

# CYBER WORLD

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Dalian (China)



Yamazaki Mazak is a global company in terms of both marketing and locations of production facilities. This is the fifth in the series in which we introduce some of the history and culture of the countries where the Mazak production plants are located. This issue introduces the areas in China where Yamazaki Mazak Machine Tool (Liaoning) Co.,Ltd. and Ningxia Little Giant Machine Tool Co., Ltd. are located.

# MAZAK around the World



NINGXIA LITTLE GIANT MACHINE TOOL CO.,LTD.



YAMAZAKI MAZAK MACHINE TOOL (LIAONING)CO.,LTD.



Xinghai Square in Dalian



Female Mounted Police

## The newest Mazak cyber factory is located in china

Mazak's newest production facility is located in Dalian China on the southernmost tip of the Liaodong Peninsula. 6.99 million people live in this city which faces the Yellow Sea. This area has been the door to Northeastern China and has been called the "Pearl of the North" for many years. Dalian is a

seaside city and is a summer retreat for people from all over China. Since it is blessed with a mild climate year round, it is an important tourist destination as well. In September 2011, the "World Economic Forum" (Davos Forum) was held in Dalian due to its rising economic prominence.

## Large number of public squares

Dalian has a long history which gives the area a unique personality and character. Many city squares are found throughout the city, including Xinghai Square which covers 176 hectares (435 acres) the largest in Asia. The "People's Square" is located in the center of the city and has government buildings on all sides. It has a semi-circular green belt of rich

grass with a surrounding corridor used by many for jogging paths. A unique feature of this square is that it is patrolled by the first female mounted police in China. The sight of policewomen mounted on horses walking with great dignity as they make their rounds always draws a large number of tourists to this popular municipal square.



Mazak production plant in China

## NINGXIA LITTLE GIANT MACHINE TOOL CO.,LTD.



NINGXIA LITTLE GIANT MACHINE TOOL CO.,LTD. in 2005

NINGXIA LITTLE GIANT MACHINE TOOL CO.,LTD. after completion of the 3<sup>rd</sup> expansion in 2013

### The first Mazak cyber factory in China

The first Mazak cyber factory in China is the Ningxia Little Giant factory which started operation in 2000. The name Little Giant signifies that the design concept is to be able to produce a large number of machine tools with a small number of employees.

The machine tools produced at this factory all feature high-speed, high-precision, network-ready capability, intelligent functions and designed with environmental considerations. As a result, these machines are now working in the automotive, aerospace, electrical machinery, electronic, die and mold, computer and general machinery industries throughout China. The factory is backed up by an extensive support network of technology centers and sales offices that provides extensive before and after sales service and support to customers on a local basis.



Latest machine tools

#### Staff interview



#### Improving processes

**Guan Jiangying** (Assembly Plant), from Wei Nan, Shanxi Province, Little Giant employee for 10 Years

I am responsible for the accuracy adjustment of machining centers in the final machine assembly area. In order to make high-accuracy machines, I have to ensure both static accuracy and dynamic accuracy. To do so, I am always trying to improve how I perform my job to realize higher efficiency. Additionally, my responsibilities include the educating of new employees.



#### Training employees by example

**He Yanbin** (Assembly Plant), from Lan Zhou, Gansu Province, Little Giant employee for 8 years

I am in charge of the assembly of CNC turning centers. To produce high-quality machine tools, concentration and precision are required which I am always trying to improve. I give my best efforts to providing a good example for new employees to follow.

Mazak production plant in China

## YAMAZAKI MAZAK MACHINE TOOL (LIAONING) CO,LTD.



Liaoning factory entrance

### The 10<sup>th</sup> Mazak cyber factory round the world

Following the opening of the Ningxia Little Giant plant in 2000, the Mazak Liaoning plant, was developed in stages. Production at this plant is performed to the same high standards and under the same quality control system as all Mazak factories around the world.

In this new factory, a total of six models of the Quick Turn Smart turning center and Vertical Center Smart machining center are produced using state-of-the art equipment. The current production output is 30 units per month but will be increased to 100 units by the end of the year.



Grand opening (May.17<sup>th</sup>, 2013)



Advanced Cyber Factory (Assembly area)

#### Staff interview



#### A sense of achievement

**Guo Yuxuan** (Machining Group), graduated from Shenyang Ligong University, Mazak Liaoning employee for 2 Years

Though the experience of job training for over a year in Japan, I have learned advanced knowledge and technology. I am always aware of "Making high quality products to respond to customer's confidence" While operating the μ8800, high accuracy horizontal machining center, I am always aware of the importance of making high quality components to meet customers' requirements. I am proud of my job and feel a sense of achievement when looking at the finished parts.



