

CYBER WORLD

New Heights for Aerospace Manufacturing



Aerospace Industry and Machine Tools

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2016
No. 49



AEROSPACE INDUSTRY

The aerospace industry is currently one of the booming industrial sectors in the world. The number of aircraft in service is expected to grow continuously on a global scale and the replacement of current aircraft with those incorporating new technology with higher efficiency will continue to increase.

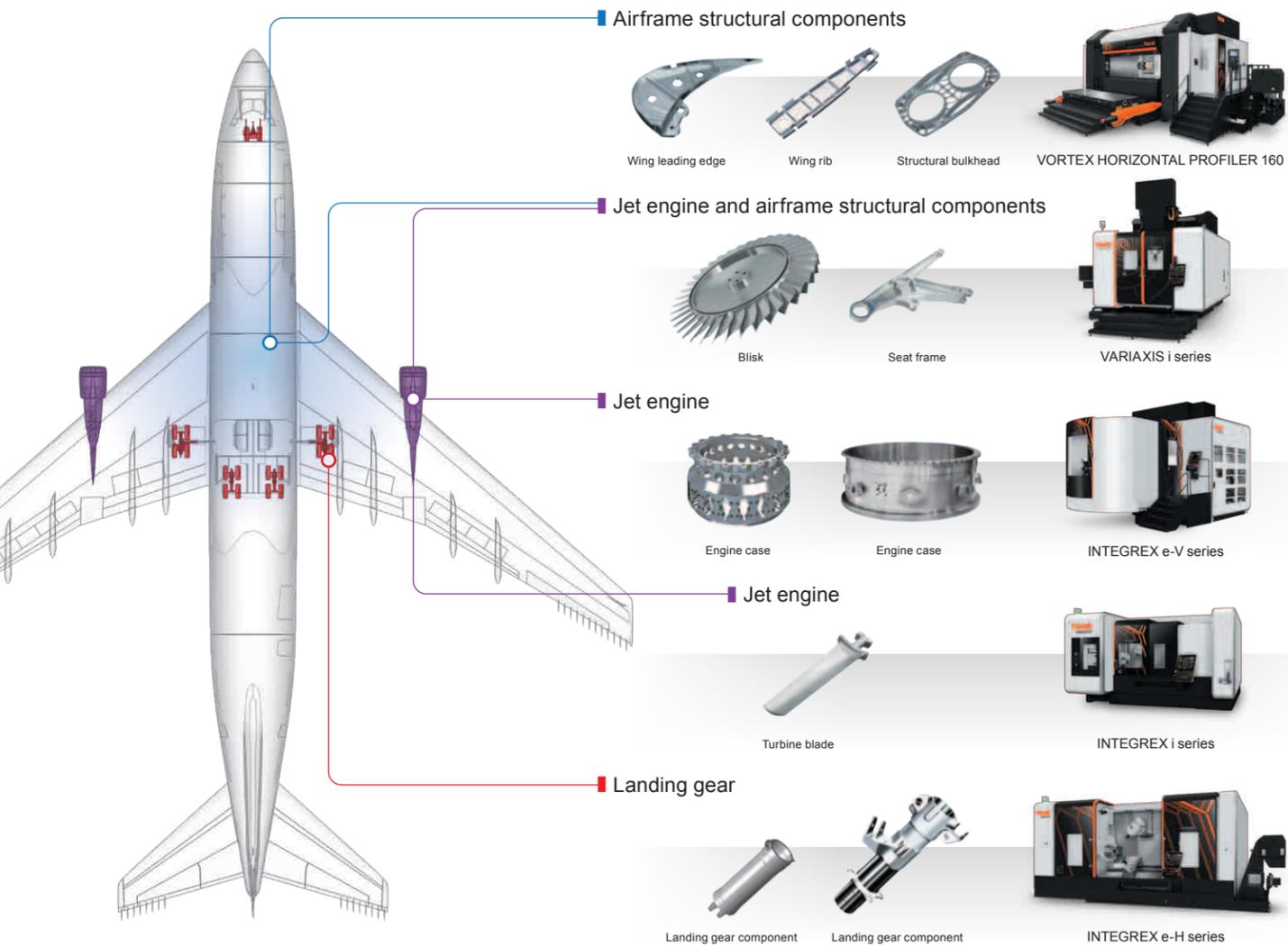


Machine tools produce a wide variety of aerospace components

Commercial aircraft can be classified into small, such as regional jets, medium and large size passenger aircraft. The markets for large and medium-sized passenger aircraft are dominated by US and European manufacturers. For smaller aircraft on the other hand, manufacturers from various countries such as Canada, China and Russia are entering the markets one after another. In Japan as well, the MRJ (Mitsubishi Regional Jet) will be a new entry into the regional jetliner market. In recent years, the reduction of production costs, improvement of reliability and high fuel efficiency, have been significant challenges for the aerospace industry. For the reduction of production costs, improved production efficiency by the use of advanced machine tools together with automation and computer networks has been realized.

