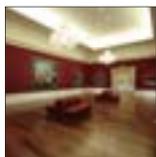


CYBER WORLD

2013 39

- 01 New year's greeting
- 03 **MAZAK around the World** 04 Singapore
- Customer Report 01 (South-eastern Asia)
- 07 Customers in South-eastern Asia
- Customer Report 02 (Japan)
- 09 Synergy System Corporation
- 11 The Latest Productivity Tools from Mazak
- 13 News & Topics





No.5 Masterpiece

THE YAMAZAKI MAZAK MUSEUM OF ART

Address: 1-19-30 Aoi, Higashi-ku, Nagoya City, Aichi, 461-0004, JAPAN
TEL: +81-52-937-3737 FAX: +81-52-937-3789 www.mazak-art.com

GREUZE, Jean-Baptiste (A Young Child Playing with a Dog)

Greuze's genre pictures were extremely popular in France from the 1760s to approximately 1780. He was born in Tournus near Lyon in 1725 and began his study of art in Lyon. He moved to Paris around 1750 and attended drawing classes at the Académie. He first made a name for himself in the field of portraiture, becoming an associate member of the Académie in 1755. He studied in Italy for two years and after returning to France, he began painting genre paintings as well as still lifes and became famous overnight for *Village Betrothal*, submitted to the Salon in 1761. Later Greuze turned his attention to the bourgeois family, painting dramatic scenes that appealed to ordinary people and employing such themes as love between parents and children, the chastity of daughters, the devoted work of sons, the need to care for parents, and the importance of educating children. The success of these genre pictures was due to the artist's skill in depicting the human figure as well as the accessibility of his themes to the bourgeois class. In his genre paintings, he depicted figures with meticulous realism while placing them in theatrical situations and creating facial expressions that accurately reflected their psychological state and inner character.

The girl depicted in this painting is clearly the daughter of a commoner. Her curly hair, soft, round face, large eyes, and childish posture are beautifully rendered. She is ready for sleep and wears only a cap, knee-length chemise, and stockings, very simple clothing even for a child. In addition to the obviously childish qualities of this little girl, there is an earnestness in her gaze that is quite enchanting.



GREUZE, Jean-Baptiste [1725-1805] 11 A Young Child Playing with a Dog
Une jeune enfant qui joue avec un chien Date unknown Oil on canvas 64 x 54.2cm



GALLÉ, Émile [1846-1904] Engraved vase with seaweed design
Vase aux motifs d'algues, décors appliqués et gravés 1900-04

GALLÉ, Émile (Engraved vase with seaweed design)

This vase is fabricated with four layers of glass, transparent, green, semi-transparent cloudy white, and reddish brown. An applied seaweed design is carved in high relief, using the techniques of etching and engraving. The delicate details of the seaweed leaves that spread over the entire vase are carved with an engraving wheel, and they have the melted, flowing appearance that can be achieved with this technique. Snail forms are applied to the thick mass of a seaweed leaf crossing from the upper right to lower left of the vase. Other snails are carved in relief on the lower part of the vase. More seaweed, which seems to move in the water, is shown in bold relief on the back. The non-carved parts are treated with a "hammered" (*martelé*) finish. The glass inside the vase is frosted with an acid treatment, creating a dense translucent surface.

In Gallé's later years, he produced a number of pieces with appliqué motifs of shells, barnacles, and seaweed, but this is a particularly important example. The undulating seaweed and shell ornaments are carved with large and small engraving wheels.

Your Partner for Innovation

Mazak



The Liaoning Plant will become fully operational in the spring of 2013 (Dalian, China).



Machines being installed in the Liaoning Plant.



The upgraded and expanded technology center in Brazil is scheduled to be opened in the summer of 2013

2013

New year's greeting



Tomohisa Yamazaki, President

I would like to extend my best wishes to you for a Happy New Year.

In the current era with the global economy in a chaotic situation, manufacturing companies all over the world have to consider their strategies not only for mature markets in developed countries but also for emerging markets in developing countries, by regarding them as both markets and production bases, in their efforts to win the severe global competition.

At Yamazaki Mazak, from our global perspective as a leading manufacturer of machine tools, we wish to continuously grow as the best partner of customers for manufacturing in every part of the world.

