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.



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 2021 (January-December) Contents

Businesses Mission Statement 1 3 Message from group CEO 9 Comprehensive solutions to realize DMG MORI's missions DMG MORI's development amidst transforming demands 11 13 Why customers choose DMG MORI 15 DMG MORI's value creation process 17 DMG MORI continues to evolve together with growing industries Competitive advantages of DMG MORI 19 21 Diversity in DMG MORI 23 DMG MORI in 2021 25 PROCESS INNOVATION 29 Value Chain Marketing R&D Production Engineering **Customer-oriented Sales & Service Network** Human resources Strategy and Organization 43 47 M&A history of DMG MORI and its contribution 49 **Group Companies** Sustainability 51 Sustainability (ESG / CSR) Initiatives (ESG / CSR) 53 **Environmental Protection** 59 **Quality Policy** 61 Health Management 63 Human resources development 65 Contribution to society 68 Sports Marketing 69 Environmental Data Corporate Governance 71 Governance Members of the Board of Directors Message from Germany Message from External Director Message from External Auditor **Risk Management Financial Data** 83 Financial Data 95 Company Data

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

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

DMG MORI drives customer value through process integration, automation and digitization, and address climate change by providing environmentally friendly products and technologies.

How do you evaluate the changes in the business environment surrounding the machine tools industry? How is DMG MORI responding to these changes?

The shift to electric vehicles (EVs), decarbonization, the global shortage of operators and the aging of population, as well as the impact of COVID-19, have significantly changed the needs of our customers for machining. The shift to EVs and decarbonization has resulted in the need to reduce coefficient of friction and

optimize the bonding between parts, which in turn has led to more stringent requirements in terms of not only conventional machining accuracy but also imposed shape and surface accuracy. In addition, single-chucking and single-pallet machining is required to realize these high precision requirements. Demand for automation and full turn-key machining solution is accelerating to address the operator shortage and to prevent the spread of infectious diseases at manufacturing sites. Clearly, the way customers are installing machining equipment is shifting from simply replacing existing machines to optimizing the way workpieces are processed, optimizing their own management resources, and reducing CO₂ emissions in consideration to climate change.

In this context, our mission has been adapting to the changes in the business environment with process integration, automation, and digitization. Workpieces that were sequentially processed by three to five machines can now be manufactured by a single process-integrated machine, such as a 5-axis machine or a mill-turn center, or in other words, through a single chucking, to achieve higher accuracy. Following such process integration, automation leads to further resource optimizations, such as compensating for the lack of operators, eliminating intermediate work-in-process that used to be idling after each process, and reducing shop floor space. Digitization has helped optimize the machining process by visualizing and providing feedback on areas where operators cannot be involved due to automation.



As an example of process integration, in FY2021, we launched the NZ platform, the first jointly developed machine by Japan and Italy, a flexible turning center that can be equipped with up to four turrets with B-axis function (swivel function). In addition to 5-axis machines and mill-turn centers, this platform expanded our line-up of process-integration machines.

The Central Tool Storage (CTS) is an automated system with a large-capacity tool magazine up to 4,000 tools, and a transfer robot that loads and unloads tools into and out of the machine tool magazine of each machine tool. The system enables automation of high-mix production. We have also introduced the MATRIS Light robot system, which can be flexibly positioned. This is a system in which human-collaborative robot is amounted on a hand cart and can be moved freely by a single operator, significantly lowering introduction barrier. Currently, we offer 57 standardized automation solutions to our customers.

In order to keep these automation solutions running error-free for as long as possible, the machining environment and conditions must be optimized. The problems caused by chips, coolant, and mist generated in the cutting process are recognized as the three troublemakers of machining. They adversely affect the machining accuracy of the workpiece and can also cause machine failure. To solve these three troublemakers, we have introduced new peripheral devices. Al Chip Removal, Zero Sludge Coolant, and *zero*FOG are contributing to further increase the productivity of our customers.

As mentioned above, we increasingly develop process-integration machines as well as automation systems and peripheral equipment that optimize the operation of those machines. These systems also contribute to the improvement of social value including the working environment and reduction of CO₂ emissions.

What do you consider to be the key elements for fulfilling DMG MORI's mission? What differentiates DMG MORI from your competitors?

We have around 12,000 employees globally, of which 4,800 (40%) are engaged in manufacturing machines and improving machine quality. The remaining 7,200 employees (60%) are engaged in marketing, sales, engineering and services. These employees help our customers to get the optimized performance out of their machining systems and solve production problems as quickly as possible.

In terms of manufacturing, we have 16 factories globally, aiming to produce machine tools and related products at the place of demand as much as possible, thereby diversifying risks. These 16 factories also serve as important marketing bases. We invite customers to our factories for test cuts and automation demonstrations to help them make decisions on their capital investment. In addition, we are promoting the in-house production of key components with the aim of improving the accuracy of machine tools and safeguarding constant supply of difficult-to-procure parts. They include spindles, which are the heart of the machine tools, ball screws to improve positioning accuracy and ultra-precision measurement components supplied by Magnescale, a group company. In the future, reducing CO₂ emissions in the area of procurement will also be a major topic. WATANABE SEIKOSHO Co., Ltd., a group company, which is involved in the manufacturing of iron casting, has decided to switch to a less CO₂ emissions and high-efficiency electric furnace, leading to our advantage in the supply chain. In terms of organization for providing and maintaining values to customers, we have 111 bases in 44 countries around the world. As the machine tools and automation systems we provide become more and more complex, we need a mechanism to directly propose and provide our value to customers.

We believe what differentiates DMG MORI from our competitors is not only the supply of products such as 5-axis machines and mill-turn centers. It is also our ability to propose and realize solutions that maximize the value of these machines and are catered to customers' workpieces. From the planning stage of production customers can procure all service and products through a single source, DMG MORI. Our strength is that we are not only a machine tool manufacturer, but also an engineering company with trading company functions.

What are your thoughts on the progress of digitization and the fusion of digital and real?

The initial introduction of digital tools was completed by the end of 2020. In 2021, we have been moving to enhance the digital contents we provide. For internal use, we have introduced the "Sales Manual 2.0" to approximately 600 area sales mangers globally, enabling them to customer needs digitally and contributing to increased productivity. The introduction of the Digital Twin Test Cuts enables significant time saving compared to actual test cutting, while at the same time reducing the costs related to materials, tools, and coolant. In 2021, we succeeded in significantly shortening the analysis and evaluation time by using the RIKEN supercomputer "Fugaku", for example in case of mold with complex curved surfaces. The portal site "*my* DMG MORI",



which was introduced in 2019, now has about 50,000 registered users. It facilitates communication with customers. Following the addition of the new "Service Request" function, customers are increasingly shifting their machine recovery request and repair parts orders online.

As mentioned above, we have enhanced our digital contents to make it more convenient for our customers, while, at the same time, acknowledging the resurging importance of real world experience. Even under COVID-19 in 2020, after thoroughly taking measures against the spread of infectious diseases, we held face-to-face business meetings with a small scale of customers at showroom in Iga and Tokyo, Japan. Physically experiencing machine tools in operation and performing test cuts is essential for our customers to make capital investment decisions. This is especially true for new technologies such as 5-axis machines, mill-turn centers and additive manufacturing. I am convinced that global expansion of these real and small-group business meeting in FY2021 have helped our customers better understand our efforts in process integration, automation / full turn-key and digitization, which led to increased orders. In the future, we will continue to pursue both efficiency through the enhancement of digital contents and the promotion of understanding of our initiatives through in-person meetings and demonstrations.

What is the purpose of the divisionalization from the beginning of FY2022?

I assume that the framework for creating and providing value to customers is now well in place. On the other hand, demand for more complex automation and turnkey as well as 5-axis machines and mill-turn centers is increasing, while the contribution of each function to profitability has become less transparent. In fiscal year 2021, we thoroughly managed the profitability of machines and systems we provided to our customers machine by machine. This has enabled us to capture the cost of the machines themselves, peripheral devices added for automation, software products, engineering, customer operator training, etc., as well as the lifecycle cost of the delivered machines and systems. Since the cost of individual machine and system we provide has been clarified, the next step is to visualize the profitability of each functional organization, with the aim of further improving profitability. Since the beginning of 2022, we have visualized the profits or losses of the parts manufacturing, procurement, engineering, and research and development departments, and clarify the responsibilities of each function.