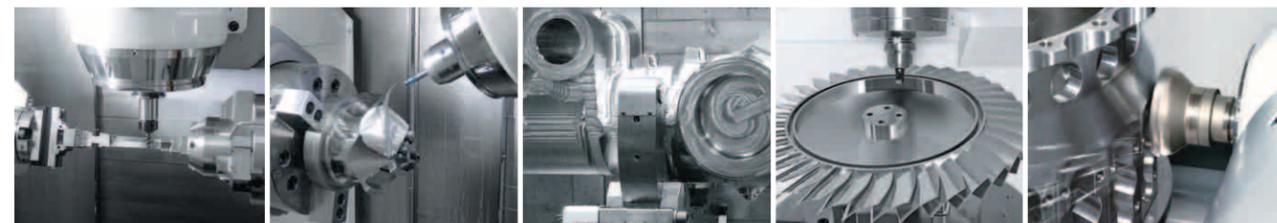
The adoption of lighter materials is a significant factor for improved fuel efficiency. For example, more carbon fiber reinforced plastic (CFRP) is used in wings and fuselages. In engines, silicon carbide (SiC) fiber has begun to be employed, which has the feature of being a heat resistant material that is one-third as heavy as nickel alloys, the most common material used at present, while it is two times stronger than nickel alloys. Titanium 5553, which has especially high durability and tensile strength, is used in high-load parts such as the landing gear. In addition, structural integration is used in parts design, of which a blisk (blades integral with a disk) is a good example.

Mazak's machine tools are used to process various aircraft parts



Due to recent trends in the aerospace industry, machine tool manufacturers are required to supply high-performance, high-productivity and high-accuracy 5-axis machines and multi-tasking machines and propose new techniques to process difficult-to-cut materials and integrated components. Mazak's extensive product range includes various machines suitable for the aircraft industry, and today many Mazak machine tools are playing active roles in aerospace manufacturers around the world. Along with Mazak 5-axis machines, the aircraft industry currently focuses on multi-tasking machines because

they can independently complete the processing that has been conventionally handled by multiple machines. Our INTEGREX and other multi-tasking machines are based on Mazak's "DONE IN ONE™" approach to integrating processes, and substantially contribute to reduce production lead time and production costs. Our hybrid multi-tasking machines, which combine machining with 3D laser deposition and other technologies, and their processing techniques also attract much attention from the aerospace industry as a solution to reduce the weight of parts and realize integrated components.



The first Aerospace Technology Center, which is devoted to the aerospace industry, was opened in 1999 in the Mazak Western Technology Center in Gardena, California. This location was chosen since the center of the US aerospace industry is located on the West Coast. Its main functions are to provide support to customers and develop processing technologies for the industry. To enhance these activities in response to the currently booming aerospace industry and its expansion on a global scale, we opened an Aerospace Technology Center at the company headquarters in Japan.

Mazak
AEROSPACE
TECHNOLOGY CENTER



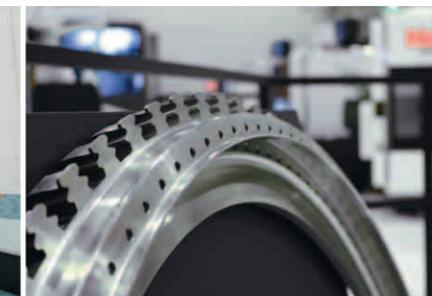
Showroom with advanced machine tools on display

The Aerospace Technology Center in Japan is currently exhibiting a total of six machines including the latest VARIAXIS 5-axis machining centers, as well as the INTEGREX multi-tasking machines. Advanced processing of example aircraft components such as frames, casings, blisks, blades and landing gear by these machines is demonstrated to show the substantial reduction of production lead time by completing processing, which is normally done by several machines, with only one machine. The center also plans to collect a wide range

of information on examples of aerospace-related applications from our worldwide network of technology centers, as well as the latest cutting tools, techniques to process difficult-to-cut materials and peripheral equipment, and make this information available to customers. Mazak will continue to contribute to the development of the aerospace industry across the world with state-of-the-art machine tools and processing technologies.



Application engineer answering questions from a customer



Turbine disk processed with high accuracy based on the latest machine technology



Various examples of aerospace components

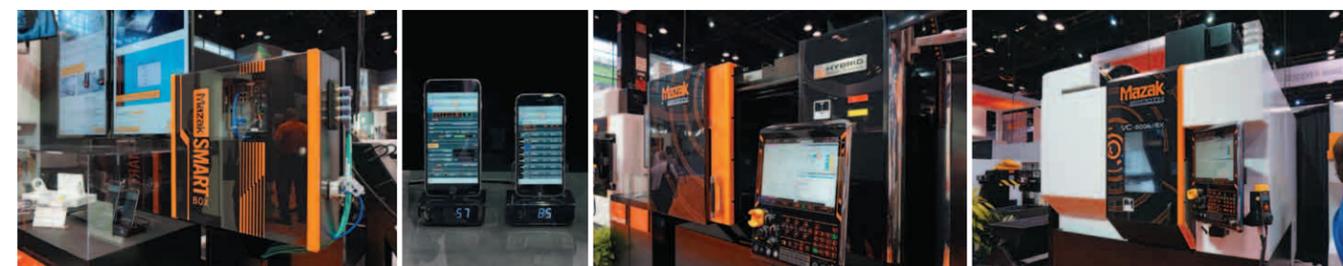


- 01. Mazak's booth had a record high number of visitors
- 02. World customer appreciation dinner with approximately 1,000 guests
- 03. Brian Papke, chairman of Mazak Corporation, making a speech
- 04. Daniel Janka, who became Mazak Corporation's new company president in July
- 05. Hot air balloon outside of the IMTS venue