First of all, we continue to expand and improve our bases to offer high-quality technological solutions and enhanced before and after-sales service and support to customers all around the world. Our technology centers are currently located in 38 sites worldwide, including the ones opened in Poland and the Czech Republic last year. We also plan to expand and improve the technology centers in Brazil and Russia in the near future.

In addition, the expansion of our factories in the United States and Singapore is underway, and the new plant in Liaoning Province, China will become fully operational in the coming spring. We believe that it is our duty to provide our customers with comprehensive benefits in service and other aspects, in addition to advantages in cost and delivery time, through the enhancement of production in our overseas plants.

As part of our efforts, our development section established in each of the factories in the US and Europe is involved in the development of products that meet local demands. Last year, we exhibited a large number of locally-developed new models at trade shows such as IMTS in the US and JIMTOF in Japan, which were extremely well received.

We will continuously invest in the development, production and marketing so that customers around the world will choose Yamazaki Mazak as a reliable partner for manufacturing with confidence.

We appreciate your continued support.

Yamazaki Mazak is a global company for both marketing and locations of production facilities. This is the fourth in the series in which we introduce some of the history and culture of the countries where our production plants are located. This issue introduces the area in Singapore where Yamazaki Mazak Singapore Pte. Ltd. is located.

MAZAK around the World



Singapore — a city of contrasts, a nation of ideas and innovation, and Asia's most exciting media capital.

Singapore is home to Mazak's South East Asia Headquarters where the production plant has been manufacturing high precision turning and vertical machining centers since 1996. Singapore, a globally connected, multi-cultural and cosmopolitan city-state, is located in the heart of Southeast Asia which makes it an excellent entry point to the region. Armed with a highly-skilled

workforce, strong regulatory environment and top-rated banking system, it makes global businesses advantageous to site their headquarters in Singapore. Apart from being an attractive location for businesses, Singapore is also an attractive country to visit for both leisure and business travelers year round. Its tropical climate and excellent infrastructure enables visitors to enjoy

many of its sightseeing sites and attractions in a safe, clean and green environment in the day. In addition, it is also well known for its nightlife activities and its once-a-year Formula 1 street night race exclusive to only Singapore. Therefore, these are the reasons why Singapore is labeled as Uniquely Singapore.



Production plant in Singapore
(expansion will be completed by the end of 2013)



