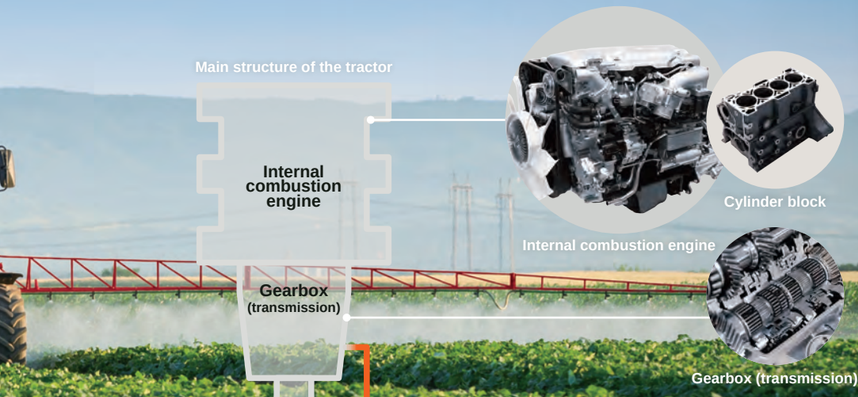
CYBER WORLD

2024 No.71

Process integration and automation supporting agricultural machinery production

E

Agriculture to feed 10 billion people in 2050



Internal combustion engine

Cylinder block

Gearbox (transmission)

PTO shaft and three-point support device

Implements

Creating power

Internal combustion engine

Agricultural machinery is mainly powered by internal combustion engines. Diesel engines are used in particular in large machinery such as riding tractors and combine harvesters. Agricultural machinery engines are also used to power work machinery, so they need to have a low rotational speed and high torque.

Machining cylinder blocks with a horizontal machining center

Transmitting

Transmission and hydraulic systems

The power generated by the internal combustion engine is transmitted to the running gear and work machinery via various transmission devices such as gearbox, differential device, and final drive. Due to the nature of agricultural machinery, ensuring the mechanism is both robust and efficiently transmits power is crucial. Hydraulic systems also play an important role in controlling work machinery.

PTO (Power Take Off) and Three-point support device

A PTO is a device that extracts part of the power from an internal combustion engine and uses it as a power source for work machines. Work machines such as rotary tillers and harvesters can be freely attached and detached to drive them. A three-point support device (hitch) is generally used to connect work machines. A three-point support device supports the work machine at three points, one upper link and two lower links, and stabilizes the tractor body by raising and lowering the work machine according to the ground conditions using a hydraulic cylinder.

Working

Implements

Tractors are the most basic and versatile agricultural machinery. They pull or transmit power to work machines (implements) to drive them. By changing the implements, they can be used for a wide range of tasks such as plowing, harrowing, harvesting, transporting, fertilizing, sowing seeds, and weeding.

Example of farm work using a tractor

Tillage and land preparation

Fertilizer and pesticide application

Transportation

The rear wheels of the tractor are larger than the front wheels

Running gear

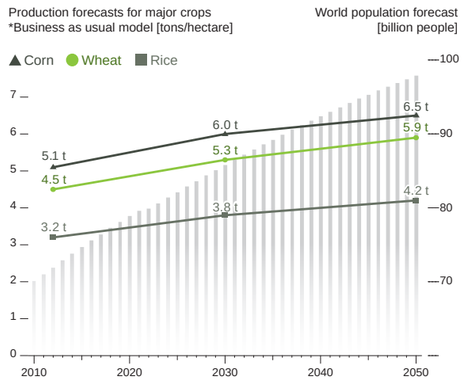
In order to deal with stationary ground, many agricultural machines are self-propelled and equipped with running gear like tractors. The rear wheels of a tractor are made larger than the front wheels to reduce the amount of penetration into the soil and increase traction. To reduce the turning radius, the brakes are independent on the left and right sides. In addition to tires, continuous tracks are also used.

Global food crisis facing agriculture

Due to the global population increase, the world's food production is under pressure. The world population, which reached 8 billion in 2022, is expected to continue to grow and reach 9.7 billion in 2050. According to the Food and Agriculture Organization of the United Nations (FAO), food production needs to increase by 70% from the current level in order to feed a population of approximately 10 billion. Meanwhile, agricultural production is expected to increase slowly but not at the same pace as population growth.