Make smart factories with Smooth Technology plus IoT

The International Manufacturing Technology Show (IMTS) 2016 was held at McCormick Place in Chicago from September 12th to 17th. IMTS2016 had a total of approximately 116,000 visitors, which was higher than the previous show two years ago, and the number of visitors to Mazak's booth was a record high.

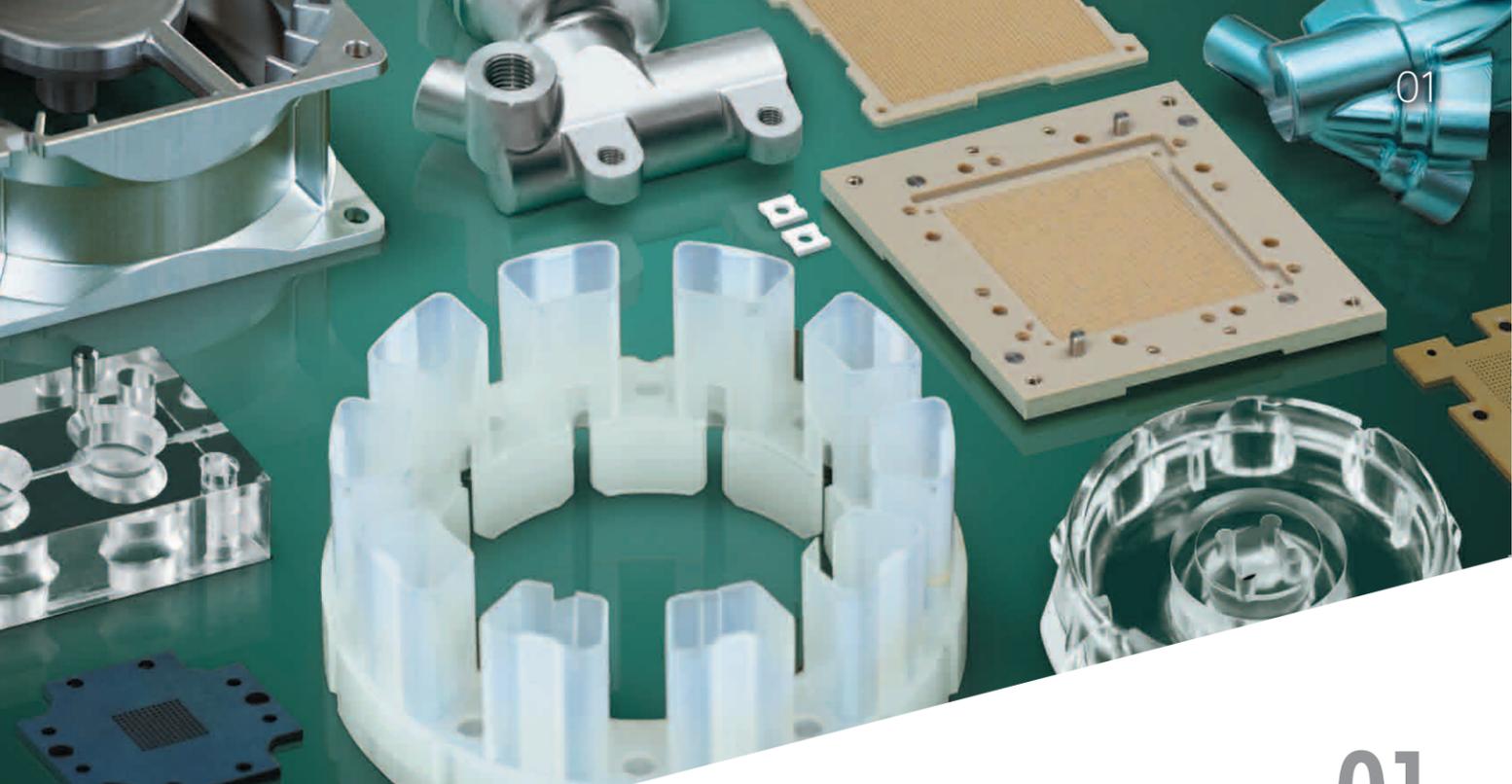


MAZAK SMARTBOX™, jointly developed with Cisco Systems Inc. Machine operation status can be checked via a smartphone using Smooth LINK VC-500 AM, the first Mazak hybrid multi-tasking machine manufactured in the United States VC-500A/5X, equipped with the MAZATROL SmoothX CNC

IMTS is one of the four main international machine tool exhibitions along with EMO in Europe, JIMTOF in Japan and CIMT in China, and is held in September every two years. In this year's event, 2,407 companies exhibited their products which was an all-time record. The Mazak booth was located in front of the entrance of the South Building again to show a strong presence in the United States established through its local production of more than 40 years. Its booth displayed a total of 19 models including seven models manufactured in the US. The exhibition featured impressive processing demonstrations with all of the models caught the attention of many visitors. New products which attracted considerable attention included the MULTIPLEX W-200 and MPP 500, which are manufactured in Japan, as well as the VC-500 AM, the first Mazak hybrid multi-tasking machine manufactured in the US.