Singapore Flyer

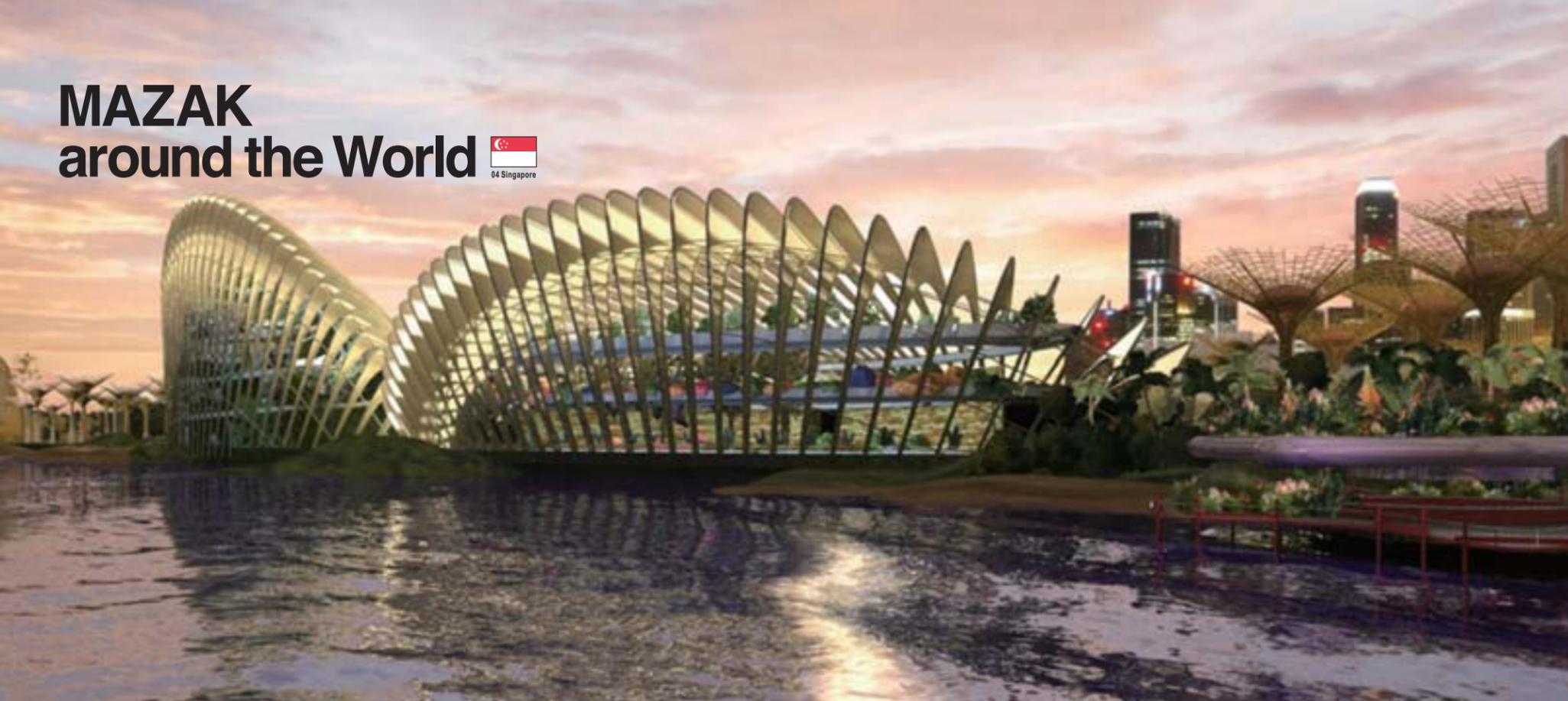
The Singapore Flyer, measuring 165 metres (541 ft) high, is the world's largest observation wheel providing you a one-of-a-kind experience and breathtaking panorama views of Singapore.

Image Courtesy of the Singapore Tourism Board.
Photographer: Mori Hidetaka

MAZAK around the World



04 Singapore



Artist Impression of Garden by the Bay

Photo Courtesy of the Singapore Tourism Board.



Singapore F1 night race

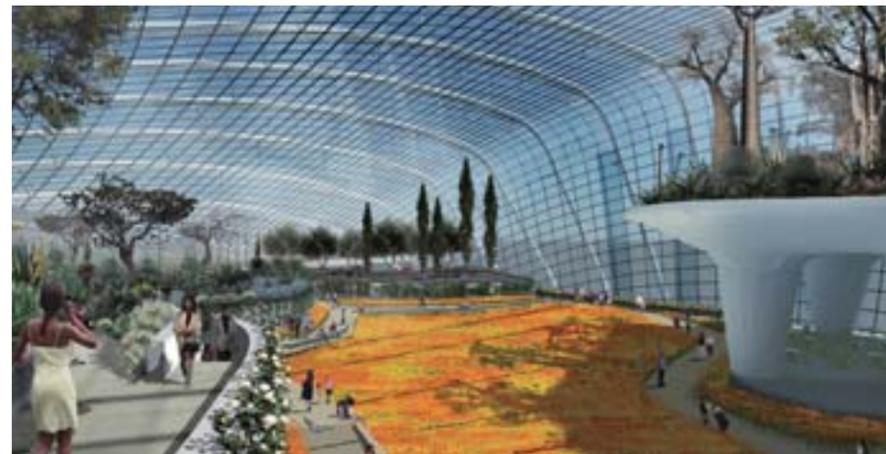


Cloud forest (left) and flower dome (right)

Image Courtesy of Alberto

An awe-inspiring new green space for Singapore

Garden by the Bay is our latest addition to our attractions in Singapore. Spanning 101 hectares (250 acres), this superpark is home to over a quarter of a million rare plants. In the garden, you will be able to see the futuristic-looking Supertrees, vertical gardens measuring up to 16 stories that add a surprising and surreal feel to the landscape. The Supertrees are not just aesthetic features. Instead, they are used to collect rainwater, generate solar power and act as venting ducts for the park's conservatory.