Direct consumption is not the only factor that affects food demand. In particular, in emerging countries where population growth is significant, changes in dietary habits are leading to increased consumption of livestock products, spurring demand for grains. In addition, demand for grains for alternative fuels (bioethanol) is also increasing as a measure against increased energy demand and climate change. Due to the globalization of food trade, agricultural crop prices traded on the international market are unstable because of natural disasters such as droughts and conflicts. Increasing agricultural production is an important issue, especially for food-importing countries, from the perspective of food security. However, farmland suitable for farming and water resources are limited. In order to promote sustainable agriculture, it is necessary to improve the productivity of existing farmland and intensify agriculture to increase the yield per unit area, rather than expanding the area of farmland.

Projections of trends in world population and major agricultural crop production up to 2050



Source: United Nations "World Population Prospects 2022"
FAO "The future of food and agriculture Alternative pathways to 2050"

The role of agricultural machinery

In modern agriculture, machinery such as tractors and combines play a major role in the stable production and supply of agricultural products. Agricultural machinery is a general term for machines used to replace agricultural work traditionally performed by people and livestock to make farming more efficient. Agricultural machinery not only reduces the labor intensity of agricultural workers but also shortens work hours and improves productivity per unit of time. It also eliminates efficiency differences due to the skill level of agricultural workers, improves the quality and accuracy of agricultural work, and contributes to stabilizing the yield and quality of agricultural crops.

Agricultural machinery has a wide variety of uses. Many farm tasks are performed by machinery, such as tilling the soil, making ridges and banks, spreading fertilizers and chemicals, removing weeds, planting seeds and seedlings, harvesting, etc. Machines involved in threshing, drying and storing harvested crops, managing livestock, irrigation, etc. are also included in the category of agricultural machinery.

In recent years, agricultural machinery that utilizes the latest technologies, such as IoT, has been introduced as a method of increasing productivity with limited skilled workers.

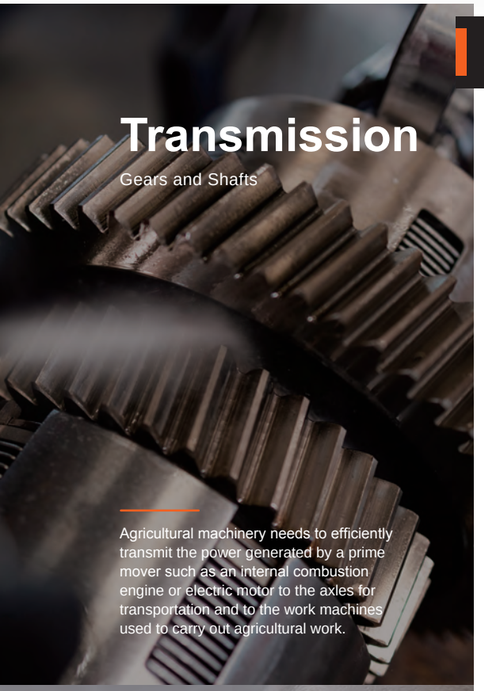
Challenges in manufacturing agricultural machinery

One characteristic of agricultural machinery parts is that they are difficult to mass-produce due to the wide variety of types. This is because the specifications required for agricultural machinery vary in detail depending on the environment in which they are used, such as the climate, the size of the cultivated land, and the cultivation conditions of the crops. In high-mix low-volume production, the more processing steps there are, the more setup time and transportation between processes increases, making it difficult to shorten the lead time. In addition, because agricultural machinery is used in harsh environments such as mud and dust, it tends to have a short service life, and there is also a high demand for aftermarket and replacement parts. In order to ensure a continuous and stable supply of parts, it is necessary to shorten production lead times.

Furthermore, like other industries, agricultural-related companies are also plagued by a shortage of skilled labor. In such an environment, it is difficult to introduce dedicated processing machines one after another, and there is a demand for one machine to be able to process many parts. Achieving a lean processing process with fewer personnel is an important issue in the manufacture of agricultural machinery.