#### Importance of Quality

**Cao Keyun** (Assembly Group), graduated from The North East University, Mazak Liaoning employee for 1 Year

I learned assembling skills from a highly skilled Japanese engineer at the Mazak Ningxia Little Giant factory after entering Mazak. At that time, I was impressed by his words "A machine tool without quality is not a machine tool". When I am assembling machines, I pay full attention to satisfy Mazak high-accuracy standards. By improving my knowledge and skills, I would like contribute to the manufacture of Mazak's advanced machine tools.



Production line with vertical machining centers manufactured by LG Mazak



Shanghai Huida Manufacturing Co., Ltd.



Processing by Variaxis multiple-surface, 5-axis machining center



Automotive component



Mr. Bao Jiasheng, General Manager

**Quick and accurate parts supply**

Shanghai Huida Manufacturing currently operates 10 Mazak machines manufactured in Japan, including five FH6000 machining centers and three VARIAXIS multiple-surface, 5-axis machining centers, as well as one HORIZONTAL CENTER NEXUS 6000 and one VARIAXIS 630-5X II. In addition, three VERTICAL CENTER NEXUS 510C II vertical machining centers manufactured by Ningxia Little Giant Machine Tool have been installed. The general manager explained that they employ Mazak machine tools because they exactly meet the company production requirements. "Parts production involving multi-angle, multi-surface processing, as in the case for steering housings, is handled by the VARIAXIS 630-5X II in a stable and precise way. We are also satisfied with the exceptional after-sales services, such as quick and accurate supply of parts."

**Pursuing the production of parts that meet strict quality standards**

Shanghai Huida Manufacturing Co., Ltd. was founded in China in May 1998 to domestically produce parts to be delivered to Shanghai GM (General Motors). It has set up alliances with world-renowned automobile parts buyers and built international partnerships since 2007. The company manufactures key components for engines, steering assemblies, transmissions and engine mounts. The first Mazak machine tool, a FH6000 horizontal machining center was installed at Shanghai Huida Manufacturing in 2003.



Horizontal machining centers installed in 2003

**An array of 13 Mazak machine tools in the plant**

To ensure safety, the components used in cars require extremely high precision. Automotive parts manufacturers are accordingly pursuing the production of components that conform to the strict quality standards set by car manufacturers.

In this context, Shanghai Huida Manufacturing Co., Ltd. was selected as the priority supplier by Shanghai GM and as the strategic supplier in China by Delphi Automotive LLP. According to Mr. Bao Jiasheng, General Manager of the company, it develops and processes components of engines, steering assemblies and transmissions, which are the three core technologies in the automotive industry, for such major companies. This demonstrates the excellent machine processing capacity and high efficiency of the company. As stated by Mr. Bao, Shanghai Huida Manufacturing adopts the quality policies of "concentration on people, straightforward negotiations with customers, continuous improvement and pursuit of excellence" to achieve the goal of "being a highly-specialized, integrated and global company that can eliminate defective items." Their efforts in production to achieve this goal are supported by a total of 13 Mazak machine tools. The general manager mentioned, "We keep purchasing Mazak machines because they can meet our requirements to conduct stable and high-precision processing and Yamazaki Mazak also provides high-quality before and after-sales service and support."



3D FABRI GEAR 220 and employees



Mr. Masanori Motoda, Chief Representative in China (right)  
Mr. Tomohiro Hamanaka, General Manager (left)

**Cost reduction by 30% without quality loss**

DAIKYO Machinery Shandong Co., Ltd. was established in Jining, Shandong Province, China as a joint venture of Daikyo Corporation in Japan and Komatsu (China) Ltd. in November 2007 in order to meet the demand for construction machinery in China, which has been growing rapidly in recent years. The company is mainly involved in the production of driver's cabs for construction machinery.



DAIKYO Machinery Shandong Co., Ltd.

**Production capacity increased nearly seven times in five years**

Hi-Tech Park of Jining City, home to DAIKYO Machinery Shandong, is known as a national hub for China's construction machinery industry and has attracted major companies in relevant sectors from all over China as well as other countries and produces 5,000 large bulldozers, 10,000 hydraulic shovels, 20,000 large trucks every year. Gaoxin is a major

supply depot of industrial machinery. DAIKYO Machinery Shandong has completed the third phase of its construction. With the phased increase in its production capacity, the number of units produced annually dramatically grew from 6,000 in 2007 to 40,000 at present. The increase in the production units by seven times in five years was realized with the introduction of large equipment including 1,500-ton hydraulic presses and welding robots, an automatic powder coating line, and a Mazak 3D FABRI GEAR 220, which performs 3D laser cutting of long pipes and structural material. How can the cost be reduced without lowering quality? An answer to this question was Mazak's laser processing machine, which was recommended by Komatsu, a customer and shareholder of the company.