Flower dome

Image Courtesy of National Parks Board, Singapore

Furthermore, the two conservatories, namely the Cloud Forest and Flower Dome, are another key feature looking to offer relief from the tropical heat. The Flower Dome replicates the cool-dry climate of the Mediterranean and semi-arid subtropical regions like South Africa and parts of Europe like Spain and Italy. The Cloud Forest replicates a cool-moist climate found in Tropical Montane regions between 1,000 to 3,500 metres (3280 ft to 11480 ft) above sea level, such as Mt Kinabalu in Sabah, Malaysia, and high elevation areas in South America.

A World of Flavors

The Singaporean cuisine is a prime example of the country's cultural and ethnic diversity. Heavily influenced by Chinese, Malaysian, Indian (especially Southern Indian) and Indonesian traditions, it is a significantly rich cuisine and a cultural attraction, enjoyed by millions of visitors each year. It is also considered as a central element of Singapore's national identity and a unifying cultural thread.

In order to experience the authentic Singaporean dining experience, the best way is by having a meal at a hawker food center. A typical food centre has about 80 to 100 stalls, providing a wide variety of local food and you will definitely be spoiled for choice.

During your stay in Singapore, it's a must-try to taste some of the "Singapore national dishes" which can be easily found in a typical hawker food center. They are Singapore Chilli Crab, Laksa and Hainanese Chicken Rice.

That's not all. Apart from Singaporean cuisines, Singapore also offers you a wide range of international cuisines ranging from Thai, Korean, Vietnamese to Mongolian food. Whether you're in the mood for a Japanese dinner, a hearty Italian meal, or a casual French bistro experience, everything can be found here.



Singapore chilli crab



Chicken rice



Laksa

Image Courtesy of Singapore Tourism Board

India



ELECON Group Company www.pbl.co.in
(POWER BUILD LIMITED)
(India)

The ELECON Group Company is a mid-size industrial machinery company producing a wide variety of gearboxes up to 22MW, conveyors, elevators, material handling equipment for the mining and wind generator industries as well as Information Technology services. There are 11 group companies with a total of 7,000 employees. The company is located in the outskirts of Ahmadabad in Gujarat state in western India. They have purchased more than 100 Mazak machine tools since the early 1980's, including a YMS-30 installed in 1981 which is still in daily operation.

Recently, the ELECON Group Company has purchased a total of 9 Mazak machine tools such as the HORIZONTAL CENTER NEXUS 4000-II, HORIZONTAL CENTER NEXUS 5000-II, MEGATURN NEXUS 900, three QUICK TURN SMART 200s, two QUICK TURN SMART 300s and a QUICK TURN SMART350 for their new factory. Mazak has a wide variety of machine tools including CNC turning centers, CNC machining centers and CNC multi-tasking machines to meet any production requirement – from heavy-duty machining to high-accuracy machining required for gear components. The customer commented that they highly appreciate Mazak's productivity, quality, reliability, long service life, ease of operation and after sales service and support. They have developed a good relationship with Mazak and are looking forward to an even stronger one in the future.



From left, Mr. Shashwata Dutta - Whole-time Director, Mr. Jayesh K Upadhyay - Assistant General Manager

Malaysia



Wong Engineering Corporation www.wec.com.my/
(Malaysia)

Wong Engineering Corporation, currently housing 60 machines in 22854 m² (246,000 sq ft), was established in 1982 with the aim to provide manufacturing and engineering services and supply chain management to a wide range of industries in Malaysia. The industries covered are telecommunication and network, test equipment, Energy, Oil and Gas and Industrial complex systems.

Out of these 60 machines, there are a total of 8 Mazak machines providing manufacturing solutions to their customers. The machines range from multi-tasking machining centers to CNC turning centers. Thanks to these 8 Mazak machines, they are able to further enhance their portfolio in providing quality and efficient manufacturing services to their customers whom have diversified requirements. It also attracts a new customer database to use their manufacturing services as Mazak machines are able to meet the stringent dimension requirements from their customers.