Improving production efficiency by innovating the machining processes

For agricultural machinery, which has a short parts replacement cycle, shortening production lead time is an important issue. Reducing the number of parts by consolidating parts, streamlining processing steps using multi-tasking machines, and replacing processing methods with the latest technology can greatly contribute to shortening production lead time.



Transmission

Gears and Shafts

Agricultural machinery needs to efficiently transmit the power generated by a prime mover such as an internal combustion engine or electric motor to the axles for transportation and to the work machines used to carry out agricultural work.

Gear processing using a multi-tasking machine

Example of a hobbed wheel hub

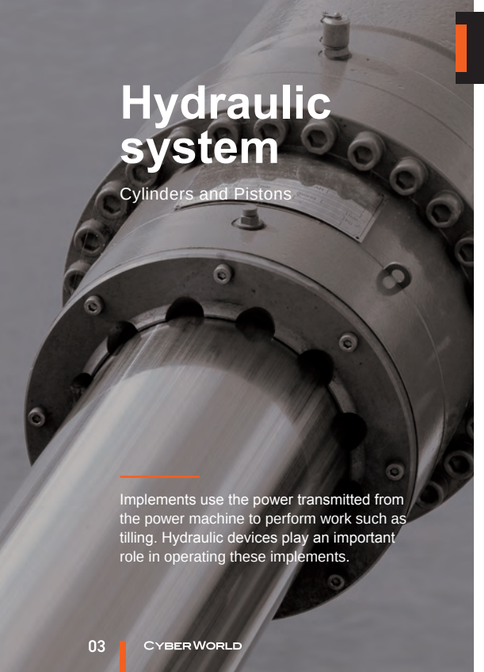
Gears are mainly used to transmit power. Gears are classified into various types, and depending on the size, shape of teeth, and combination with other gears, the direction and speed of the transmitted power, as well as the amount of power that can be handled, can be easily changed.
Gear parts used in various places on agricultural machinery require machining using specialized machines, which can be an obstacle to production and design. Mazak's hybrid multi-tasking machine INTEGREX AG series combines high-precision gear machining functions in one machine in addition to normal part machining. This makes it possible to consolidate part machining processes that previously spanned multiple machines into one machine. Not only that, but by consolidating parts that were previously made separately then combined into one part, it has become possible to make parts lighter and stronger, and to consolidate production processes.
Reducing the number of parts by consolidating multiple parts and shortening production lead times by consolidating processes onto a single machine are breakthroughs in modern parts processing.

Endmilling

Hobbing

On-machine measurement

Hybrid multi-tasking machine INTEGREX AG series



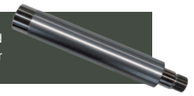
Hydraulic system

Cylinders and Pistons

Implements use the power transmitted from the power machine to perform work such as tilling. Hydraulic devices play an important role in operating these implements.

AM coating replaces plating

Example of an AM coated hydraulic cylinder



Hydraulic cylinders and piston rods efficiently convert and transmit engine power to work machines. These parts repeatedly expand and contract with metal rubbing against each other, so the surface of the material needs to be made wear-resistant and corrosion-resistant. Normally, chrome plating is used to increase wear resistance, but by replacing it with AM (additive manufacturing) coating, which is a process in which metal powder and a laser are simultaneously irradiated, melted, and layered, it is possible to achieve the same or better functionality.
Conventional plating processes consume a lot of electricity, have long lead times, and require waste liquid disposal, which places a heavy burden on the environment. Furthermore, peeling of the plating after processing and rusting of the base due to cracks can occur. AM coating can reduce CO_2 emissions by 80% and lead times by 70% compared to conventional plating processes. It also does not produce industrial waste that burdens the environment.
In addition to coating, AM technology is being applied to a wide range of parts manufacturing, including additive manufacturing of gear teeth and repair of cracks and worn parts of casting and die-casting dies. Agricultural machinery will continue to become more advanced. As we move towards fully unmanned operation through autonomous driving and remote monitoring, the demand for improved functionality and reliability of hydraulic systems is expected to increase further.

AM coating of brake disc

Enhanced value and labor reduction through automation equipment

The benefits of introducing automation systems are not limited to improving productivity and addressing labor shortages. In the agricultural machinery industry, which is expected to continue growing in the future, the biggest benefit is that workers will be able to take on tasks with higher added value.