How do you evaluate the financial results of the strategies and measures?

Firstly, we were able to reduce the volatility of our business performance during the recession. I have gained confidence in our ability to remain profitable even in times of recession. Secondly, our customers have recognized the added value of processintegration machines, automation / full turnkey, and digitization, which has led to an improvement in the gross profit margin. In addition, we have been able to collect down-payments of around 30% of the order price when we receive orders.

Regarding the first point, in the global financial crisis in 2008, our sales dropped by about two-thirds from 202.3 billion yen (fiscal year ended March 2008) to 66.4 billion yen (fiscal year ended March 2010), and our net loss for the same year was over 34 billion yen causing a significant financial impact. During the COVID-19 pandemic, however, for fiscal year 2020, sales dropped only by about one-third, from 485.8 billion yen (fiscal year ended December 2019) to 328.3 billion yen (fiscal year ended December 2020), and we secured a net profit of 1.7 billion yen. Compared to about a decade ago, we have been able to diversify our customer base by region, industry, and business size. However, what is more

Trend in sales revenue



important is that our business model has shifted to processintegration machines, and automation / full turnkey systems with an increase in industrial-based customers that are less affected by short-term changes in the economic environment. On top of that, these orders have a long lead time to shipment, and with an abundant order backlog, it has become possible to level out management resources, especially in production. We expect this trend to further increase the stability of our business performance over the medium to long term.

With regard to the second point, we have been able to increase customer satisfaction by proposing optimized machining methods for their workpieces, such as process-integration machines and automation / full turnkey systems, which in turn has eased price pressure from customers and thereby improved the gross profit margin. Previously, in the growing period for machine tools demand, we used to have to raise working capital from parts procurement to collection of trade receivables. However, since we have been able to collect down-payments when receive orders, we no longer have such financing needs and our financial stability has improved.

As for our business performance in FY2021, demand from semiconductor production equipment, EVs, space, molds and medical related industries expanded, and our key performance indicators had greatly exceeded our initial plan. Order intake was 456 billion yen (up 63% from the previous fiscal year), sales revenue was 396 billion yen (up 21%), operating profit was 23.1 billion yen (up 2.2 times) with the operating margin of 5.8%, and net profit attributable to owners of the parent was 13.5 billion yen (up 7.7 times). Order intake even exceeded the pre-pandemic fiscal year 2019 by 11.4%. Also compared against fiscal year 2019, sales revenue, operating profit and net profit attributable to owners of the parent recovered to 82%, 62% and 75% levels, respectively.

Please tell us about the ESG issues you are focusing on. What are you doing to address them?

We place the highest priority on the health of employees. Employees are the key players in providing value to our customers and contributing to society through that value, so promoting their health is indispensable. At the beginning of 2021, we made the "DMG MORI Health Management Declaration" based on our management philosophy of "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". Rather than managing by company-wide average, we have been able to thoroughly manage individual employees, and annual working hours of 2,000 hours, the interval of 12 hours between leaving and arriving at work and the number of paid vacation taken per year of 20 days have been firmly established. As par of our COVID-19 measures, we provided vaccination at the workplaces, encouraging employees, their families and affiliated companies to take vaccines. The vaccination rate of employees in Japan and China exceeded 95%, while the rate in other regions was around 80%.

We have continued our efforts to protect the environment, in particular, in response to climate change. At the beginning of 2021, we achieved carbon neutrality, with the use of emission credits, of our machine tools manufactured across the world in the rage of scope 1 to upstream of scope 3. We have been shipping products with the "GREENMACHINE" logo after obtaining a third-party evaluation and assurance. In July 2021, we disclosed the first draft in accordance with the recommendation of the Task Force on Climate-related Financial Disclosures (TCFD), including information on governance, business risks and opportunities, and specific initiatives to CO₂ emission reduction. In addition, in

November last year, we received SBTi (Science Based Targets initiative) certification. We set our CO2 emission reduction targets of 46.2% in Scope 1 and Scope 2, and 13.5% in Scope 3 by 2030 from the base year 2019. In Scope 1 and 2, we have already decided to introduce biomass and solar power generation equipment, electric and fuel-saving vehicles, a high-efficiency electric furnace at the casting factory as well as purchase more CO₂ free electricity. In upstream of Scope 3 (CO₂ emissions caused by purchased goods and services), we have already negotiated with suppliers to make efforts to reduce CO₂ emissions, and we are considering providing technical support to achieve such reductions. In downstream of Scope 3 (CO₂ emissions when customers use our machines), we will reduce the power consumptions of our machines by introducing GREENMODE technology, and we continue to provide our customers with process-integration machines and automation / full turnkey systems, leading to less energy consumption. In addition, since small and medium-sized enterprises (SMEs), which

account for about 60% of our customers, are even facing challenges to investigating their current CO₂ emissions, we will be helping them to visualize their CO₂ emissions through our digital technology, "*my* DMG MORI".

С	CO2 emissions in supply chain						
	Achie						
	In-he	ouse	Supplier, employee commuting, etc.	Customer			
	Scope 1	Scope 2	Scope 3 Upstream	Scope 3 Downstream			
	Combustion of fuel	Use of electricity	Procurement of raw materials & parts	Use of products			

Please tell us about your assessment of the current corporate governance and your vision for the future.

Our board of directors consists of 10 members with six internal directors, including two foreign nationals, U.S. and German citizens, and four external directors (40% of total directors), including one female director. Diverse opinions are brought to the table based on their respective expertise in general management, global expertise, technology, legal affairs, and accounting & finance. In addition, we are expecting another female director to join our Board of Directors subject to the approval of the General Meeting of Shareholders in fiscal year 2023. With the inclusion of

two female external directors from fiscal year 2023, the Board of Directors will become more gender diverse. At present, the female director is mainly from outside the company, but we are fostering of candidates from within the company, and we will make efforts to increase the share of female directors to more than 30% by 2030. The Board of Auditors consists of one internal auditor and two external auditors to strengthen the management monitoring function.

Human resource development is an important issue in the machine tool industry. What are you doing to develop future engineers?

Mori Manufacturing Research and Technology Foundation, which is approved at the 69th general shareholders' meeting [March 2017], plays an important role of human resource development and support of research and development. Since 2019, we have provided three-year scholarships to engineering graduate students in the second half of their doctorial courses. A total of 22 students will be supported including students who are expected to join in April 2022. In addition, for the Graduate School of Advanced Integrated Studies in Human Survivability [Shishu-kan], Kyoto University, we are fostering of doctorial students who would be active on the global stage. Furthermore, with the aim of promoting diversity in engineering workforce, we have concluded a comprehensive cooperation agreement with Nara Women's University, which is the first women's university in Japan to open a department of engineering. We support the development of female engineers by dispatching instructors and advising curriculums and texts. In summer 2022, the Nara Product Development center (PDC) for DX (Digital Transformation) and advanced technologies will open in Nara, the place where Mori Seiki was founded. I expect it will be the place to promote the development of cutting-edge technologies such as 5G communication technology, AI (Artificial Intelligence), and digital twin as well as human resource development through industry-academia collaboration and close communication with related engineers.

Please tell us your efforts in other areas in ESG.

DMG MORI SAILING TEAM participated in the Vendée Globe 2020-2021, a solo, non-stop, round-the-world yacht race, skippered

by marine adventurer Kojiro Shiraishi, and finished 16th out of 33 boats. He was the first Asian to finish the race. During the race,

the team collected samples of microplastics in water that are rarely navigated by commercial ships or oceanographic research vessels, which cooperated with the Japan Agency for Marine-Earth Science and Technology (JAMSTEC) in their research and study. In support of musical activities, we have been supporting Kyohei Sorita since 2018 and founded 'Japan National Orchestra Co., Ltd.' (JNO) in May 2021. At the present stage, Kyohei Sorita and 17 young soloists are engaged in activities.

What are some of the other ESG issues that you need to address in the future?