As a result, Mazak machines not only help in improving the efficiency of manufacturing services enabling a reduced backlog, but also promotes Wong Engineering Corporation as a company providing quality services to their customers.



Mr Wong Ken Chew, Executive Director (Right) and Mr Chang Joo Huat, Technical Director (Left) with latest addition, the INTEGREX j-200.



Thailand



SAMART KASETYON LTD., PART. www.smkythailand.com/
(Thailand)

SAMART KASETYON LTD., PART. is an agricultural machinery manufacturer established in 1985 by Mr. Samart Leethirananon, the company president. The company covers all facets of production from design, machining, assembly as well as distribution. In 2011, the company received the top "The Best Innovation of Technology" award. This award is presented by the Thai government for companies using the most advanced technology. The production plant is located in Hankha, Chainat Province, in central Thailand. In their production facility, the company has a large number of Mazak machine tools including an INTEGREX e-1060 V8 II, an INTEGREX 400 IV S and many others in order to efficiently produce their components. The company has recently purchased a 3D FABRI GEAR 300 laser processing machine.



Mr. Samart Leethirananon, President of Samart Kasetyon Ltd. is in the black/green shirt to the right of center and Ms. Srinaul Leethirananon, Marketing Manager his right.

Vietnam



Dong An Polytechnic(DAP) dongan.edu.vn/
(Vietnam)

Dong An Polytechnic (DAP) was one of the pioneers to provide technical training to students to upgrade the capabilities for high-tech industries that will be contributing to the economy of Vietnam. Established in 2008, it aims to develop and cater to high quality training by equipping the school with modern teaching equipment, sophisticated laboratories and workshops and a R&D center to facilitate the current 21 training programs.

In addition, DAP also invested in Mazak machines in 2011, namely the INTEGREX 100-IV ST, QUIC TURN NEXUS, VERTICAL CENTER NEXUS & HORIZONTAL CENTER NEXUS 6800 to provide hands on training in preparation for the various industries such as Mold & Die, Oil & Gas, etc. Furthermore, Mazak engineers also provided strong application and training support to transfer the knowledge to the lecturers before conducting lessons. This results in the students having the necessary skills to meet the requirements of the growing industry in Vietnam.

Realizing the effectiveness of Mazak machines, the school plans to continue in investing in new machines that are more related to the Oil & Gas and Automobile industries to ensure that students have access to the knowledge and skills required by these high-technology industries.



Dong An Polytechnic exterior



Automated industrial machine "3-axis (XYZ) robot" is a main product of Synergy System.



Mr. Yoshinobu Uemura, President

We aim for 100% in-house production with Mazak machines

Located in the verdant countryside near the Aso Mountains in southern Japan, Synergy System is a machinery and equipment manufacturer with an exceptional track record in supplying items for the production of digital cameras. As the equipment has to be updated in accordance with the frequent releases of new products, the company needs capacity to respond quickly. A strong point of Synergy System is the high in-house production ratio, which is achieved based on its technology in machinery, electrical and software design and supported by the products of Yamazaki Mazak.

"I wanted independent engineers who had different areas of specialities to get together

and combine their efforts to realize consistent manufacturing," said Mr. Yoshinobu Uemura, who is the president and also works actively as a mechanical designer, when explaining his intention of using the word "Synergy" in the company name.

The company was founded as a private business in 1999. In 2004, Synergy System was established as a limited company, and the Shichijo Plant was also opened at the same time. The Ueki Plant was opened in 2006, and the organization was converted into a stock company in 2008. All the functions of the existing plants were transferred to the newly-built Kikuchi Plant in 2010, which produced a synergistic effect to increase the

sales by 210% over the previous year. Synergy System is thus further improving its performance.

The main product at present is an orthogonal 3-axis robot for production lines. As described below, its components are processed using various machines of Yamazaki Mazak. The orthogonal 3-axis robot of Synergy System has gained such a high reputation that it is exclusively used in the main process of digital camera production by major precision equipment manufacturers. "We are a young company, so we did not try to overdo things, but aimed at a product that fits in the palm of your hand," said the president, explaining why they entered the market of equipment for



Mr. Uemura (center of the front row) and employees.

manufacturing digital cameras.