Variable volume production with the PALLETECH mixed line

Example of a cylinder block processed on the mixing line

Automation systems contribute to labor-saving in the high-mix low-volume to medium-mix medium-volume production required for agricultural machinery part manufacturing. The introduction of such a system improves production efficiency while reducing labor by allowing machines to operate at night and on holidays.
Mazak's automation system, PALLETECH, can also be used to build a mixed system of different types of machines, incorporating horizontal machining centers, 5-axis machining centers, multi-tasking machines, and auto gear cutting machines (AG) to achieve even more advanced process integration. By performing multiple processes on the same line, waiting time between processes can be minimized. In addition, the dedicated controller PMC NEO supports scheduled operation, so setup instructions and missing tools can be confirmed in advance.
By using the Tool Transport System, a large-capacity tool stocker, tools that are missing or reaching the end of their life can be automatically supplied from the stocker. It also supports the transfer of tools between machines, preventing unexpected machine stoppages due to a lack of tools.

5-axis machining center is machining the upper and inclined surface at once

Module integration automation system PALLETECH series

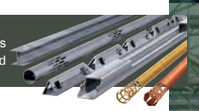
Internal combustion engine

Housings and Gear cases

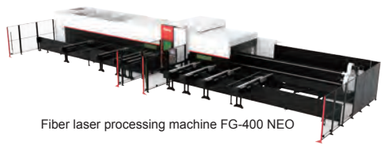
Tractor engine outputs vary widely, from around 10 kW to over 100 kW, and sometimes more than 50 different types of engine and drive system parts are processed on a single line.

Labor-saving by using laser processing machines

Highly reflective materials such as aluminum can also be processed



In agriculture, in addition to agricultural machinery such as tractors and harvesters, various parts are required, such as water pipes used for irrigating farmland and the framework of plastic greenhouses. These materials vary in shape and material, from thin and thick plates to pipes and shaped steel; laser processing machines are used to process them. For example, weather-resistant thin plates are used for grain storage, while thick plates about 12 mm (0.47 inch) to 19 mm (0.75 inch) thick are used for heavy machinery. Mazak's high-power fiber laser processing machine can cut both thicknesses with one machine by changing the laser beam diameter and shape. It can also stably cut highly reflective materials such as aluminum, copper, and brass. Additionally, technological advancements have enabled the reduction of the welding process by incorporating bending and mortise grooves on pipes and shaped steel, as well as the consolidation of drilling and tapping, which were previously done separately. In this way, laser processing machines alone can reduce labor and shorten processing time, but by combining them with an automated system that handles the loading and unloading of materials and the sorting and loading of parts, labor savings can be further achieved.



Fiber laser processing machine FG-400 NEO

Laser cutting

Tapping

Frame

Cabin frames, Water pipes and, Plastic greenhouses

In addition to agricultural machinery, other important agricultural industry products include plastic greenhouses to protect growing crops, warehouses to store harvested crops, and racks to store attached work machinery.

Customer Report 01

Kyoei Technos Co., Ltd.

Aiming for a “challenge without a goal” with Mazak machines

Kyoei Technos Co., Ltd. (Takasago City, Hyogo Prefecture), which manufactures power generation equipment parts, is a venture company established in 1998 by President Takayuki Sakai. The company has seen an increase in orders due to the evaluation of the integrated production system it established in 2016. Various Mazak machines are included in the machining department in this system.

The first factory is lined with multi-tasking INTEGREX series machines

Kyoei Technos Co., Ltd.

President & CEO	: Takayuki Sakai
Head office	: 210-1 Yoneda-cho Shioichi, Takasago-shi, Hyogo Prefecture, Japan
Number of employees	: 145

kyoei-technos.co.jp

Kyoei Technos Corporation

President Takayuki Sakai

Yuya Tanigawa, Senior Managing Director

Tatsuya Tamenori, Technical Director

The latest model INTEGREX i-350H

#Multitaskingmachine #Canmanufacturing #Machining #Inspection #Japan

President Sakai (center) and employees

Communicate with operators using MAZATROL, a “universal language”

Perform high-precision inspections with measuring instruments

Starting a business to promote the wonder of manufacturing

“Products are works of art.” President Sakai, who studied mechanical engineering at a technical college and gained experience in manufacturing, preaches this to his employees about the wonders of manufacturing. “Even before I started my own company, I always thought, ‘I want to provide products that exceed the customer’s demands.’ However, within the organization, no matter how hard I aimed for 100 points, I was told that 80 points was good enough. So, I thought the only option was to start my own company, and I did it.”