**Improved productivity enhanced by a "small pipe processing factory"**

The 3D FABRI GEAR 220 introduced by DAIKYO Machinery Shandong in 2011 changed its production process dramatically. The equipment is characterized by its ability to complete all of the loading, unloading, tapping and cutting of materials automatically. With the full-scale operation of



Finished construction machinery cabs

the machine, also known as a "small pipe processing factory," the troublesome work that previously required several machines including a crane for transport of materials, as well as cutting equipment and a press plus several operators, is now finished by only one unit. The introduction of the 3D FABRI GEAR 220 provided production automation, and made it possible for DAIKYO Machinery Shandong to realize improved productivity, which had been a goal of the company for some time. Mr. Tomohiro Hamanaka, General Manager proudly said, "Using the same machines as Komatsu, we can now produce products with higher efficiency. We have successfully reduced cost by about 30% with no impact on quality." DAIKYO Machinery Shandong currently produces 80 sets of cabs each day, more than half of which use pipes processed by the Mazak Fabri Gear. It is obvious that this machine is playing an essential role in supporting the local construction machinery industry.



MES version of cyber factory that integrates all machines and systems into a network

## Trying to achieve innovation with an original cyber factory

Aluminum cell phone straps machined by 5-axis processing are displayed in the exhibition space of MES, which engages in precision parts processing. This original item is presented exclusively to the companies that have ordered trial production to MES. The production is performed by Mazak machines.

MES stands for mechanics, electronics and system. The company has high technical capabilities for parts processing, design and production of equipment, along with software development, thus responding to customer demands in a comprehensive manner. MES was founded in Yanagawa City, Fukuoka Prefecture in 1991 with the goal to be a manufacturer of industrial robots and other production equipment. In 1993, it improved its processing facilities and launched full-scale operation of parts processing. The home office/plant was

moved to Ozu-machi, Kumamoto Prefecture in 1999. Using this opportunity, MES entered the business to design and manufacture wafer dryers and other equipment for semi-conductor production. The company moved again in 2005 to the current location.

Mr. Shigenobu Omagari, President said, "While our jobs were once divided evenly into manufacturing of production equipment and processing of mechanical parts, almost all of the work now is the processing of mechanical parts." The change in the business was an inevitable result of the sharp decline in orders under the prolonged recession caused by the strong Yen.

### Company president saw the capability of the Mazatrol

"We were forced to decide whether to keep going forward or withdraw from the business, and reached the conclusion after

much debate that we should place our hope of comeback on the Mazak V-515 vertical machining center. The choice turned out to be right - we decided to purchase a V-414 in the following year. The high performance of the Mazatrol CNC system was the key to our decision" commented Mr. Omagari. As an experienced engineer himself, the president easily saw the extensive capability of the Mazatrol.

MES continued to introduce Mazak machine tools one by one, and established a production line composed of the V-655, FJV-200, FJV-250, FJV-50/80 and VARIAXIS 500-5X II machining centers. Based on the idea that parts processing is the driving force for the company to expand sales, it began the operation of the MES version of a "cyber factory," which integrates all of the machines and systems, including Mazak machines, in the home plant into a computer network.



Cell phone strap machined by 5-axis processing



Mr. Yohiro Omagari, Plant Manager, with VARIAXIS 500-5X II



Mr. Shigenobu Omagari, President (second from left on first row) with employees



[Company profile]  
Home office and plant: 996-1 Futa, Nishihara-mura, Aso-gun, Kumamoto Prefecture  
Number of employees: 24  
www.kk-mes.jp

Home Office

The MES version of a cyber factory is also significant for maintenance of current customers and development of new ones based on the technologies to improve existing products, according to Mr. Omagari. Due to its successful use of information technology, the factory is receiving intense interest from customers and competitors. Through these initiatives, the company is promoting the "MES innovation plan," which aims to "place emphasis on complicated parts processing such as 5-axis processing and, at the same time, conduct research on anodized aluminum and develop a system to internally perform processing and surface treatment of this material." Because MES believes that integrated manufacturing and introduction of surface treatment can boost the improvement of the production system for customer development, it has restructured its businesses into three major sectors - parts processing, surface treatment and mechatronics (design and production of machines), and attaches importance to the development of new customers. Mainly using VARIAXIS as well as 3D-CAM Mastercam X Mill-3, MES creates aluminum figures to publicize its technical capabilities.