Designed for exceptional value from the planning stage

Synergy System has technical strength in mechanical processing and assembly and wiring, and currently approximately 90% of all machined parts are produced in-house. The company is committed to increasing the ratio in order to realize "Designed for exceptional value from the planning stage" according to Mr. Uemura.

The efforts to reach the goal are assisted by Mazak products. In fact, Yamazaki Mazak has supplied all of the production facilities used in the Kikuchi Plant, where two multi-tasking

machines and seven vertical machining centers are installed in a line. Synergy System has even painted the walls white, the floor orange and the pillars black to coordinate the interior to the colors of the Mazak machines.

"Once we have mastered one machine, we can learn to operate all NC machines in a short time and also eliminate the errors that could be caused by differences in operation. The improvement of quality in processing depends on the machine capacity. In that sense, the conversational MAZATROL programming, which can be handled even by beginners, is an advantage that other companies do not offer," said Mr. Uemura, explaining the key factor in introducing Mazak machines. Before introducing the Mazak machines, Synergy System outsourced mechanical processing to partner firms. Accordingly, the company had to discuss delivery time, cost and quality with them each time. "We once failed to deliver products to the customer by the due date because of this situation," mentioned the president. Mr. Uemura also comments that the introduction has enabled not only quick response to delivery time and cost but also "establishment of a system to check the processing accuracy of individual parts from the development phase and feed back information on the optimal configurations of the parts to the design staff." Thanks to these machines, the designers have also learned processing technology, and now there are much fewer diagrams of shapes which are too complicated

to process.

MAZATROL programming can be also used for the training of new employees

Yamazaki Mazak conversational programming helps reduce work time in the processing of single items as well as mass-production items. Synergy System has recently focused on further improvement of efficiency using the MAZATROL smart CAM and a 3D CAD/CAM system. In particular, the MAZATROL smart CAM is also used for the training of new employees. "The machine reduces burden in the training, motivates those who are learning about processing and replaces their anxiety with confidence. As another advantage, the programs can be easily edited when the trainees have gotten used to handling it," stated Mr. Uemura. Coming from the field of design, his interest also extends to the field of software. In its efforts to reach the goal of 100% in-house production of machined parts, which has been set to "bring the necessary speed and quality to the development of new units, which is required of a development-oriented company that can make good proposals," Synergy System has lifted up the ratio to nearly 90% so far. To start internal sheet-metal processing, which is currently outsourced to its partner firms, the company plans to introduce a laser processing machine. The style of Yamazaki Mazak is regarded as a model on both the hardware and software aspects, and seems to be giving a major synergistic effect to the Synergy System, as it looks forward to the next two years.



[Corporate profile]
Home office: Yasunaga, Mashiki-machi, Kamimashiki-gun, Kumamoto Prefecture
Plant: 1614 Naga, Shisui-machi, Kikuchi-shi, Kumamoto Prefecture
Number of employees: 48
www.synergy-s.co.jp



The Kikuchi Plant has all of its pillars, walls and floors coordinated with the colors of the Mazak machines.

The Latest Productivity Tools from Mazak

■ Compact multi-tasking machine

Designed for machining small complex parts such as bone prosthetics in a single setup



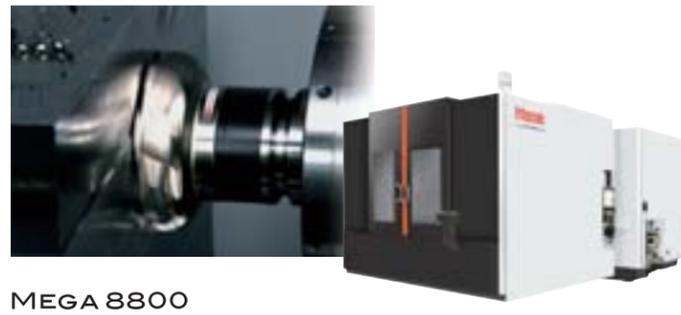
INTEGREX i - 100ST

Newest member of the INTEGREX i series with a 6" chuck. Done-in-One processing for unsurpassed productivity