Kyoei Technos has steadily expanded its business from can manufacturing and maintenance of production equipment for major steel mills, to the manufacture of power generation equipment parts and in-house non-destructive testing. As the final step in its expansion, the company launched a machining department in 2016 and established an integrated production system.

“Even if a company excels in either sheet metal processing, machining, or inspection, it is rare for the company to fully develop all of these areas. That’s why we promoted the benefits of an integrated production system through OEM of various industrial equipment parts, which are difficult to manufacture and have high added value in the finished products. This has also helped us to increase the value of our company,” said President Sakai.

The current breakdown by division (sales basis) is 70% various power generation equipment parts, 10% marine internal combustion engine parts, and 20% other aircraft parts.

Achieved 40% cost reduction through introduction of integrated production system

To prepare the machining department, which is the key to an integrated production system, the company built a line in the first phase with CNC lathes QUICK TURN SMART 300 and QUICK TURN 200, multi-tasking machine INTEGREX i-200S, 5-axis machining center VARIAXIS i-700T, etc. The decision to introduce Mazak machines was made after comparing various companies, but in addition to the enthusiastic efforts of the sales representatives, “the decisive factors were the generous support that trained operators who had never handled a machine tool and were practically amateurs to become fully-fledged in less than a year, and the high versatility of the MAZATROL” said Tatsuya Tamenori, Technical Director.

In particular, the numerous one-of-a-kind products that utilize the unique machining technology of the INTEGREX i-200S, which stimulated Mr. Tamenori’s spirit of challenge in manufacturing, have led to a sharp increase in inquiries and contributed to an expansion of the number of clients. “Thanks to the integrated production system that we have been promoting, we have achieved a 40% cost reduction. We are most proud of the fact that we have achieved this figure with individual items, not mass-produced items,” said President Sakai.

Yuya Tanigawa, Senior Managing Director in charge of sales, also analyzed the situation, saying, “Thanks to the tenacity we built up during the run-up period from 2016, when we established our machining division, to 2018, our performance has increased at a 20% annual rate since 2019. This is largely due to the fact that our product range has expanded thanks to our integrated production system.”

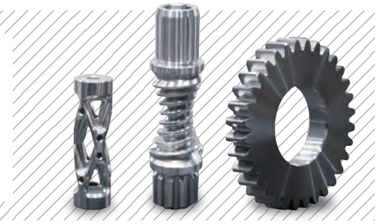
Launch of third factory for business expansion anticipated within the year

The high level of trust in Mazak machines is shown by the fact that “we’ve introduced nine INTEGREX series machines in eight years,” said Mr. Tamenori. “By unifying the awareness of all staff using the ‘unified language’ of MAZATROL, we’ve been able to guide young operators to become semi-professionals in the shortest possible time. In fact, we have new employees who have been with the company for six months cut expensive Inconel materials because we want them to use this experience to grow.”

In March 2024, the company purchased a used factory near the headquarters to become the company’s third factory. “This is to expand into new business fields, such as prototyping defense equipment, which is difficult to manufacture, and technology development work,” said President Sakai. Repair work is currently underway, and the factory is scheduled to be operational as early as this year. “It’s important to keep challenging ourselves to achieve further growth. Therefore, there is no end to our challenges. Mazak machines are our encouraging comrades,” said President Sakai.

Workpieces processed by Mazak machine

Products machined with the INTEGREX



High precision machining to meet the highest accuracy requirements

Customer Report 02

Omni Mold Ltd.

Aiming to be Number One

Singapore, a popular tourist destination and an international city, is also one of the largest industrial countries in Southeast Asia. Omni Mold is located in the western area of the country, where manufacturing industries thrive. The company is dedicated to becoming the number one by adopting the latest technologies and focusing on business improvement.