A mutually supportive relationship with suppliers is one of them. While it is essential to eliminate unfair labor conditions for foreign labor forces and hazardous substances, we recognize that low wages and poor working environment are also important issues to be improved for the sustainability of society. We have traditionally interviewed our suppliers to understand issues and make improvement proposals. However, in light of the increasing social demands for human rights issues and improvement of the working environment, we have implemented a more standardized and strict management system by utilizing the platform provided by INTEGRITY NEXT GmbH of Germany. The system has already been introduced in Europe, where supplier management has been centralized. Given its effectiveness, we introduced it in Japan from the beginning of 2022.

Please tell us about your medium-to long-term business challenges, financial targets, and shareholder return policy.

We are planning to formulate a medium-term business plan by the end of 2022 that will cover three-year period through 2025.

We have been promoting process-integration machines, automation / full turnkey systems, and digitization in response to changes in the business environment, such as the shift to EVs, decarbonization, and the aging of society. In addition, we have responded to material sustainability issues such as employee health and climate change. In the next medium-term business plan, we would like to re-evaluate our current understanding, clarify our materiality, and at the same time, formulate a plan to resolve / improve the material issues with concrete actions.

Our focus on process integration, automation, and digitization will bring about a major shift from quantity to quality. The machining process that used to be performed by 3-5 machines will be replaced with one integrated machine tool, and the importance of peripheral equipment such as robots and software products for optimizing the process will increase. Although it will depend on economic conditions, we aim to achieve sales revenue of 500-600 billion yen and operating profit margin of 10-12% around 2025 as an intermediated target. Looking ahead to the next 10 years, we expect our average unit price to rise from the current 39 million yen to 50 million yen as the automation and full turn-key system ratio increases. With the increase in unit price due to this qualitative shift and the expansion of service and repair parts business, we expect sales to reach around 1 trillion yen. We have already commented that the gross profit margin has been on an improving trend by proposing the optimized processing method for workpieces. As a result, we have a chance to aim for an operating profit margin of 12-15% when we achieve sales revenue of 1 trillion ven.

With less volatized business performance derived from diversified business opportunity, we expect to be able to generate rather stable free cash flows for the next couple of years. We aim to achieve a Net Debt of zero, excluding perpetual subordinated bonds and loans, by around 2024, and a shareholders' equity ratio to around 50% based on the assumption that convertible bonds issued in 2021 will be converted to common stock.

We aim for a dividend payout ratio of 30-35% as a shareholders' return policy. In fiscal year 2021, we raised the dividend per share to 40 yen, up 20 yen from the last fiscal year, 10 yen for the interim period and 30 yen for the year-end period. In fiscal year 2022, we plan to pay a dividend per share of 60 yen, as the initial plan.

We have introduced TQM (Total Quality Management) to improve the quality and productivity of our operations. The management policy associated with this management philosophy has been developed and disseminated throughout the company. At the present stage, about 400 QCs (Quality Circles) are working to visualize activities and improve and standardize daily operations. By implementing this SDCA (Standardize \rightarrow Do \rightarrow Check \rightarrow Act) and PDCA (Plan \rightarrow Do \rightarrow Check \rightarrow Act) cycles at high speed, we will improve customer satisfaction, thereby, leading to an increase in corporate value. In particular, the SDCA contributes to an improvement and increased productivity of operations combined with visualization and traceability by implementing TULIP (low code platform to realize DX at shop floor).

DMG MORI will strive to continuously improve its equity value, contribute to solving social issues and satisfy all stakeholders.

Comprehensive solutions to realize DMG MORI's missions



 $\mbox{-}Saving$ resources and reducing CO2 emissions by process integration

Digital Twin Test Cuts

•Factory digitization to enhance productivity •Efficient maintenance with centralized machine data management •Efficient process simulation with digital test cuts



productivity

DMG MORI's 5-axis machines, mill-turn centers, automation / full turn-key systems, and digitization, as well as our comprehensive proposals, help customers to enhance their entire factory's productivity.

Our 5-axis machines and mill-turn centers complete machining in single-chucking and

integrate several production processes. This facilitates the automation of transfer and measurement operations. The vast amount of data from automated processes will then be collected with our digital technology and sensing devices, and accumulated and analyzed by AI.

The analysis results help us improve quality of our machine tools, peripheral equipment, and all machining processes, creating a continuous growth cycle.



DMG MORI's value creation story

DMG MORI's development amidst transforming demands

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.



Service & others

5%

Machine tools

85%



Digitization & environmental initiatives

my DMG MORI, TULIP, CO₂-neutral products, Digital Twin Showroom, Digital Twin Test Cuts, etc.

Further market expansion 150,000 existing customers 2030s...

2020s

Expansion of global production Operator shortage

Declining birthrate and aging population, Operator shortage, Increasing demand for high-mix low-volume production, factory automation & digitization, sustainability

Automation, Digitization, AI & Decarbonization

Progression of connectivity

Process integration & streamlining



150,000 potential customers

+

customers worldwide

Supporting

the value

creation of

DMG MORI's value creation story

Why customers choose DMG MORI

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 precision & high rigidity



The foundation of DMG MORI's services

Diversity

Number of employees (consolidated):

approx. 12,000 / 44 countries

- Integration of European and Japanese advantages-



Extensive product lineup, supply system, and software

Juick response and

support system

Products with a small environmental footprin



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

spare parts.

Customer-oriented sales & service 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.



Our manufacturing process is fully carbon-neutral from the parts procurement to shipment.

OMG MORI Co. restruction



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



DMU 50 3rd Generation

DMU 65 monoBLOCK + PH Cell

Provided by DMG MORI digital technologies

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

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.



Operator training

We provide hands-on training and e-learning lessons to help our customers develop skilled operators of 5-axis machines and other machine models.

Energy saving functions for green machine operation



Contributing to the development & production of green technologies



Quality that fulfills all demands

Quality

Impeccable pricing

throughout product lifecycle

Delivery

Quick response and extensive support

Spare parts shipment within 24 hours

Environment

Reducing customers' carbon footprint

Integrated Report 2021 | 14

DMG MORI's value creation story

DMG MORI's value creation process

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





DMG MORI's value creation story

DMG MORI continues to evolve together with growing industries

We have seen surging demand for renewable energy power plants, EVs, and medical equipment, in line with growing concerns for climate changes and aging population. DMG MORI is committed to meeting those needs, which all require diverse and sophisticated machining methods.



Machining process revolution

Ultra precision = dimensional accuracy, geometric accuracy, surface accuracy

High-mix production

CO₂ footprint reduction

Aircraft

Cutting-edge & emerging industries

Process integration, automation, digitization

Electric & Home appliance

Commodity-based industries

Construction

Agricultural machinery

Basic industries



Energy



DMG MORI's headcount in marketing, sales, engineering and services

Sales	Approx. 1,100	Service	Approx. 1,900	
R&D	Approx. 1,300	Parts	Approx. 300	▶ Approx. 7.20
Engineering	Approx. 1,000	Administration (EG)	Approx. 1,600	

Technological innovation of machine tools precisely capturing societal needs

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

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

Purchasing

Quality Control

Production Approx.

4,800

Administration

(Production)

Production	Approx. 2	2,800		Totat
Quality Control	Approx.	400	4 800	12 000
Purchasing	Approx.	800		Approx.
Administration (Production)	Approx.	800 _		employees

Total

Diversity in DMG MORI



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.



DMG MORI's automation solutions

As a response to the rising demand for flexible automation of factories, we are offering a total of 57 automation solutions to our customers.



DIVERSITY by region

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.



DIVERSITY in business size

Customers in all sizes

Approx. 60% of our 150,000 customers are relatively small companies with 100 or less employees. By covering customers of all sizes and addressing their diverse needs, DMG MORI is stabilizing the long-term sales revenue.

- Accumulated machining know-how gained from various customers helps us become an even better solution provider.
 - Order composition by customer size



DIVERSITY in human resources

Multinational workforce

DMG MORI's workforce consists of approx. 12,000 employees in 44 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: 60 countries

DIGITIZATION

Optimized factory operation with digital innovation

We provide various platforms and software solutions that digitally connect entire 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.

