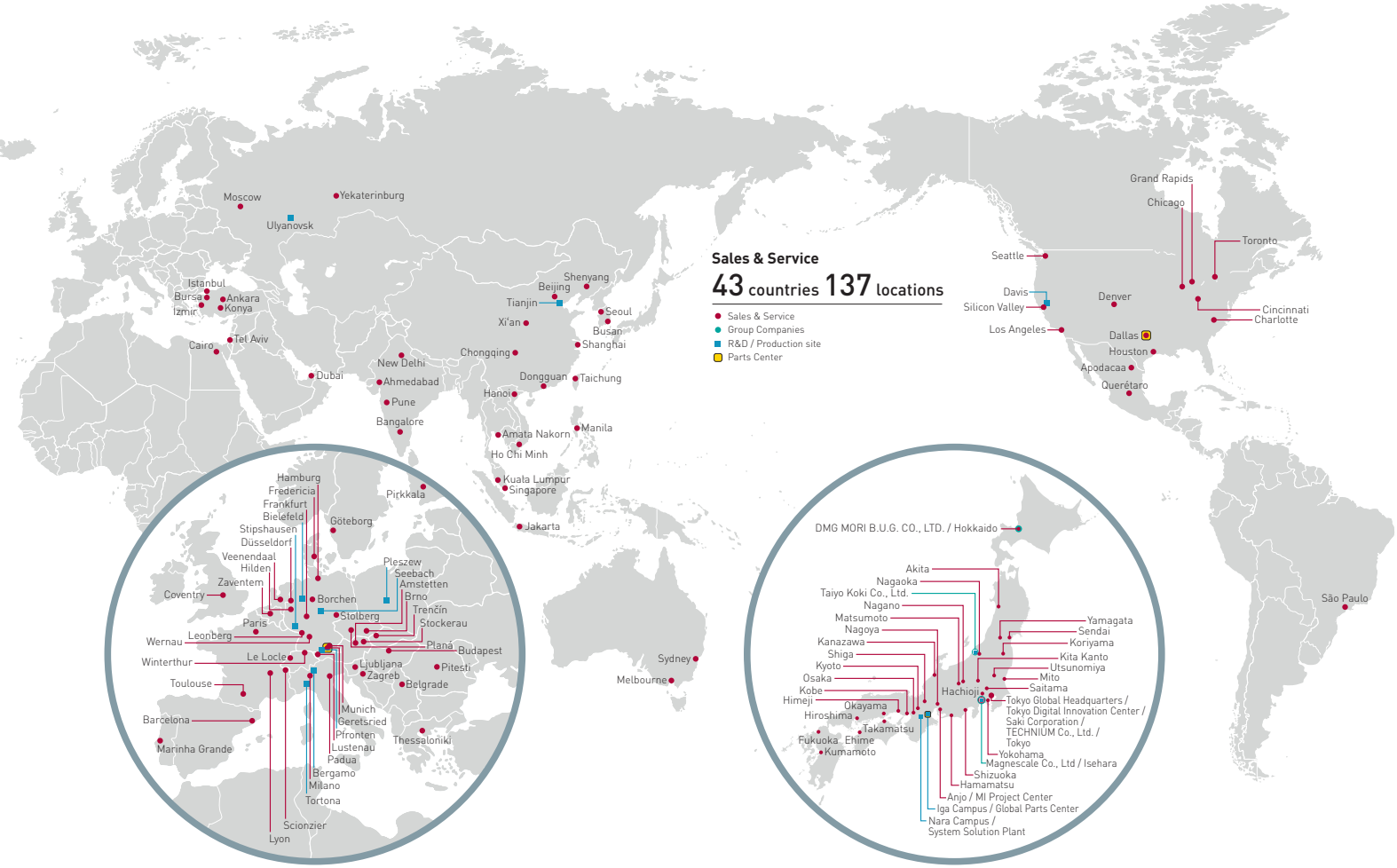

We have permanent exhibition areas for four major industries: Automotive, Medical, Die & Mold, and Aerospace. Engineers with specialized knowledge and expertise in each industry propose optimized solutions there.

# Direct Sales & Services Network

It is our mission at DMG MORI to offer our customers a way of improving their productivity while also supporting their business in the long-term. Through our direct sales and services network, we will continue to be a valuable partner to our customers.