INTEGREX i-200S enhanced manufacturing capabilities and efficiency

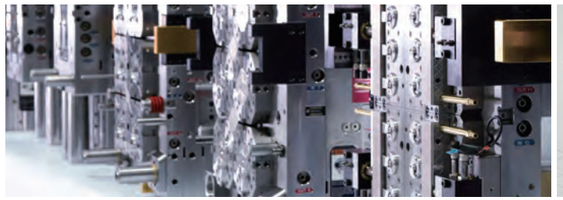
Omni Mold Ltd.

CTO & Executive Vice President	:	Simon Tan
Head Office	:	51 Joo Koon Circle, Singapore 629069
Number of employees	:	180 (Omni Mold Ltd.)

omni.com.sg

OMNI MOLD™

A Sunningdale Tech Company



Ultra precision, high cavitation molds, a source of pride for the company

Mr. Simon Tan, CTO and Executive Vice President

#Precisionmachining #Multitaskingmachine #Medicaltooling #Singapore

Clean and spacious factory for precision machining

Singapore-based mold manufacturer

"Our mission is to provide a one-stop turnkey solution at competitive prices for all plastics engineering needs." Mr. Simon Tan, Chief Technology Officer (CTO) and Executive Vice President of Sunningdale Tech Ltd. said. Established in 1989, Omni Mold, a subsidiary of Sunningdale Tech Ltd, has emerged as a leading authority in ultra-precision mold manufacturing within Singapore. Renowned for its expertise in designing, engineering, and producing intricate and highly detailed steel molds, the company serves industries with stringent specifications, including electronics, automotive, consumer IT, telecommunications, pharmaceuticals, and medical devices. With a rapidly expanding clientele fueled by the surging demand for high cavitation, high precision plastics injection molds, Omni Mold has widened their customer base now extending across America, Europe, MENA, and the Asia Pacific regions.

The company makes a plastic injection mold that specializes in ultra-precision, high-complexity, and high-cavitation. With a workforce exceeding 180 highly skilled individuals, the company benefits from a robust team dedicated to excellence. Moreover, their state-of-the-art facility boasts advanced computer software and cutting-edge machine tools, providing the necessary infrastructure for precision manufacturing and innovation. Thus, enabling them to achieve the highest standards of accuracy and efficiency in mold manufacturing. From concept to completion, they employ a meticulous approach to ensure that each mold meets the exact specifications and requirements of their clients.

Two strengths fortifying the operations

In response to the escalating demand for high cavitation molds for medical parts and liquid silicone molds, Omni Mold decided to make strategic investments in advanced CNC machines. Among these investments were the Mazak INTEGREX i-100 and INTEGREX i-200S models, chosen to pilot into higher precision medical tooling. Since its introduction in 2006, the INTEGREX i-200S has played a pivotal role in machining molds for blood tubes, showcasing its exceptional capabilities and contributing significantly to their growing reputation as a world-class medical tooling company.

Ultra-high precision tooling for complex parts and high-volume productions, as well as high-demanding tooling for high-performance engineering plastics – these are the top two products of Omni Mold. To enhance their manufacturing capabilities and efficiency, they integrated Mazak machines into these operations. The state-of-the-art machines not only improved the production time but together with the expertise and assistance of Mazak's highly trained and professional engineers, they help to optimize the processes and maximize the output. Mr. Tan emphasizes the significant advantages of being in close proximity to Mazak Singapore, highlighting the benefits derived from the presence of well-trained engineers who offer professional support to their operations. This collaboration has further solidified Omni Mold's position as a leader in the mold manufacturing industry, ensuring the continuation of delivering superior quality and precision to the customers.

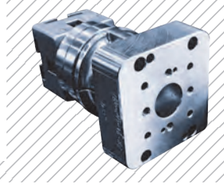
Vision and Strategy for the future

Mr. Tan elaborated on the vision of Omni Mold, emphasizing the company's aspiration to become the preeminent and most adept mold manufacturer within the world. "Omni Mold's vision is to be the best and most well managed mold manufacturer." He stressed the paramount importance of continually challenging and refining operational methodologies to ensure unparalleled customer satisfaction. "Our focus is on continually challenging and improving the way we do things to ensure total customer satisfaction. We recognize that it is the quality of our people that will help us achieve this vision. As such, we are committed to a series of initiatives aimed at unleashing the full potential of our employees through a steadfast emphasis on quality, comprehensive training programs, and empowerment initiatives." The company formulates a strategic approach - to continually look for opportunities, investments and manufacturing sites that align with the standards outlined in its mission and vision. Through this deliberate approach, they endeavor to harness newfound expertise and infuse added value into their operations, all in the pursuit of fulfilling their overarching vision for excellence. "We will continue to keep abreast with technological advancement and innovations." Mr. Tan eagerly anticipates the future with a forward-looking perspective.