ISTOS

🕨 TULIP

MESSENGER WERKBLIQ



DMG MORI in 2021

(January-December 2021)

• Started shipping products with a

• Formulated "DMG MORI Health

Management Declaration"

"GREENMACHINE" mark as a proof of its carbon-neutral production

DMG MORI

January

processes

2021



• The 73rd Annual General Meeting of Shareholders

April

- Introduced CO₂-free electricity at Iga and Nagoya
- Launched "Service Request" on *my* DMG MORI
- Participated in CIMT2021 (Beijing, China)





DMG MORI digital open house

- Mr. Kojiro Shiraishi (DMG MORI SAILING TEAM) became the first Asian skipper to finish the Vendée Globe
- Hosted a fully-digital open house (Pfronten, Germany)
- Launched "Digital Twin Test Cuts"





DMG MORI

Digital Twin Test Cuts



May

• The 119th Annual General Meeting of DMG MORI AKTIENGESELLSCHAFT (virtual meeting)

June

 Released "Tool Visualizer," a noncontact on-machine measurement system that allows high-level integration of machines with measuring technology



July

- Announced support for recommendations of Task Force on Climate-related Financial Disclosures (TCFD)
- Raised JPY 40 bn. through convertible bonds
- Developed large-capacity tool magazine "CTS" (Central Tool Storage) for up to 4,000 tools
- Developed built-in mist collector "*zero*FOG"



August

 Released flexible robot system "MATRIS Light"



September

- Developed new laser additive manufacturing machine "LASERTEC 3000 *DED hybrid*"
- Developed "NZ platform" a new turning center concept for up to 4 turrets with B-axis (swiveling axis)

October

- Released "WH-AGV 5"
- Participated in EMO Milano 2021 and hosted an exclusive customer tour at our Milan Showroom





November

• Obtained approval from SBTi (Science Based Targets initiatives)



LASERTEC 3000 DED hybrid



Highlights PROCESS INNOVATION

Integrating the advantages of digital and real world for better customer experience

In 2021, DMG MORI enriched the digital content throughout the value chain - from marketing, sales, after-sales service to operator training - to improve customer experience.

At the same time, we also value face-to-face meetings with customers. By arranging consultation meetings and operator training at our factories and solution centers, we help them understand our solutions and values better.



Digital Twin Showroom

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

The Digital Twin Showroom was first launched in 2020 in Japanese and English. Later in 2021, we upgraded the usability by adding a list of available machines and releasing a German and Chinese version, too.

Enriched digital content

Process Planning Advisor (100 instructional movies for 5-axis machining process design) and other digital content available for better customer support

For those customers who are interested in 5-axis machines, we created 100 instructional movies of 5-axis machining processes in CG animation. Among the other available content are the Digital Twin Showroom and over 600 videoclips about our products, technologies, services, and trainings on *my* DMG MORI.



Process Planning Advisor: 100 selections of indexing 5-axis machining examples

Sales Manual 2.0

Sales Manual 2.0 for approx. 600 Area Sales Managers worldwide

On this digital platform, we always share the newest information with sales managers worldwide. This benefits our customers with optimal proposals and better communication, as well as ourselves with enhanced productivity.



Weekly in-house small-scale events

Open house for small-scale business meeting with customers - from Japan to the world

We host Technology Fridays every week in Japan, where we invite customers to showroom tours and various seminars. The event originally started in Japan and is now rolled-out to other parts of the world, so we can propose better-fit solutions face-to-face with customers.



Digital Twin Test Cuts

Digital Twin Test Cuts powered by the supercomputer Fugaku of RIKEN

"Digital Twin Test Cuts" reproduce dynamic machining conditions in a digital realm and calculate the machining results in a significantly shorter time than conventional test cuts. This also saves the cost for materials, tools, coolant, and others, while reducing the environmental impact. Thanks to the RIKEN's supercomputer "Fugaku," the processing time can be shortened considerably even for molds with complex curved surfaces.





Conventional on-machine test cut



Digital Twin Test Cuts with Fugaku

Automation

Total of 57 automation solutions now available

In order to fulfill our customers' needs even further, we added a few new automation solutions to our lineup in 2021. Among them is the large-capacity magazine "CTS (Central Tool Storage)" for up to 4,000 tools; and the robot system "MATRIS Light" for optimal and quick setup to support high-mix low-volume production.







MATRIS Light

7

Solutions to the 3 troublemakers of machining



Solve the 3 troublemakers of machining (chips, coolant, mist) to maximize automation efficiency

We have released 3 units of in-house peripheral equipment: "AI Chip Removal", "Zero Sludge Coolant Tank", and "*zero*FOG". They are our solutions to the 3 biggest troublemakers of machining. In addition to preventing unexpected machine stops and improving efficiency of automation systems, they also help enhance factory conditions and reduce carbon emissions.



AI Chip Removal

Zero Sludge Coolant Tank

*zero*F0G



my DMG MORI

"Service Request" released on *my* DMG MORI

The "Service Request" function is now available for ordering on-site repairs and spare parts on *my* DMG MORI, our customer portal launched in 2019.

DMG MORI Academy

"Service Skill Training Center" launched in Iga Campus

The new training facility provides curricula covering all machine models of DMG MORI, automation, and digitization to approx. 2,000 service engineers worldwide, and develops skilled engineers with extensive skillset to further enhance customer satisfaction.

DMG MORI

#理律用法能研修センタ

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-scale group of customers.

Promoting global marketing making full use of digital and real-world measures



Q. What are the main features of marketing at DMG MORI?

First of all, we have a direct sales and service network. Being able to directly catch up with issues in the field and respond to them quickly is very significant in terms of marketing. In addition, because we have facilities around the world, we are able to communicate in the same language as our customers, with an understanding of the cultural background specific to each region. This is important for us to be able to provide the customers with the exact solution they need. In addition, our diverse product portfolio enables us to meet any challenge our customers face. Our strength lies in our ability to work directly with our customers to understand their needs and find a solution together.

Q. What were your key milestones in 2021?

We believe that the effective combination of digital and face-toface events in our communications has paid off. Because we had already been developing our digital infrastructure for some time, we were able to respond quickly to changes in the global pandemic. In the Digital Twin Showroom, we have expanded its functionality in 2021 to promote its use. Face-to-face events have gradually resumed, and in Japan, direct dialogue is now possible at Technology Fridays, to which a small-scale group of customers are invited to our showrooms every Friday. In Europe, we respond online to customers who cannot attend due to travel restrictions. In such a way, while we are promoting a face-to-face approach especially in our factories, we are adopting a hybrid of face-toface and digital approaches around the world. Although the COVID-19 pandemic has made things more complicated, I think we have been able to respond flexibly to customers' needs and build good relationships.

Q. What do you think about digitization in marketing?

Marketing is not just advertising, but it is rather "communication with customers" about products and solutions. I feel that the digitization of marketing is accelerating the essential aspects of marketing. For example, our Digital Twin Showroom, which I mentioned earlier, is accessible to customers around the world 24 hours a day, 7 days a week, without being bound to time zones. The Showroom accumulates rich contents, including a huge variety of related videos, and customer case studies. As a result, customers can obtain much more information than they can by experiencing the actual machines at exhibitions. In addition, digitization in marketing allows us to communicate with customers through various communication channels, like social media as well.

Q. Please tell us about your future plan.

In terms of the relationship between marketing and sales, I believe that they will become increasingly integrated. In the past, the marketing department would create brochures and exhibition booths, and the sales staff would contact customers and sell products, but now communication through digital channels has been established. As a result, the marketing side also needs to constantly provide what is needed to support sales activities. With this background in mind, I think it is important that marketing in the future uses a variety of means, channels, and languages to provide in a way that suits various cultures.



Irene Bader Executive Officer Director, Global Marketing

Digital Twin Showroom



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.

Exclusive open house events at Milan Showroom and around the world



In addition to our presence at EMO 2021, we had active discussions with selected customers at our Milan Technical Center, conveniently located only 15 min. away from the main venue. With our global network of 16 production bases and Technical Centers, we will continue to host private shows and events to offer customers a first-hand experience of our machine tools.

Technology Fridays: Open house events for a small-scale group of customers



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 largescaled events at our factories.

Under the strict disease prevention measures, we invite a smallscale group of customers to our facilities and offer technical seminars on requested subjects and cutting demonstrations with the newest products in our showroom.

Being an established service provider that is close to customers worldwide

DMG MORI takes both the digital and physical approach towards customers. Our digital measures include the Digital Twin Showroom (a digital replica of Iga Global Solution Center, now available in Japanese, English, German and Chinese) and a series of full CG product introduction movies. We also value face-to-face meetings, such as our small-scale open house "Technology Fridays" with technical seminars, showroom tours and cutting demonstrations, as well as weekly consultation meetings between skilled engineers and customers.