Advanced Smooth Technology

In this year's IMTS, our Smooth Technology was even more advanced, and we presented to customers demonstrations of various processing applications to offer new solutions based on cutting-edge processing technologies. We also featured IoT-related items including networking with MT Connect®, a communication protocol for the manufacturing industry and the MAZAK SMARTBOX™, which was jointly developed with Cisco Systems Inc. and provides cyber security for factory networks. In particular, Smooth LINK, which is a new function to check the operation status of machines via smartphone, received attention from many corporate managers who were considering optimal operation of plants.



01



AZUMA CO., LTD.
 President : Hatsutarou Shimizu
 Address : 8655 Kanou, Tomi-shi, Nagano
 Number of employees : 84
 www.azuma-japan.co.jp



Customer Report 01
Never stop trying to realize your goal

Japan AZUMA CO., LTD.



"Youth is not a time of life; it is a state of mind" - a passage from "Youth", a poem by the US poet Samuel Ullman. This is in common with the way of living of Mr. Hatsutarou Shimizu, president of AZUMA CO., LTD. in Nagano, Japan. The history of the company, whose main business is the cutting of plastics and machining of non-ferrous metals such as aluminum and copper, reflects the motto of Mr. Shimizu "Do not forget that young is a state of mind, and keep dreaming to achieve new goals."

After working for a car component manufacturer with a desire to launch his own business in the future, Mr. Shimizu founded the company in 1973 to realize his goal. AZUMA offered prototype processing in all fields as its main business. While the company had developed techniques, it needed machine tools that could turn them into reality. Mr. Shimizu then saw Mazak machines when he happened to visit a machine tool trade show. "I was fascinated by the MAZATROL because of its interactive programming, as well as the performance of the machine itself that provides high-speed and precision machining, and I decided to make the purchase without any hesitation." With this purchase as the start, AZUMA has installed a total of 130 Mazak machines so far. "We can introduce the machines with confidence because Mazak has a reliable service and support system." The plant of the company is equipped with so many Mazak machines that there is no more floor space available for any machine.



Mr. Shimizu talking about his passion

Everything is to far exceed customer expectations

In fact, not all of the machines are constantly operated at full capacity. "As we mainly engage in machining of prototypes and small lots, it is important to start machining quickly. In this regard, Mazak machines that can be quickly and easily programmed interactively allow us to respond to urgent orders flexibly. This is why we have extra equipment. While some may say it is a waste to own machines that are not used, it is much worse to fail to meet customer demand due to not having the necessary equipment."

operation of the company, which is aiming to be a "best partner in manufacturing." "Our goal is to be the "go-to-man" for customers. When there are any necessary materials that we do not hold in stock, we negotiate with material manufacturers and order them, and we sometimes purchase machines to be used for specific types of processing. We do them all for higher customer satisfaction." The company's stance to "make the best possible efforts as a "go-to-man" has led to the development of its business being evenly spread across a wide range of fields.

Aiming to develop products with their original brand in the medical field

While AZUMA has operated for more than 40 years since its foundation, the enthusiasm of Mr. Shimizu for manufacturing is still growing. In line with one of its creeds "Keep trying to achieve new goals," the company is planning to enter business in the medical fields. "Starting with components, I hope to release products with our own brand sometime in the future."



This Harley-Davidson is Mr. Shimizu's longtime beloved motorcycle. It is on display in the lobby of the main office and was produced in the same year Mr. Shimizu was born



According to Mr. Shimizu, "Manufacturing requires not only technology but also sense"

The Mazak machines that play active roles in the plant seem to be essential for the



Plant with rows of Mazak machines



02



03



04

- 01. Components of various materials produced by AZUMA
- 02. Production line can respond to any job promptly
- 03. Always striving to achieve uncompromising precision
- 04. Mr. Hatsutarou Shimizu, president (second row, third from right), and employees

▶ A model of the Shinkansen with a total length of more than 2 meters (6.6 ft.) produced to publicize the company's capabilities. It was machined by a Mazak SUPER VELOCITY CENTER, a vertical machining center that can very efficiently machine long components.





01

Customer Report 02

Manufacturing is an industry that responds to changes

Japan TOA KOUSAKUSHO CO., LTD.