Mr. Simon Tan (second from the left) and employees with INTEGREX i-200S

Workpiece processed by Mazak machine

Hot runner made by Omni Mold



Mazak News & Topics

Mazak Corporation (US) celebrates 50 years of Kentucky manufacturing

This year marks the 50th Anniversary of Mazak Corporation's Florence, Kentucky, the United States, manufacturing facility. Since its establishment in 1974, Mazak Corporation has progressed guided by “Rock Solid” management principles with quality, innovation, technology, and optimal customer support at its core, and is dedicated to continuous improvement and evolution to always go above and beyond for its customers. As a result, Mazak Corporation has expanded its Kentucky facility 20 times. The facility currently produces more than 70 different machining solutions. Spanning almost one million-square-feet, it allows for the design and manufacture of machine tools and manufacturing technology that ensure Mazak customers reduce costs and maximize their productivity.
“For the next 50 years and beyond, Mazak Corporation will continue its commitment to being a partner to its customers with innovative technology and the industry’s best service and support,” said President Dan Janka. “We will continuously invest in own manufacturing technology to maintain our position as a world-class provider of machine tools and our recently launched Kentucky-designed and built SYNCREX Swiss-Style Production Turning Machines and our Ez Series of machines.”
For Mazak Corporation, 2024 is also a year for the International Manufacturing Technology Show (IMTS) taking place in Chicago. As it is in the industry, Mazak has always been front and center at IMTS, and its presence there gives shops the opportunity to learn more, do more and make more and overcome the manufacturing challenges they face.

Tube 2024: European debut for tube cutting CNC

The new SmoothTUBE CNC system was given its European debut at Tube 2024. The show, which is the premier European exhibition for tube and pipe cutting, took place in Dusseldorf from April 15 to 19, 2024. The SmoothTUBE CNC features a new Graphical User Interface that makes the utilization of the control simple and intuitive, and a new Human Machine Interface that ensures easy production scheduling and programming. Mr. Gaetano Lo Guzzo, Director Laser Business Europe at Yamazaki Mazak, said: “The FT-150 FIBER with our new specialist tube CNC is the product of Mazak’s dedication to developing exceptional laser machines that use the latest technology and intelligent functions to drive speed, accuracy and ultimately, profitability.” Visitors were also treated to demonstrations of the TUBE DX software, which generated further positive feedback.

Excitement peaks at FEIMEC 2024

FEIMEC 2024, the largest manufacturing event in South America, took place in São Paulo, Brazil from May 7 to 11, 2024. The exhibition attracted over 65,000 visitors and featured more than 1,100 companies from 37 countries. Mazak Sulamericana Ltda. (hereafter, Mazak Brazil) showcased four popular models, including the INTEGREX i-250H AG, which combines gear machining technology with the widely adopted INTEGREX series in the South American market. This machine garnered attention from customers in various industries such as agriculture, oil, and automotive, and was elected as one of the technological highlights of the event. Another standout was the VARIAXIS C-600, catering to the busy aerospace market. Mazak Brazil remains committed to meeting the needs of local customers through its extensive technological center, providing top-notch services.

Success abounds at MTA VIETNAM 2024

Yamazaki Mazak Vietnam Co., Ltd. (hereafter, Mazak Vietnam), participated in MTA VIETNAM 2024 held in Saigon, Ho Chi Minh City from July 2 to 5, 2024. The exhibition attracted 470 exhibitors from various countries including Singapore, Japan, China, India as well as Germany. Mazak Vietnam showcased three models highly in demand locally - the QTE-200MY SG, QT-PRIMOS 100 SG, and VCN-430 L. Visitors to the booth showed keen interest in all three models, indicating that the displayed content aligned well with customer needs. Mazak Vietnam remains committed to local engagement and will continue to contribute to the manufacturing industry in Vietnam.