Max. machining diameter (upper / lower turret)	ø500/400 mm (ø19.69"/15.75")
Max. machining length	854 mm (33.62")
Main / Second spindle (30 min. rating)	6000 rpm, 11 kW (15 HP)
Milling spindle (30 min. rating)	12000 rpm, 7.5 kW (10 HP)
Tool storage capacity	36, 72 (option)

■ Horizontal machining center for heavy-duty machining

Improved productivity for the machining of aerospace alloys



MEGA 8800

The MEGA 8800, equipped with a powerful 4000 rpm integral spindle / motor spindle with output of 85 kW (113 HP), Max. torque of 1249 N·m (921 ft-lbs) is designed for heavy-duty machining of difficult to cut workpiece materials.

Pallet size	800×800 mm (31.5"×31.5")
Max. workpiece size	ø1450×1450 mm (ø57.09"×57.09")
Travel (X / Y / Z-axis)	1400/1200/1350 mm (55.12"/47.24"/53.15")
Spindle (15 % ED)	4000 rpm, 85 kW(113 HP)

■ Machining center with unique turn-face headstock

Designed for the machining of large valve bodies used in the oil industry and other workpieces that are difficult to turn



ORBITEC 20

The ORBITEC 20 offers a groundbreaking approach to creating turned machining features on large, odd shaped parts, which are not conducive to normal turning operations. Large valves which require turning, threading, and tapered boring are ideal components to be processed on the ORBITEC 20.

Pallet size	630×630 mm (24.8"×24.8")
Max. workpiece size	ø1050×1300 mm (ø41.34"×51.18")
Travel (U / V / Z / X-axis)	600/600/1230/300 mm (23.62"/23.62"/48.43"/11.81")
Spindle (30 min. rating)	600 rpm, 30 kW(40 HP)

■ Ultra high-accuracy, high-speed horizontal machining center

Designed for components that require ultra-high accuracy machining



μ - 8800

Standard equipment: positioning accuracy 8 times better than ISO. Designed for high-accuracy machining over extended periods of operation thanks to high rigidity construction, a high-response feed system and counter measures to prevent thermal distortion.

Pallet size	800×800 mm (31.5"×31.5")
Max. workpiece size	ø1450×1450 mm (ø57.09"×57.09")
Travel (X / Y / Z-axis)	1400/1200/1350 mm (55.12"/47.24"/53.15")
Spindle (30 min. rating)	10000 rpm, 37 kW(50 HP)

■ Advanced machine tools



HORIZONTAL CENTER NEXUS 4000-III

Increased cutting performance thanks to high-rigidity bed and column. Optional spindle specifications provide efficient machining performance for a wide variety of workpiece materials.

Pallet size	400×400 mm (15.75"×15.75")
Max. workpiece size	ø630×900 mm (ø24.8"×35.43")
Travel (X / Y / Z-axis)	560/640/640 mm (22.05" / 25.2" / 25.2")
Spindle (40 % ED)	12000 rpm, 18.5 kW (24.8 HP)



VARIAXIS i-500

The newest 5-axis vertical machining center equipped with ø500 mm (ø19.69") table designed for unsurpassed versatility.

Table size	ø500×400 mm (ø19.69"×15.75")
Travel (X / Y / Z, A / C-axis)	350/550/510 mm (13.78"/21.65"/20.08"), -120--+30°/360°
Spindle (40 % ED)	12000 rpm, 22 kW (30 HP)
Tool shank / tool storage capacity	No. 40 / 30