## Worldwide network covering 137 locations in 43 countries

REAL



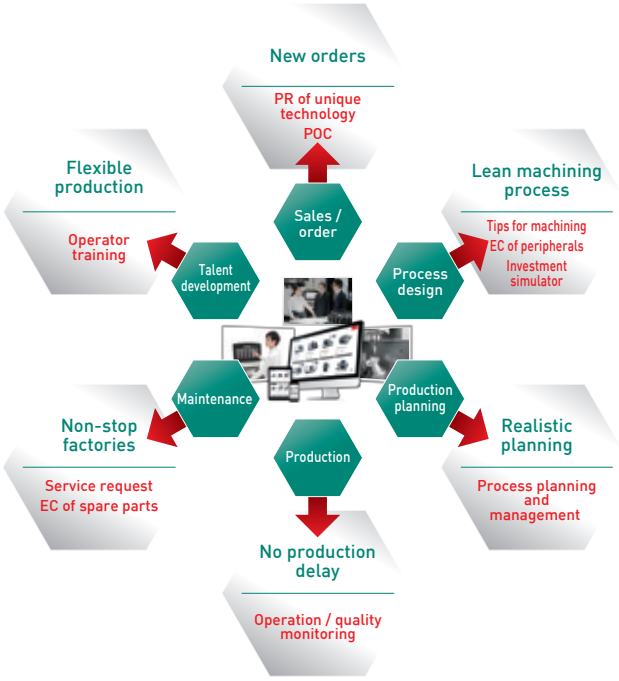

## *Providing the same-quality support worldwide*

Quick trouble-shooting is essential for reliable and long-term machine tool usage. When a machine is down for a long time, it can negatively affect the owner's business performance. DMG MORI operates 137 locations in 43 countries and provides the same quality maintenance and recovery services to customers around the world.

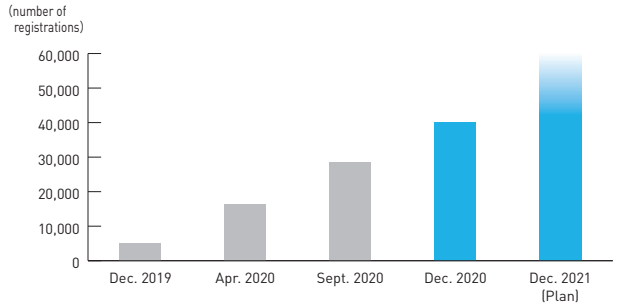
## *my* DMG MORI

DIGITAL

In September 2019, we launched a new exclusive customer portal "*my* DMG MORI" that brings additional value to customers through digitization. The website allows them a quick view through installed machines' information in each factory, including the serial number, delivery date, and warranty expiry date. Manuals and service, repair, and spare parts histories are also easily accessible. We also have added functions for placing service and spare parts orders online.




### Number of registrations to *my* DMG MORI




## e-Learning Service: Digital Academy

DIGITAL × REAL

DMG MORI launched the "Digital Academy" to offer a more effective and efficient learning service consisting of e-Learning and machining practice. Participants can get great benefit because they can watch the e-Learning contents repeatedly and ask questions during the course. With the classroom training with e-Learning, we could shorten the practical training at DMG MORI's factory to 2 days.


## TULIP: Supporting improvements on the shopfloor by digitization

DIGITAL × REAL

TULIP provides a cloud-based platform to create applications for the shopfloor without programming knowledge. Established by MIT Media Lab in the United States, TULIP ensures higher efficiency and quality by offering solutions for people working on the shopfloor to create a wide range of applications for work instructions, quality control, and monitoring of equipment by themselves.

## Group Companies

# Pursuing expertise and added value

DMG MORI has group companies with high expertise. The Tokyo Digital Innovation Center (DIC) is home to the three group companies of DMG MORI specialized in digital technology. They provide their joint knowledge and support for improvement of efficiency at customer's site.
The same applies to overseas, where proficient group companies individually develop proprietery technologies, while also merging them with other members of our group.