Mazak Foundation announces 42 grant and award recipients

On May 22, 2024, the Mazak Foundation announced the recipients of its grants and awards for fiscal year 2023. A total of 42 projects were selected: 23 machine tool-related research projects, 17 outstanding papers, and two international conferences. The Mazak Foundation will continue to support research and development related to advanced production systems and contribute to the development of the machinery industry.
Representative examples:
"Identification of machine tool geometrical errors utilizing machine tool servo data based tool-workpiece contact detection method" by Assistant Professor Lee Kyungki, Nagoya University;
"Proposal of novel chatter-free milling strategy utilizing extraordinarily numerous flute endmill and high-speed high-power machine tool" by Associate Professor Hayasaka Takehiro, Nagoya University

ROBOT TECHNOLOGY JAPAN 2024

ROBOT TECHNOLOGY JAPAN 2024 was held at the Aichi Sky Expo from July 4 to 6, 2024. Despite the scorching heat, the event was crowded with many visitors. This exhibition focused on industrial robots and automation systems, and many peripheral devices, such as robot hands and AGVs (automated guided vehicles), were also exhibited. Mazak exhibited the INTEGREX i-200H S, which excels in process integration, and the collaborative robot Ez LOADER 30 to propose a labor-saving solution by linking machine tools and automation systems. The Ez LOADER 30, which can be operated from the CNC system of the machine tool using the dedicated application Ez LOADER APP, attracted the attention of many customers.

Mazak Community study session held in Kumamoto, Kyushu

A Mazak Community study session was held in Kumamoto Prefecture, Japan, on June 14, 2024. Mazak Community is a community site for the cloud-based membership service "Mazak iCONNECT™" that supports customers and is a place for customers to interact with each other. This study session, focused on automation, had 17 participants from 7 companies, and was held at Kaisei Industry Co., Ltd., a member of the Mazak Community. The event included a seminar and a tour of the company’s factory, as well as a talk on the company’s experience of actually implementing automation, and time for participants to exchange opinions. Participants said that in addition to the automated equipment, the talks on 5S (Sorting, Setting-in-order, Shining, Standardizing, and Sustaining the Discipline) and tool management in the factory were also useful.

Published by Yamazaki Mazak Corporation
1-131 Takeda, Oguchi-cho, Niwa-gun, Aichi Prefecture, 480-0197, Japan

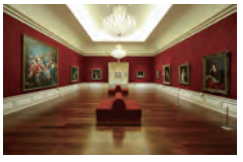
THE YAMAZAKI MAZAK MUSEUM OF ART
Collection Showcase

Woman Wearing Chéchia Hat

LAURENCIN, Marie

A fez is a cylindrical hat worn by Arabs and the soldiers of North Africa. The word comes from Arabic. Because Algeria in North Africa was a French colony, many French artists such as Delacroix and Renoir traveled there in search of brilliant colors and exotic subject matter. Although exotic, the products and customs of Algeria became very familiar and popular in Paris.
Laurencin was one of the few female stars of the art world at the time, and also had many friends in the world of fashion.
This work has a close relationship to current fashion, but the costume of the woman shown here is not ordinary. She is dressed like a fairy for a theatrical performance. The colors are limited to rose and indigo, giving a sense of subtle melancholy. This tinge of sadness in her gentle expression was a common feature of Laurencin's painting at the time, and this mixture of elegance and melancholy made her famous.

LAURENCIN, Marie [1883-1956], "Woman Wearing Chéchia Hat", 1938, Oil on canvas



THE YAMAZAKI MAZAK MUSEUM OF ART

https://www.mazak-art.com

The Yamazaki Mazak Museum of Art was opened in April 2010 in Aoi Higashi-ku, the heart of Nagoya in order to contribute to the creation of a rich regional community through art appreciation and, consequently, to the beauty and culture of Japan and the world. The museum possesses and exhibits paintings showing the course of 300 years of French art spanning from the 18th to the 20th centuries collected by museum founder and first museum director Teruyuki Yamazaki (1928 - 2011), as well as Art Nouveau glasswork, furniture, and more.We look forward to seeing you at the museum.

Mazak

Yamazaki Mazak Corporate Website
www.mazak.com