"I want to ensure that the company stays in business for more than 100 years." This simple goal for the future of TOA KOUSAKUSHO near Nagasaki, which is well known for various types of processing of large complex parts ranging from heavy-duty cutting to high-precision finishing, was stated by Mr. Tomo Kurosaki, managing director. "To achieve this goal, it is important to monitor the trend of the times and adapt to it flexibly," added Mr. Yuichi Kurosaki, his father and the company president who will retire in two years. Although Nagasaki Prefecture, in which TOA KOUSAKUSHO is based, has many major heavy industrial companies and such industries are the areas of specialty for the company, most of the orders are received from companies outside the prefecture, which is unique in the local area.



Nagasaki, Japan



02



03



04

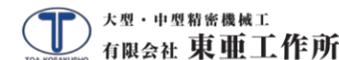
- 01. INTEGREX e-1600V/10S is used very effectively
- 02. INTEGREX e-1600V/10S is located in a separate building dedicated to machining high-value added components
- 03. Operators learn from each other every day
- 04. Mr. Yuichi Kurosaki, president (front row, left), Mr. Tomo Kurosaki (front row, right), managing director, and employees

COMPANY PROFILE



TOA KOUSAKUSHO CO., LTD.

President : Yuichi Kurosaki
 Address : 376-10 Kururigo, Togitsu-cho, Nishisonogi-gun, Nagasaki
 Number of employees : 30
 www.toak.jp



Customer Report 02

Japan TOA KOUSAKUSHO CO., LTD.

TOA KOUSAKUSHO was established in 1952 by rebuilding the business founded by the father of the company president which had stopped operation due to the devastation of World War II. Beginning with the processing and assembly of steering units for major shipyards, the company expanded its business over the years to also handle components for the marine, liquid crystal and semi-conductor manufacturing, and wind power generator industries. Along with the diversification of its products, TOA KOUSAKUSHO aggressively invested in equipment for the processing of large complex components according to the types of the products and processing handled by the company. Large machine tools such as turning centers, 5-axis machines, 5-face machines and horizontal and vertical machining centers were installed in turn.



Other Mazak machine tools installed in response to changes in the business environment

"The key is to look at the general trend of the times because manufacturing is an industry that responds to changes. Our footsteps are exactly the history of pursuing processing and machines for the production of products demanded in the times. In fact, as a result of our approach to focus on the trend of the times rather than on competition within the region, we receive more than a half of our orders from companies outside the prefecture," said President Yuichi Kurosaki.

Capital investment aimed at entering the aerospace industry

One of the models proudly owned by the company, which places emphasis on adapting to the current environment, is the INTEGREX e-1600V/10S, the first Mazak machine tool with the MAZATROL SmoothX CNC introduced in the Japanese market. It has been installed in a dedicated



High-precision machining of large parts

building constructed next to the existing plant. "This is part of our capital investment aimed at the processing of aerospace components, which we consider to be a new core of our future business. We decided on the purchase based on a thorough comparative review of other machines in the same field. The superiority of the MAZATROL CNC in operation and other performance was demonstrated by the existing machines, which also encouraged us to select this model," said Managing Director Tomo Kurosaki. He took the initiative in the introduction, and the policy of his father to seek "machines for the production of products demanded in the times" seems to have taken root in his mind.

The Mazak machine is now used to process dies and other high-value added parts in preparation for the processing of aerospace components in the future. "The operation rate is high and the precision is extremely high. Mazak's quick support provided as required is helpful as well. In fact, the machine is contributing not only to parts machining but also greatly to the training of new, young employees" he mentioned, since the machine's performance exceeded his expectations.

Workpieces for exhibitions raised the morale of young employees

In the manufacturing industry, it is becoming more and more difficult each year to hand down technical skills over time due to the retirement of many experienced employees who were born during Japan's

Workpieces displayed in M-Tech held at various locations in Japan



post-war baby boom. To address this, TOA KOUSAKUSHO focuses on active recruitment and cultivation of young employees. The new employees receive on-site training on a one-on-one basis over a year. Demonstration workpieces to be exhibited in trade shows are invited from all employees. "This aims to raise the morale of young employees who will lead the next generation. Actually, when their workpieces have been selected, the employees devote themselves to their work in a different way." There is a rule that the workpieces should be produced by finding time during the working hours for the processes from programming to completion, and finished with the machine of their choice such as the INTEGREX e-1600V/10S. All of the workpieces displayed in the Mechanical Components & Materials Technology Expo (M-Tech), which is held in various areas of Japan, have achieved favorable reviews.



Mr. Yuichi Kurosaki, president (right), and Mr. Tomo Kurosaki, managing director, talking about their future business

Managing Director Tomo Kurosaki expressed his attitude toward business continuity and succession by stating, "Based on our history of 64 years, I want to ensure the company stays in business for more than 100 years." To him, President Yuichi Kurosaki cheered and said, "See how business is going and develop good employees." The baton of management will be surely passed to the next runner who will lead the next generation.