We have started open house events in the USA (2020), as well as in Europe and Asia (2021), to become a close and established service provider to customers around the world.



Masami Hatano Operating Officer Corporate Communication Fixed Asset

R&D

DMG MORI has been committed to developing cutting-ege and efficient products that meet needs of customers around the world, taking advantage of features of both Japan and Germany.

Total support for solving problems relating to manufacturing

Q. What are the strengths and guidelines for development at DMG MORI?

The strengths of DMG MORI is not only to develop machine tools but also to provide comprehensive solutions, and being capable of delivering entire manufacturing processes for customers. While promoting multi-axis machines and mill-turn centers, we deliver automation systems accompanied by sensing, through which big data is analyzed, leading to improved and developed machines. In addition, we can provide tools and peripheral equipment that used to be procured separately by customers, and offer services such as human resource education and consultancy for customers. As a result, we contribute to an improvement of customers' entire manufacturing process as well as developing our technology, which enables DMG MORI to provide even higher quality solution to customers.

Q. What is your review of newly developed products in 2021?

DMG MORI launched the Tool Visualizer, which uses high performance sensing technology to automatically measure tools, in June 2021. It automatically generates 3D models for collision prevention, eliminating a need of registration of tools which used to be a time consuming process, thereby saving a substantial time. It also can detect abnormalities such as tool breakages and chip wrapping, and automate tool correction. Furthermore, by quantifying the amount of wear, tool life can be predicted, leading to cost saving by miximizing the use of tools. Another product on the market in July 2021, *zero*FOG, the built-in mist collector, efficiently and reliably collects the mist generated during metal processing and achieves a clean factory environment. It is very popular with customers because it can be built-in to the machine tool body in a compact housing.

Q. How are you involved in the SDGs?

DMG MORI proposes solution technology to integrate machining process and improve production efficiency, which contributes to a reduction of manufacturing floor space, shorter operating time, and a decrease in electric consumption as well as CO₂ emissions. We can expect a great effect in CO₂ emission reduction, considering the amount of energy consumption in the factory. In addition our proposal to improve working environment helps to protect human resources and greater job satisfaction, leading to a sustainalbe economic growth.



Q. What are main factors to support future developments and technological capabilities?

DMG MORI employs the largest number of people in the machine tool industry for development in Germany, Italy and Japan, and has established a collaborative system amongst them. The company holds a Product Development Conference every quarter and a Global Development Summit once a year, which ebables people to share cutting-edge technologies as early as possible, collaborate with each other and leverage every person's strengths. It is an attractive environment for technicians and researchers, and a source of developing high-preformance products. Our customers highly appreicate our advanced technologies, and we continue to make best efforts to respond to their expectations.



Tatsuhiko Kuriya Dr. Eng. Operating Officer Mechanical Design



VALUE CHAIN

Marketing



Make cutting-edge machining technology more relevant and available

Q. What is the position of Additive Manufacturing at DMG MORI?

DMG MORI positions Additive Manufacturing (hereinafter referred to as AM) among the integrated machines like 5-axis machines and mill-turn centers. Although AM is expected to be used to manufacture complicated workpieces, the applications are currently diversifying, and it is focused on repairing damaged metal components by adding functions with different materials other than the main materials. We have been developing machines to meet the increasing variety of customers' needs by making full use of the advantages of AM.

Q. What is the business outlook and the future potential of AM?

In 2020, the AM market was assumed to be around 260 billion yen. Although AM initially used to be applied to high value added industries such as aircraft and medical, its application is now expanding to the general industry, and, for example, inquiries are increasing from small and medium-sized enterprises at Higashi Osaka region in Osaka prefecture, which is known as a town of manufacturing. DMG MORI has two product lineups, a powder nozzle method (DED) that is suitable for relatively large workpieces and a powder bed method (SLM) for precision workpieces. We launched a newly developed AM "LASERTEC 3000 *DED hybrid*" in 2021. The SLM market is expected to increase by 2.3 times in 2025 from 2020, while the DED equipped with a laser or electron beam devices is predicted to jump up 5.3 times. We will surpass Death Valley by introducing new models with the DED method, of which demand is growing.

Q. What are the features of the "LASERTEC 3000 DED hybrid"?

The LASERTEC 3000 *DED hybrid* is a standard machine tool with integrated DED method AM, based on the cutting technology cultivated in NTX series and the AM technology. It has a function of mixing a variety of metal powders and switching to other metals, which enables the layered fabrication with different materials on top of an original material. For example, the screw part of the shaft in an injection molding machine requires use of the abrasion-resistant material. While the entire screw used to be made of abraision-resistant materials before introducing the AM technology, the new machine makes it possible to use the abraision-resistant material only for a relevant part of the screw. There is a growing need of process integration in the automotive industry because of shifting to electric vehicles and high-mix small-volume production. The AM will deliver the opportunity to replace more than ten machines with one in the manufacturing process, which can be regarded as the ultimate process integration.

Q. What are your future prospects?

DMG MORI will celebrate its 10th year anniversary of developing DED technology in 2022. We will focus on the market development, and expect the AM business will account for around 10% of the company's total sales by 2030. Our target is to achieve at least annual sales of 10 units for the time being, and expand sales of the DED-based AM to 10 billion yen by 2030.





Yoko Hirono P. E. Jp Operating Officer for R&D In charge of AM Development General Manager AM Development Department

Development of next-generation transfer system realizing entire factory automation

Q. Why have you developed the AGV in combination with robots?

DMG MORI has developd the AGV (Automated Guided Vehicle) with robots to promote automated manufacturing systems in the entire factory to respond to a variety of customers' needs. Unlike the conventional robot systems, one of the great advantages of AGVs with robots is to be able to flexibly adapt to changes of layout in the manufacturing process and the factory. In particular, we promote installation of AGVs to small and medium-sized customers who produce high-mix products and aim to automate loading and unloading tools out of machine tools, and logistics as well as to digitize the entire factory.

Q. What are the advantages of DMG MORI's AGVs?

Application of AGVs has been expanding throughout the factory by replacing hand-filters and forklilfts. However, it has been a general opinion that the introduction of AGVs in the machining process of the factory is difficult because it requires more precise positioning technology to load workpieces into machine tools and needs to drive on uneven floors and at sites where cable ducts are laid. We have been working on resolving such issues and developing AGVs very suitable for machine tools as well as added-value by equipping them with robots. We launched a automation system of the WH-AGV 5 combining the AGV and the human corporative robot in October 2021, which is able to automate logistics and loading and unloading workpieces into and out of machine tools. The WH-AGV 5 is equipped with an internally developed vision system and realizes positioning accuracy of less than ± 1 mm, which enables it to directly load workpieces into machine tools. As for driving performance, it can not only drive on cable ducts of up to 35 mm in height, but still achives ground contact stability when stopped. There is no need of magic tapes and markers for travel routes. It can avoid obstacles by using the radar scanner, which can eliminate safety fences. In addition, the laser range finder enables guideless travel, leading to flexibly respoinding to layout changes.

Q. What are the benefits for customers?

When introducing the conventional AGVs, construction work was required for each automation option for machine tools, However, the WH-AGV 5 enables automation with its standardized specification, and can be connected to each production equipment in the entire factory. It responds flexibly to layout changes, lowering installation risks of automation for customers. In addition, customers can reduce working hours and costs for the installation due to elimination of magnetic tapes and safety fences, and help improve the factory environment.

Q. What is the outlook and prospects of new models?

DMG MORI is the first company in the machine tool industry that introduced the autonomous driving robot system suitable for machine tools, and it has attracted the customers' attention. Our responsibility is increasing in terms of consulting on customers' entier factory and promoting automation. In addition, with its high flexible feature, the WH-AGV 5 can be installed in factories outside of the machine tool industry, leading to new business opportunities.



Hideki Nagasue AGV Development Office General Manager



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.

Expansion of production capacity

DMG MORI is actively expanding its production capacity in response to the increasing demand for process integration and emerging markets, aiming for sustainable growth.