TAIYO KOKI

## TAIYO KOKI CO., LTD.

221-35, Seiryo-machi, Nagaoka City, Niigata, Japan

https://www.taiyokoki.com/en/

### *Realize customer needs with custom responsiveness Front runner of vertical grinding machines*

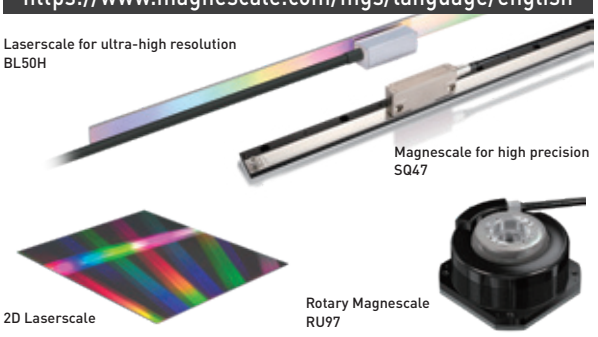
Taiyo Koki is an innovative and highly skilled manufacturer specialized in grinding machines, such as vertical grinding machines. Grinding machines make the last step of metal processing; hence, require the highest level of accuracy within all machine types. To meet all customer needs, Taiyo Koki applies a flexible development and production system adjusted to the requirements of each order. After its foundation in 1986, the company became a member of the DMG MORI group in 2001, and listed in the JASDAQ Standard market in 2007. In 2019, Taiyo Koki's turnover surpassed JPY 10.0 bn. for the first time. With its technical expertise, highly praised both in- and outside of Japan, the company is devoted to further expanding its market in the world.

Magnescale

## Magnescale Co., Ltd

45 Suzukawa, Isehara City, Kanagawa, Japan

https://www.magnescale.com/mgs/language/english




### *Magnetic and optical position detection of highest precision*

For over 50 years, Magnescale has been providing high-precision encoders based on magnetic and laser technologies for machine tool and industrial machinery equipment. Its high-precision magnetic waveform recording and high-grade interpolation technology enable precision and resolution equal to optical technology, while its magnetic technology ensures high-level environmental resistance. This makes Magnescale's products highly reliable, even in the tough conditions of the metal cutting industry. In addition, Magnescale offers Laserscale, an optical encoder suited for semiconductor manufacturing systems and ultra-high-precision machines, capable of 2.1 picometer, the highest resolution in the world.

## Saki Corporation

DMG MORI Tokyo Digital Innovation Center, 3-1-4 Edagawa
Koto-ku, Tokyo, Japan

https://www.sakicorp.com/en/

### *Development of automatic inspection equipment for electronic parts mounting processes*

Saki Corporation provides automatic inspection equipment mainly used for circuit boards and semiconductors. Due to the miniaturization of electric components and the progress of high density mounting technology, the inspection of circuit boards used in 5G network systems, electric vehicles and others is becoming more difficult. Automatic quality inspection systems for manufacturing processes are increasingly necessary in order to secure the quality of our infrastructure. Saki Corporation contributes to the realization of smart factories through its total solution of hardware, software, and management system. This includes high speed, high definition imaging devices with cutting-edge optical and 3D X-ray inspection technology, software for advanced computing and judgement, and quality management systems for the entire factory.

## TECHNIUM Co., Ltd.

DMG MORI Tokyo Digital Innovation Center, 3-1-4 Edagawa
Koto-ku, Tokyo, Japan

https://www.technium.net/


### *Long-term support after machine delivery by DMG MORI's digital services*

In January 2018, TECHNIUM Co., Ltd. was founded through the joint investment by DMG MORI and the Nomura Research Institute, Ltd. TECHNIUM offers digital services that improve productivity and reduce costs throughout the lifecycle of customer's machines. *my* DMG MORI offered by TECHNIUM is a customer portal that enables members to manage all data related to installed machines, such as documents and the history of service and spare parts, all on one single platform. New functions are continuously added to the portal. With the newest function, customers can now send service requests for machine repair and recovery directly from *my* DMG MORI.

## T Project Co., Ltd.

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https://tprj.co.jp/

### *Promoting factory digitization by TULIP*

T Project Co., Ltd. was founded in September 2020 and became our Japanese distributor for TULIP, a manufacturing app platform invented by US-based Tulip Interfaces, Inc. TULIP enables the easy creation of applications without knowledge of programming. With its process digitization, efficiency and quality on the shopfloor is significantly improved. This is not only beneficial to machine tool users, but also to a wide range of other customers from various industries. By providing TULIP as a completely new digital solution, we are able to vastly improve productivity throughout the industries.