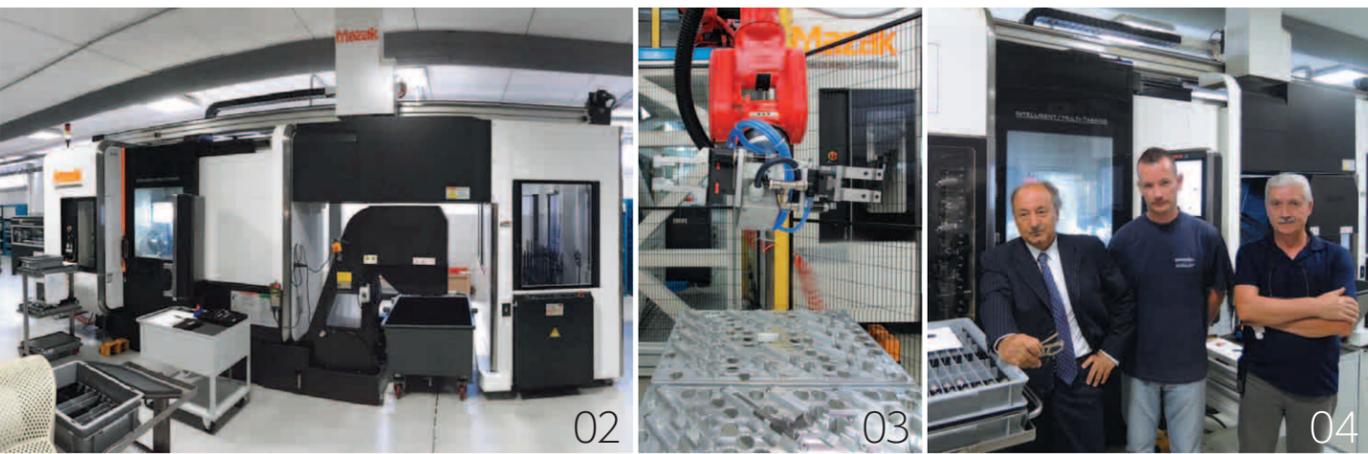


A top manufacturer in the European medical industry

Italy permedica s.p.a.



Located in Merate near the hills of the Brianza district of Northern Italy, permedica is among the best manufacturers of medical prosthetics and other medical items in Europe. Its plant has one of the largest and most advanced production facilities in the region. Many talented young engineers and technicians enable the company to respond quickly to changes and requirements in the orthopedic surgical and dental markets and put them into products. In particular, the success in the field of cutting-edge artificial joint products has underpinned the growth of the company.



01. Components made with the state-of-the-art technology of permedica and Mazak machines
 02. INTEGREX i-100ST equipped with a bar feeder and gantry loader for unmanned operation over extended periods
 03. Automated system combining INTEGREX j-200 and robot
 04. Marco Perego CEO and employees of permedica



permedica s.p.a.
 CEO : Marco Perego
 Address : Via Como, 38 Merate (LC) 23807 Italy
 Number of employees : Inside 110 + outside 40 agents, consultants and collaborators
 www.permedica.it



permedica was established as a trading company dealing in medical items in 1986. It now has an integrated system from design and development of products and services related to orthopedic surgery and dentistry to manufacturing and distribution. Its main products include artificial joints, which are processed with four Mazak machines. "To optimize production time and machining process, which is closely related to product quality," permedica introduced its first Mazak machine in 2014, according to Mr. Marco Perego, CEO of the company.



Mr. Marco Perego, CEO

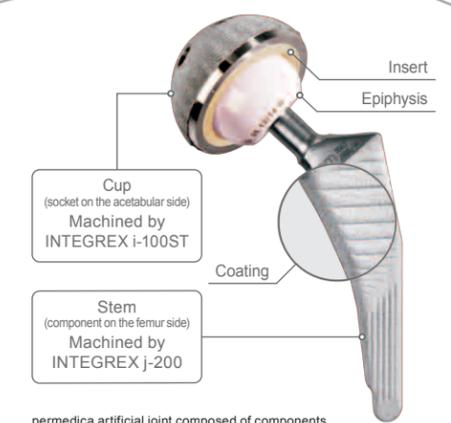
"During the two years prior to 2016, we purchased the INTEGREX i-100ST and INTEGREX j-200. We have recently ordered an INTEGREX i-100S as well. Once the materials to be machined are forged and loaded in the machine, final parts with excellent quality are finished in a shorter time than before even without any specific action by the operator. We have reduced the production time and improved machining accuracy." Mr. Perego explained the effects of the introduction of the INTEGREX, which is based on the DONE IN ONE™ concept.

Technical abilities of multi-tasking machines that improve the quality of surface finishes
 "By combining our cutting-edge forging technology with the technology of Mazak's multi-tasking machines, we have dramatically improved the quality of the cutting process, especially the surface-finishing process." The business development of permedica is firmly supported by the commitment of Mazak to development of models and market strategy with focus on the medical field. In fact, the features of the INTEGREX series such as suitability for high-mix low-volume production and machining in a single setup are appropriate to the production style of permedica.