Pfronten (Germany) The biggest production plant in the world for simultaneous 5-axis machine



Bielefeld (Germany)



Seebach (Germany)



Bergamo (Italy)



New production plant in Egypt (Cairo) (Planned operation start in 2023)

FAMOT (Poland)



Iga Campus

The biggest production plant in the world for turning / machining center & 5-axis machine / mill-turn center

Production capacity expansion with the opening of a 2nd assembly plant (Operation start in Sep. 2021)

Nara Campus

The biggest system solution plant in the world

Renovated to System Solution Plant (Planned operation start in 2023)



Davis CA (USA)

Tianjin (China) Developing factory



Second production site to be built in China (Pinghu) (Planned operation start in 2023)





Global Production Sites:
 16 fully owned +
 1 partner production

1 Pfronten (Germany) [DECKEL MAH0] 2 Seebach (Germany) [DECKEL MAH0] 3 Bielefeld (Germany) [Gildemeister] 4 Stipshausen (Germany) [Ultrasonic Lasertec] 5 Bergamo (Italy) [Gital] 6 Tortona (Italy) [Graziano] 🕖 Ulyanovsk [Russia] 8 Pleszew (Poland) [FAMOT] 🤊 Tianjin (China) 🕕 Nara Campus (Japan) 1 Iga Campus (Japan) 🕐 Taiyo Koki (Japan) 🖪 Magnescale (Japan) 🚺 Saki Corporation (Japan) (15) Watanabe Steel Works (Japan) 10 Davis CA (USA) • Lakshmi (India) [Partner]

Marketing

Geographically diversified production facilities

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 diversifying our global production reach, we secure short delivery time and reduce transportation costs. Also, considering geopolitical risks, DMG MORI's diversified production network offers sustainable and safe operation, enabling continuous support for our customers.



Digitization of the shopfloor Introducing TULIP to global production sites

TULIP, a manufacturing support application creation platform, has been introduced at DMG MORI's main production sites. TULIP enables on-site personnel to easily create applications with various functions such as work procedures, quality control, equipment monitoring, and data linkage with other systems such as MES. The system also makes it possible to digitize paper work procedures, quality check sheets, and various daily inspections, visualize and link production data, and quickly improve processes through efficient data collection and analysis.



Process integration at our own machining factory

Replaced 50 units of column type 5-side processing machines with 10 units of 5-axis DMC 340, which resulted in 42% less power consumption

Example of process integration initiatives at DMG MORI's machining factory

Comparison of machining of bed casting process for NLX 2500Y

	Installed floor space (㎡)	machining time (min)	Cutting removal amount (mL / min)	Power consumption (kWh)
Column type 5-side processing machine	316 per unit 15,800 for 50 units	512	585	136
DMC 340 FD	229 per unit 2,290 for 10 units	259	1,575	79
	86% reduction	49% reduction	169% up	42% reduction



In-house production of key components





At DMG MORI, quality improvement and shorter lead time 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.





As part of in-house production of key components, DMG MORI has released a new model in its high-speed spindle series speedMASTER in November 2021. The new 'speed MASTER 30k' is capable of a max. rotation speed of 30,000 min⁻¹. (existing models have the available max. rotation speeds of 15,000 min⁻¹ or 20,000 min⁻¹.)

'speedMASTER 30k' with its high speed & high output features contributes to shorten process time, improve customer productivity and reduce power consumption as well as CO₂ emissions.

Engineering

DMG MORI contributes to solving problems at customers' sites by providing engineering solutions that combine high-precision and high-rigidity machine tools with machining methods, tools, jigs, automation, software products, and sensors and AI technology. The Engineering Department aims to be an organization that provides the maximized production efficiency for customers by specifying workpieces with information on materials and product outputs.

Our knowledge cultivated in diverse industries helps solving the customers' problems

Q. What is the busines environment and market background surrounding automation?

One of reasons to promote the automation lies on a shorter product life-cycle and high-mix, small-lot products. Demand for multi-purpose machine tools is increasing under those changed circumstances, compared to mass production systems with specialized machines. In addition, shortage of operators and labor in general requires automation.

Q. What is the strength of DMG MORI's engineering?

DMG MORI has been working on the development of automation solutions for more than 10 years before it became noticed in the market. We had already built up necessary machine models for automation such as multi-axis machines, mill-turn centers and additive manufacturing. The design team of 36 engineers specialized in automation has the capability to meet customers' demand for customized automation systems with short turnaround time, and supports customers' manufacturing process from ramp-up to maintenance, all with their advanced engineering abilities. In addition, with a wide network around the world, DMG MORI has accumulated experience and knowledge while solving customers' problems. We can make full use of such know-how.

Q. What is your view on the product development inclduing MATRIS Light in 2021?

DMG MORI launched the MATRIS Light in August 2021, which enables customers to install automation systems for high-mix small-lot product in a short time. The features of the MATRIS Light are 1) it is easy for operators to use because it is equipped with a human-colaborative robot, and 2) a single operator can freely arrange the hand cart in front of the machine tools in use, and it automatically carries workpieces in and out of the machine tools. Demand for the system is expected to increase for smallsized manufactures engaged in high-mix, small-lot production as the first step. Some systems have already been introduced at small-sized customers and highly appreciated. We believe the advanced and easy-to-use automated robot system would be the driving force to help change the environment of production sites where young people tend to avoid working, and solve a shortage of operators and labors.





Satoru Kashiwagi Engineering Control Department Technical Sales Department General Manager



Q. What are benefit of digital technology?

In our digital twin initiatives, we have revamped and standardized our software products so that we can utilize 3D models from the very beginning of our customers' procurement journey. We can identify the main points of our customers' challenges in the virtual space at the quotation stage of proposal more smoothly than in 2D. In addition, we can pass the original information to the designers without creating data in CAD after the proposal is approved. This enables us to substantialy shorten the lead time from the proposal to design output, leading to solving customers' issues much earlier than before.

57 standardized automation portfolio SPECIFIC TO THE MACHINE UNIVERSAL SCALABLE (> 1 MACHINE) CHANGEOVER TIME GX / GX T TURNING **WORKPIECE HANDLING** SR (WASINO) Robo2Go MAX Robo2Go MATRIS IMTR (NTX 1000) MILLING Robo2Go Milling WH-AGV WH Cell PALLET HANDLING PH Wheel LPF PH Cell PH-AGV AWC (NMV / CMX V) TH-AGV H 150 CPP **TOOL HANDLING** CTS > COMPLEXITY

[*1] DMP, CMX V, CMX U, DMU, DMU monoBLOCK, DMU eVo, LASERTEC
 [*2] NHX, DMC H linear, monoBLOCK, duoBLOCK, Portal
 [*3] DMC 65 monoBLOCK, DMU 65 H monoBLOCK





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.

Participation of female engineers



At DMG MORI, female engineers play an active role at our offices in Japan and overseas. Although the machine tool industry used to be a male-dominated industry, the number of female engineers is steadly increasing in our company, which we believe contributes to an increase of female operators at our customers' sites.

Customer-oriented Sales & Service 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. We will continue to be a valuable partner to our customers.

Building a unique platform to connect with factories



Q. What is the background of development of my DMG MORI?

DMG MORI started to develop the system in 2017, which provides information and proactive services by using a digital technology, aiming to improve the quality of our communication with customers. In 2018, we set up Technium CO., LTD. in collaboration with Nomura Research Institute, Ltd., which boasts with IT technology, and launched *my* DMG MORI, an exclusive portal site for our customers. It was a pioneering initiative for the B-to-B business and a challenge for us. We currently have approximately 50,000 customers registered for the service around the world.

Q. What can users do with my DMG MORI?

I would like to focus on two functions out of six features in my DMG MORI: Manual Browsing, and Repair and Restoration Service. The former function is a first service from the beginning, and it allows users to view manuals, drawings and specifications of installed machines through PCs and smartphones. According to our customer satisfaction survey, users highly appreicate an easy way to find necessary information with high searchability, and the convenience to print out and use it in front of the machine tool, compared to the conventional paper manuals. We started the Repair and Restoration Service in 2021, which allows our Repair and Recovery Center to receive inquiries from customers through the web, and respond promptly. The advantage of this system is that customers can use text and images to describe the situation as they are, and the center can provide more precise information to solve the problems. In addition, users can confirm the correspondent status including the shipment of repair parts, and view thier historical repair report.