VARIAXIS i-800

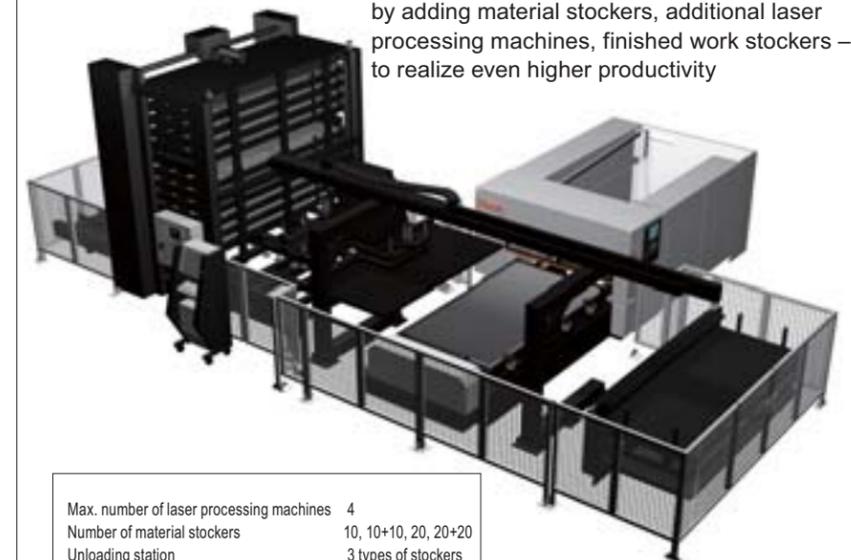
The newest 5-axis vertical machining center equipped with high-rigidity ø800 mm (ø31.5") table for the heavy-duty machining of large, heavy workpieces.

Table size	ø800×630 mm (ø31.5"×24.8")
Travel (X / Y / Z, A / C-axis)	730/850/560mm (28.74"/33.46"/22.05"), -120--+30°/360°
Spindle (40 % ED)	10000 rpm, 37 kW (50 HP)
Tool shank / tool storage capacity	No. 50 / 30

■ Laser EXTENSIBLE MANUFACTURING CELL

EXTENSIBLE MANUFACTURING CELL

Latest version of the Mazak Laser FMS
Designed for convenient system expansion – by adding material stockers, additional laser processing machines, finished work stockers – to realize even higher productivity



Max. number of laser processing machines	4
Number of material stockers	10, 10+10, 20, 20+20
Unloading station	3 types of stockers

● JIMTOF 2012



Mazak's booth was crowded with visitors every day at JIMTOF 2012.

At the JIMTOF 2012 machine tool exhibition, the Yamazaki Mazak booth had the main theme of "MAKING TOMORROW with Mazak," and exhibited 22 machine tools in total, consisting of 18 machines manufactured in Japan and 2 developed and produced in the US, and 2 developed and produced in Singapore. The activities of Yamazaki Mazak based on its global development and production system were also presented. We received more visitors than originally expected at JIMTOF again this year. This would not have happened without your support, and we would like to take this opportunity to express our gratitude.



ORBITEC 20 from U.S.A

● IMTS 2012

The Mazak corporation booth at IMTS 2012 had the main theme of "Discover more with Mazak," and exhibited 22 machine tools in total, consisting of 12 machines manufactured in Japan, 8 developed and produced in the US plant and 2 manufactured in the Singapore plant. The activities of Yamazaki Mazak based on its global development and production system were also presented. We received more visitors than originally expected at IMTS again this year.



Mazak's booth attracted many visitors every day.



The Dalian Plant in China will become fully operational in spring 2013.

● New Dalian Plant in China scheduled to start operation in spring 2013.

In China, Mazak started operation of the Ningxia Little Giant Machine Tool Co., Ltd. (Little Giant Plant), in Yinchuan, Ningxia Hui Autonomous Region in 2000. Currently, the construction of the second Chinese production

plant is well underway in Dalian to start full operation from spring 2013 under the name of Yamazaki Mazak Machine Tool (Liaoning) Co., Ltd. The plant will become the 10th production base for Yamazaki Mazak in the world.

In addition to the production of machine tools, the construction of this new plant aims at further improvement of before and after-sales service and support by having new facilities such as a spindle repair department.

● 2MB Solar Power Generation System at MINOKAMO

YAMAZAKI MAZAK has been an ISO 14000 certified company in Japan for many years. Since minimizing our impact on the environment is a high priority, construction of a solar electrical power generation system was started on the MINOKAMO plant grounds in December 2012. It's output will be 2.2 million kWh, equivalent

to the power consumption of 600 households and will be input into the local electrical power grid. This system will be located on a land area of 32,000 m² (344,400 sq ft) and is scheduled to begin generation of emission-free power in July 2013.



(Architect's rendering)