High quality machining completed in a short time based on the DONE IN ONE™ concept

The effects of the introduction of Mazak machines are not limited to reduction of production time and improvement of machining accuracy. "Thanks to the machines we introduced, we have reduced the cost with unmanned operation. We use automation systems in all Mazak machines. One of the biggest advantages is just-in-time production based on unmanned operation over long periods of time. They also help us improve the work environment."



permedica artificial joint composed of components machined by Mazak machines

A new plant is under construction for a further production increase
 Support to permedica has been given by the application team in Yamazaki Mazak Italia S.R.L. since the introduction of the machines. "We are grateful that, whatever happens, it is solved immediately with just a telephone call in most cases." Mr. Perego thus shows strong confidence in the support system. "We are one of a few companies in this industry to manage all production cycle stages internally, including machining, finishing, quality control, marking, washing and packaging; for critical items that will be implanted into human bodies." To promote this approach and further expand production, permedica is constructing a new plant next to an existing one. Mazak has an extensive record of delivering machines of the INTEGREX i-100 series to manufacturers in the medical industry in the United States. This is a result of working closely together with customers to learn in detail their machining requirements. Such achievements will be steadily made with permedica as well.

Precision components to be transplanted into human bodies



MAZAK PEOPLE

iSMART Product Planning Group, Solution Development Department

 **Mr. Shuichi Hirooka**

Key person who plays a role in the iSMART Project

Yamazaki Mazak operates many bases in Japan and other countries for various functions such as production, sales and before and after-sales service and support. MAZAK PEOPLE introduces employees who are active in the forefront of the Group companies.

This issue features Mr. Shuichi Hirooka, who belongs to the iSMART Product Planning Group, Solution Development Department. With practical experience including overseas working experience at YMUK (U.K. plant), he is a highly respected young engineer.

PROFILE >> Mr. Shuichi Hirooka

Mr. Hirooka joined Yamazaki Mazak in April 2012, and was assigned to the Oguchi Product Special Order Design Department in December. After several transfers, he moved to his current position. His motto is that "it is more difficult to be simple than to be complicated."



— **Why did you choose Mazak?**

I had already known Mazak because I studied cutting tools in college. The deciding factor was the active development of overseas business. The possibility to play an active role in the overseas arena through work was attractive and became a major incentive to choose the company.



He is also in charge of the design of the MAZATROL SmoothX control panel

— **What is your job?**

I engage in the design of control panels, sign boards, emblems and moldings commonly used by equipment that comprise a smart factory. I am now in charge of the design of the MAZAK SMARTBOX™ cabinet, a network switch jointly developed with Cisco Systems Inc. to provide cyber security to a plant, and the first unit in Japan has been installed in the Oguchi Plant. It was difficult to streamline the form in the design because the box had to be large enough to accommodate equipment and it was also necessary to consider the accessibility of the assemblers, as well as room for wiring, at the time of assembly.

— **When did you feel that you made a good decision to join the company?**

It was when I saw the opportunities to work with a broad view. In our company, each of the persons in charge of design has opportunities to be involved in all units. Therefore, they can necessarily expand

knowledge and experience through working with various units on their own. This is a major advantage.

— **What did you acquire during your overseas working experience, which you had looked forward to, at YMUK?**

I was involved in the design of UK products during the training. Work with local colleagues made me aware of various things. For example, the thickness of steel plate that can be used for parts is different between the UK and Japan as well the cost – this must be taken into consideration at the design stage. I also surveyed the trend of companies that made presentations at trade shows related to IIoT. I would like to make use of these experiences in future projects.

— **How was working in the U.K.?**

Most of the local staff left for home right at quitting time. They tried to have a good balance between work and their personal and family life. By doing so, they tried to make the best use of their time and work and reduce waste as much as possible.



Enjoying Japanese barbecue with colleagues

— **What advice do you want to give to younger employees?**

Appreciate the fellow employees who entered the company the same year as you, and develop good relationships with them. When you are new with the company, there will be many things you do not understand which can become bothersome. At such times, these fellow employees can be a welcome support. You can freely talk with them about anything to see what their opinion is which many times can be good advice. Such fellow employees are and will remain treasured friends for me.

Mazak, which offers products, services and solutions, that address automation and the introduction of IIoT, is working for next-generation manufacturing in the iSMART project. Mr. Hirooka is working hard in the front line of the section that plays a role in the project. He is so motivated that he wishes to obtain qualifications on machine design to improve the speed and accuracy of drawing checks. Not only the products that he is in charge of but also his way of living are SMART.

The most important item for me

Ballpoint pen

This ballpoint pen was given by my professor when I graduated from university. To remember his lesson "Learning continues every day even after you start to work," I have always displayed it on my desk since I joined the company. The pen is like an important lucky charm for me.