Q. What are benefits for customers?

Our customers can reduce their work time because of high searchability of manuals and accumulated historical repair report. In addition, customers can reduce their burden, while we can improve the quality of services, by reducing waste time on inquiries. We believe this contributes to an improvement of productivity at our customers. Since 2019, we have been working on paperless intiatives, and have actually reduced the amount of paper used, leading to a contribution to society.

Q. What is your outlook for my DMG MORI?

Since DMG MORI has been promoting automation and robot systems, the number of inquiries about them is increasing. We plan to provide information and services about our machines as well as robots and other systems. Furthermore, the entire DMG MORI organization as well as Technium is working on a quick response to customers' requests and is promoting the use of *my* DMG MORI. *my* DMG MORI will continue to evolve, and we believe customers will enjoy more benefits from access to it.



Kentaro Blumenstengel Technium CO., LTD. COO

my DMG MORI

In September 2019, we launched a new exclusive customer portal "*my* DMG MORI" that brings additional value to customers through digitization.

The portal allows customers a quick overview of installed machines' information in each factory, including the serial number, delivery date, and warranty expiry date. Manuals and service, repair, and spare parts history are also easily accessible. We also have added functions for placing service and spare parts orders online.

Number of world registrations to my DMG MORI



New orders PR of unique technology POC Flexible Lean machining production process Tips for machining Operator training C of peripherals Investment Non-stop Realistic factories planning Service request Process planning EC of spare parts and management No production delay Operation / quality monitoring

e-Learning Service: Digital Academy

We established "Digital Academy", which realizes more effective and efficient educational services combined with e-learning and process training in 2020. We have been expanding these services to school cooperations such as colleges of technology and universities since 2021. With e-learning, students can watch content repeatedly and ask questions during the course, thereby achieving a high learning effect. By adding e-learning lecutures, the practical training at our factory is shortened to two days, and students can concentrate on leaning the processing technology. In addition, customers considering an introduction of 5-axis machines, can learn various contents including "Process Design Advisor (*1)", supervised by our customer Iriso Precision Co., Ltd., which reproduces with CG the machining process of 100 workpieces manufactured by 5-axis machines.

(*1) to be released in the spring of 2022.

TULIP: Supporting improvements on the shopfloor by digitization

TULIP, which was developed by Tulip interfaces, Inc., origin of MIT Media Lab in the U.S., is a cloud-based manufacturing support application creation platform, and this supports solving on-site issues through digital technology. There is no programming expertise required, and on-site personnel can create applications with various functions such as work procedure manuals, quality control and equipment monitoring, contributing to operational efficiency and quality improvement.



100 selections of indexing 5-axis machining examples



Leveraging individual diversity for organizational growth

Based on the philosophy, "people are the asset", DMG MORI has introduce a personnel system that enables employees to maximize their abilities. As employees with different backgrounds work together for the same goal while respecting their respective strengths, innovations that are essential to the sustainable growth of the company are born.

Promoting the motto "Play hard, study continuously, work together"

Q. What is DMG MORI's human resource strategy?

In the personnel department, we formulate and execute personnel strategies to achieve our business strategies with each business manager, and play the role of a so-called HRBP (Human Resources Business Partner). Especially for technicians and engineers, we manage employees in line with their role with the aim of avoiding long working hours, and improve efficiency of business and systemize training of engineers to increase organizational capability in the development department.

Q. What are the initiatives for diversity you have been focusing on?

At DMG MORI, we believe that it is our responsibility to create and offer opportunities for all employees to play an active role, and we have been working to promote diversity. In particular, we place an emphasis on providing a workplace where women can develop and demonstrate their abilities. Due to the characteristics of the machine tool industry, the number of female applicants is smaller than that of male applicants, leading to the lower hiring rate of women. However, the working fields for women are fairly open. For example, both women and men have already been given equal opportunities, and many female engineers are demonstrating their professional abilities as well as gaining experience. We think that the issues lie on business guidance and growth opportunities for women employees in the engineering department, and, therefore, we have integrated the office secretarial work in the manufacturing and development departments into one, and assigned a manager in charge from 2021. We will continue to focus on training female managers.

Q. What are your actions to implement Health and Productivity Management?

We formulated the "DMG MORI Health Management Declaration" in January 2021 and established the Health Management Promotion Committee consisting of dedicated industrial physisians, health insurance associations, and personnel at general affairs in order to study and promote measures. One of our goals is to be certified as an excellent health management corporation, and we have been steadily surveying necessary measures. In addition, we have introduced an employee commendation system to award employees who are recommended every month. The commendation is divided into three catergoris, "Play hard, study continuously, work together" in line with the DMG MORI's management philosophy.

Q. What is your human resource development policy in the future?

More than half of our customers are SMEs (Small and Mediumsized Enterprises) with 100 or less employees. Our basic idea is "we want to be a group of friendly people", who will support each and every one of our customers sites. To be more specific, we aim to develop people with such a mindset and the skills to support the entire production systems by promoting automation and digitization in accordance with customers' requests. The organization has been growing year on year, and, in particular, the business environment has been changing significantly since the merger with DMG MORI AG. Given such circumanstances, DMG MORI creates a working environment where employees personally can make a leap forward as the company grows, while actively promoting young people.



Yosuke Nakatsukasa Operating Officer R&D Management / Accounting / Human Resources Production Human Resources

Women's empowerment

DMG MORI's initiatives to promote female participation

In line with the "Act on the Promotion of Female Participation and Career Advancement in the Workplace", DMG MORI established an action plan to support female employees in various professional fields. In 2021, 22.0% of the new hires at DMG MORI were women. We have also encouraged full usage of the allocated paid holidays, and achieved an average usage rate in 2021 of 96% (19.2 days). Cultivating a working environment for anyone to feel comfortable in is crucial; we are committed to offering fulfilling career opportunities to professional women in both technical and administrative sectors.



Expanded childbirth and childcare support

In order to help our employees balance business and private lives, we have formulated an action plan based on the "Act on Advancement of Measures to Support Raising Next-Generation Children" for stronger childbirth and childcare support. DMG MORI Child Care Center, a company-led nursery school, has been established at Iga and Nara Campus, and is ready to accept a total of 100 pre-school children under 6 years old. The nursery school is available practically free of charge under the Japanese government's childcare subsidy system. It also operates on national holidays in accordance with the company's

work calendar. In addition, from January 2020, we have introduced a system whereby the first 20 days of childcare leave will be paid if the employee takes more than 20 consecutive days. In this way, we are encouraging male employees to take childcare leave. In 2021, 71 employees (including 16 male employees) took childcare leave. We have introduced a system that allows employees to take a paid leave on an hourly basis since the beginning of 2022, and will flexibly respond to various work styles. We will continuously listen to the voices of our employees and develop a comfortable working environment.



DMG MORI Child Care Center (Iga Campus)



Divisionalization Strengthen internal management system by divisionalization

DMG MORI has evolved from a machine tool seller to a comprehensive solution provider. In the course of this transition, we have redefined our value-providing framework by enhancing our marketing and engineering capacity and building a customer-oriented sales and service network. We have also upgraded our internal management structure, especially since 2019, when we introduced the "company system" and reinforced individual profitability management using sales ledgers by machine number.

In January 2022, we replaced the company system with a function-based organization structure. It involves the spin-off of some functions, such as the production division. In this way, we can clarify the responsibilities and roles of each division and ensure precise control over financial performance and profitability, all for better group-wide management.



Development of next-generation leaders Succession plan

DMG MORI has dynamically evolved and adapted to an ever-changing business landscape, one of the biggest changes being the integration with AG. We are now developing the next-generation of leaders to keep our dynamism and ensure sustainable and long-term growth.

Operating Officers

DMG MORI's operating officers are responsible for running PDCA cycles in each business sector to learn what it takes to become the next generation of management members. We particularly value the diversity among them, with some in their 30s and others in their 70s, to ensure strong and stable leadership over the coming years. As a global company, we pursue diversity in nationality and gender as well. While our operating officers originated from 5 different countries in 2020, they now span 7 different nationalities including 2 female members. We hope they grow to be skillful leaders and managers of the whole DMG MORI group.

Experience in managing subsidiaries and divisions

In January 2022, we spun-off a small part of DMG MORI CO., LTD. from the main corporate body, and divided the company based on functions. To each company and division, we assigned responsible persons to oversee and manage the business and financial performances (see page 45), most of them Operating Officers and General Mangers in their 40s. We hope that by experiencing the management of smaller-sized companies and divisions, they will learn what it takes to lead a global company in the future.

Vision 2030 for young talent development

In order to develop young talents and fuel their motivation, we picked some 20 promising employees in their 20s or early 30s and organized the working group "Vision 2030." The group discusses how DMG MORI should be in 2030 and lays out the path ahead. Under the guidance of external advisors, the members choose several management topics, perform investigation, implement measures, and make quarterly presentations to the Board of Directors.



Age composition of Operating Officers
* Please refer to the Annual Securities Report for the
names of Operating Officers.



Developing globally active human resources

Developing engineers and emerging technology specialists

Emerging Technologies Laboratory

DMG MORI established the Emerging Technologies Laboratory to train next-generation leaders of digital transformation in the manufacturing industry. The laboratory aims at developing super engineers capable of implementing AI, IoT, and cloud computing, while helping long-term student interns deepen their knowledge in cutting-edge technology. More than 10 members are constantly improving themselves in this

top-notch, global setting.



DMG MORI Academy

We founded DMG MORI Academy to develop international-minded business people with technical and administrative skills. We also offer various on-site trainings and e-Learning programs for customers and develop human resources worldwide.

Service Skill Training Center

The "Service Skill Training Center" was founded at Iga Campus in 2021. Our service engineers are required to develop an extensive skillset, given the rising demand for 5-axis machines, mill-turn centers, and automation. We installed over 40 advanced machines and automation systems in our new training facility for the training of quick, precise, and safe service operation.

Machining & Measuring Training Center

We offer machining and measuring training programs for both customers and employees. As for the internal training, our young engineers spend 18 full months at the training center, away from their normal job, and learn how to operate millturn centers and 5-axis machines. With our team of in-house machining experts, we will be able to meet increasingly complex machining needs in the future as well.

M&A history of DMG MORI and its contribution

DMG MORI was formed in 2015 through the integration of the former Mori Seiki and GILDEMEISTER (or DMG) of Germany. Even before the integration, DMG MORI had been actively acquiring technologies and know-how through corporate acquisitions and business takeovers, leading to its business growth.

This section looks back at the major mergers and acquisitions to date and their results.

TAIYO KOKI joined in the group

- TAIYO KOKI, which developed the industry's first vertical grinding machine, has joined the group, and DMG MORI Group has become a metalworking manufacturer with a full lineup that covers everything from cutting to grinding.
- Listed in the JASDAQ Standard in December 2007 (Listing on the Tokyo Stock Exchange Standard Market from April 2022)



1948

2001

Acquired BUG, a software development company

- Leading to the development of CELOS, an operation software for machine tools
- BUG's software technology has led to *my* DMG MORI and other IoT enabling technologies to date.

Business succession of Hitachi Seiki Co., Ltd.

- Strengthen product lineup business succession of the company in Japan, which had strengths in mill-turn centers
- Mori Seiki, which mainly originated in Kansai, Western Japan, expanded its sales presence in Eastern Japan.
- Currently, Iga Campus has taken over mill-turn technologies and their production.

2002

2007

Acquisition of DIXI machines (Switzerland)

- Acquisition of high-precision, high-rigidity technology for machine tools, including scraping technology
- Gain access to the world's well-known customers with the DIXI brand
- Accumulated overseas production know-how as the first overseas production facility of the former Mori Seiki
- The technology was inherited by the Pfronten plant in Germany, after the closure of the Swiss plant in 2016.

GILDEMEISTER (DMG)



Establishment of Magnescale Co., Ltd through business acquisition from the current Sony Group Corporation

- Acquisition of measuring equipment technology such as scales and sensors, which are important parts of semiconductor produciton equipment as well as machine tools
- Realize high precision machine tools with ultraprecision measurement technology

2008

Consolidation of Saki Corporation

- Consolidation of the company engaged in in-line automated inspection systems for mounting circuit boards and semiconductors
- Contribution to expanding the customer base in the field of next-generation communication systems and EVs
- Realization of "defect-free" smart factories

Became possible of supplying sensor components and equipment from semiconductor manufacturing equipment (front-end process) to semiconductor utilization (back-end process)

Business transfer of small-size turning center from AMADA CO.,LTD.

- Added small-size turning center into product portfolio
- Offering WASINO brand products, featured with G Series, a ultra high precision turning center

Consolidation of Watanabe Steel Works

- Stable supply and quality improvement by in-house production of castings such as machine tool beds and columns
- CO₂ emission reduction by switching to an electric furnace

2009 2010 2013 2015 2016 2020 Collaboration Company Accomplished business integration with DMG names started unified to **Consolidation of AG** DMG MORI 🗹 Global One machine tool manufacturer DMG MORI Support solving customers' problems as COMPANY LIMITED one-stop Harmonized corporate culture between Japan, Europe and the US

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/





CNC vertical grinding machine CNC vertical grinding machine CVG-9 Vertical Mate 85

Magnescale

Magnescale Co., Ltd.

45 Suzukawa, Isehara City, Kanagawa, Japan https://www.magnescale.com/en/



Saki Corporation

DMG MORI Tokyo Digital Innovation Center, 3-1-4 Edagawa Koto-ku, Tokyo, Japan https://www.sakicorp.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. TAIYO KOKI is aiming for a turnover of JPY 20.0 bn. or more by 2030. Towards the target, TAIYO KOKI is endeavoring to further expanding its market share in the world.

Magnetic and optical position detection of highest precision

Magnescale Co., Ltd. has been offering high-precision position detection systems based on magnetic and laser detection principles to the machine tool and industrial equipment fields for more than half a century. Magnescale, a measuring instrument using the magnetic detection method, is highly resistant to harsh environments such as condensation, oil, and vibration. Laserscale has realized the world's highest level of resolution, up to 2.1 picometers. It is widely used in semiconductor manufacturing and inspection equipment, where the extreme precision is required. The company is also accredited as a JCSS length and angle calibrator, providing products that are traceable to national standards.

Delivering smart manufacturing quality in the digital age with automated inspection solutions for PCBs and semiconductors

Saki Corporation designs, manufactures, and markets automated in-line inspection systems for printed circuit board and semiconductor manufacturing. Electronic printed circuit boards, which are used in next-generation communication systems and electric vehicles, are critical components of today's digital society infrastructure. Driven by miniaturization of electric components and high-density mounting processes, the demand for high-precision automated quality inspection is rapidly growing.

Saki Corporation's total solution of advanced optical and 3D X-ray imaging measurement technologies, as well as high-speed, high-precision quality inspection using AI, contributes to the realization of "defect-free" smart factories.

TECHNIUM

TECHNIUM Co., Ltd.

DMG MORI Tokyo Digital Innovation Center, 3-1-4 Edagawa Koto-ku, Tokyo, Japan https://www.technium.net/



💠 T Project

T Project Co., Ltd.

DMG MORI Tokyo Digital Innovation Center, 3-1-4 Edagawa Koto-ku, Tokyo, Japan https://tprj.co.jp/



WATANABE SEIKOSHO

Watanabe Steel Works

1378 Otsu, Izumo-City, Shimane prefecture https://w-seiko.co.jp



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. 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 *my* DMG MORI, a customer portal offered by TECHNIUM, customers can now send service requests for machine repair and recovery directly.

Launch of low-code platform 'TULIP' to enable shopfloor driven digital transformation

T Project Co., Ltd. was founded in September 2020 and became our Japanese distributor for TULIP, a manufacturing app platform developed by the 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 are 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.

Stable supply of high-quality, green casting products

Watanabe Seikosho Co., Ltd. (or Watanabe Steel Works) has its head office and factory in Izumo City, Shimane Prefecture, where it produces casting products for machine tools and industrial machinery, including beds and columns, which are key components of machine tools. In 2023, Watanabe will mark the 100th anniversary of its founding and switch the melting furnace from a cupola to an electric furnace to shift to green casting using carbonfree electricity. Watanabe will contribute to the stable supply of high-quality, green casting products with its accumulated casting know-how developed over many years.