News & Topics Introduction of new products

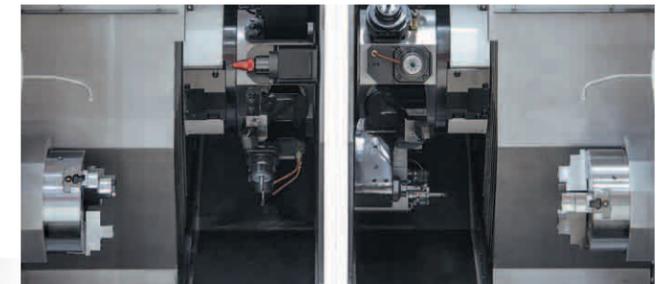
 CNC turning center with 2 opposing spindles and 2 turrets

MULTIPLEX W-200



MULTIPLEX W-200Y (with optional gantry loader)

Chuck size	8" / 8"
Maximum swing	ø320 mm (ø12.6")
Main spindle (30 min.)	5000 rpm, 15 kW (20 HP)
Number of tools	12 × 2



The MULTIPLEX series features two spindles and two turrets. A single machine has the processing capability equivalent to that of two machines. The MULTIPLEX W-200 is equipped with the new MAZATROL Smooth CNC system for improved operation performance and productivity. Other improvements include a slant bed design for improved disposal of machined chips, faster tool changes for a reduced chip-to-chip time, and items requiring frequent access for maintenance are now in one central location. A wide variety of optional equipment and specifications is available to meet a wide range of production requirements, including Y-axes and a high-performance gantry loader system.

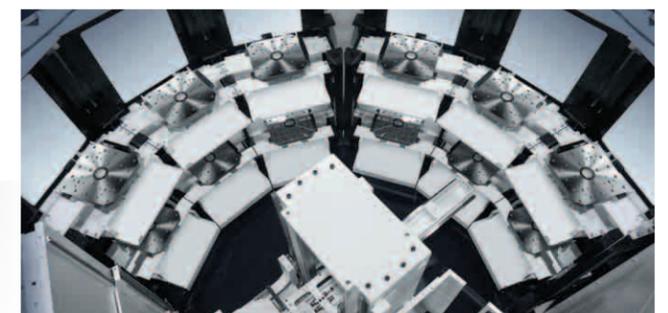
 Compact multi-pallet stoker system

MPP 500 [6PC, 12PC, 18PC]



MPP 500 [12PC] (VARIAXIS i-600)

	VARIAXIS i-600	VARIAXIS i-700
Pallet size	400 mm × 400 mm (15.75" × 15.75")	500 mm × 500 mm (19.69" × 19.69")
Maximum machine load capacity	300 kg (661 lbs)	400 kg (882 lbs)
Maximum workpiece size	ø600 mm × H425 mm (ø23.62" × H16.73")	ø600 mm × H425 mm (ø23.62" × H16.73")



The compact stoker system has a small footprint. In the case of the 12-pallet changer, for example, the floor space is about 50% smaller than that of a linear pallet stoker system. The system is designed for convenient pallet storage capacity expansion after the initial installation. A stoker with 6 pallets can be expanded up to 18 pallets in response to increased production requirements. The operation and management of the MPP 500 is performed by the same software used by Mazak's FMS system which is highly regarded world wide for its ease of operation and high productivity.

The Yamazaki Mazak Museum of Art was opened in April 2010 in Aoi-cho, 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.



OUDRY, Jean-Baptiste [1686-1755]
"Still Life with Fruits and Vegetables" 1727
Oil on canvas

THE YAMAZAKI MAZAK MUSEUM OF ART
Collection Showcase 1

OUDRY, Jean-Baptiste
"Still Life with Fruits and Vegetables"

Jean-Baptiste Oudry was a major painter of decorative still lifes in the Rococo style. In this painting, set in an evening landscape, a basket laden with pears, peaches, grapes, and a melon rests on a stone in the upper part of the foreground and an assortment of cabbage, endives, scallions, and celery is placed below it. It is noteworthy that the still life objects are placed on the ground outdoors. The fruits and vegetables placed on the ground suggest the abundant blessings produced by the earth. The composition of this work is very similar to that of *Earth*, one of a group of four still life paintings (Nationalmuseum, Stockholm) intended as allegories of the four elements around 1719-1721. *Earth*-contains a fruit basket, vegetables, and melons like those in this painting surrounded by flowers and a number of other types of vegetables. *Air*-shows birds, monkeys, and musical instruments (violin, musette, and flute) and musical scores, *Fire*-animals taken in the hunt, and *Water*-water birds and fish.

THE YAMAZAKI MAZAK MUSEUM OF ART
Collection Showcase 2

GALLÉ, Émile
"Marquetry and engraved vase with an iris design"

The surface is decorated with iris, dragonfly, and butterfly motifs. The iris leaves are formed with glass marquetry using moss-green, white, and yellowish green pieces of glass. The longest leaf, reaching from the base to the lip, is 55 centimeters (22 in.) in length. Pieces of colored glass, blue, reddish purple, and white, are inlaid and delicately carved to make the iris flowers. There is also a carved dragonfly and butterflies near the top of the vase. Platinum fragments are inserted at the base of all the insects, giving them a faint glow when struck by light. Many Gallé vases made around 1900 have a similar form, a tubular body rising from a bulbous base. The overall softness of the colors gives a calming, relaxing effect to the design. It is a good example of the esthetics of Art Nouveau, with its preference for intricate, ambiguous patterns that allow for varied interpretations.



GALLÉ, Émile [1846-1904]
"Marquetry and engraved vase with an iris design" c.1900