### Responding to more complicated die machining and quick delivery

As a result, Mazak machines and the cyber factory seem to be making great contributions not only to improvement of productivity but also to management innovation of the company. Mr. Yohiro Omagari, Plant Manager and also son of the president, launched the MES version of a cyber factory from scratch. He appreciates Mazak machines, saying "We should learn

from the goal to keep moving forward and always try to develop models with new ideas and functions." He considers that the introduction of the 5-axis machining centers and 3D CAD/CAM system has enabled more complicated die machining and quick delivery, which gave the company momentum for handling high value-added products, as well as opportunities to find new customers.



Mr. Shigenobu Omagari (left), president and Mr. Yohiro Omagari, plant manager



Multi-tasking CNC turning center MULTIPLEX 6200-IIY with Gantry Loader System



Exhibition area with the winning trophy and parts



Home Office

[Company profile]  
Home office and plant: 936-8 Mitarai, Mino City,  
Gifu Prefecture  
Number of employees: 7  
www.metalworking.jp



Mr. Takeshi Yamada, President

## First victory in the 2nd Koma Taisen (Spinning top competition)

The diameter must be 20 mm (0.79") or less — that is the only requirement for the specifications of spinning tops (koma) to join the Koma Taisen (Spinning top competitions). There is no restriction on the materials, weight or shape. Two tops fight on a ring made of chemical wood with a diameter of 250 mm (9.84") and a concavity of R700 mm (27.56"). The winner is the one that flips the other out of the ring or keeps spinning longer than the other. The champion among 200 participating companies in the second event in February this year was Shion Inc. (Mino City, Gifu Prefecture, represented by Mr. Takeshi Yamada, President), a company that processes precision aerospace components and machine tool components.

The president decided to join the competition because he was impressed

with a newspaper article reporting the first event held last year. He thought that such an event would lift the spirit of the whole company like that of himself. His idea was developed into internal competitions to prepare for the national one. "Unlike jobs for the company, which require production exactly as in the design, employees had an opportunity to try the entire process from brainstorming to design, production. I guess many employees found the joy of manufacturing again" said Mr. Yamada, looking back at the days of trial and error aiming for the national competition.

### Good opportunity to experience the joy of manufacturing

The spinning top which won the national competition had been selected from more than 100 prototypes. Through the internal competitions and preliminary matches in the Nagoya Tournament regional round,

Shion further improved the top to eventually produce a model with a diameter of 19.8 mm (0.78") and weight of 60.9 g (2.1 oz) as well as a shaft with a diameter of 4.0 mm (0.16"). The top was named ZION, the origin of the company name. With a heavy alloy body, duralumin shaft and tungsten tip, the top was a "complex device." Explaining their efforts in the design, Mr. Yamada said "We made the top heavy and lowered the center of gravity. A vertical hole was made to reduce the weight of the central part, and a material with a smooth surface was used for the part having contact with the ring to avoid friction with the ring surface." In terms of processing, "We took great pains to create a shape that makes the heavy top keep spinning as long as possible." Shion made full use of Yamazaki Mazak's CNC turning center MULTIPLEX 6200-IIY because the

president places trust in its high accuracy and ease to align in phase between the first and second processes. He commented "We attempted to apply 3-axis (X, Z and C) simultaneous small-diameter end milling for the first time."

The uniqueness of ZION is not only in the appearance but also in the 0.05 mm (0.002") coating applied to the outer perimeter. "We saw a top with rubber on the outer perimeter using a tactic to spin it in the opposite direction to receive power from the opponent when touching it and increase the rotation speed. The top kept winning and we took a clue from it. The coating does not remove the momentum of the opponent but has the effect of stopping the movement," said Mr. Yamada. As there is no restriction other than the diameter of 20 mm (0.79") or less, there are limitless ways to win the battle. The coating is one of them. Such ideas on both hardware and software can be obtained only by those who are deeply involved in manufacturing. That is why Mr. Yamada involved all employees in the competition and gave them an opportunity to experience the joy of manufacturing.

### Helping employees use their initiative

"Work based on a given flowchart and with defined programs, machines and tools is like following a path paved by others. It is easy but boring." The experience of Mr. Yamada in a precision parts plant where he used to work was useful as a bad example when he inherited the factory run by his father. With a hope that employees enjoy manufacturing and feel proud of their work, the president actively introduced Mazak's multi-tasking machines and promoted employee training using them. He emphasizes the advantage of employing user-friendly Mazak machines as the main equipment. "Engagement in the whole procedure from selection of materials to setup, processing and inspection with help from automatic programs provides employees with confidence that they have produced the parts. In case of failure, it is their responsibility and they have a good opportunity to learn through reporting to their superiors and identifying the causes." "It is better to light one candle than curse the darkness." This phrase from the Bible is written on the business card of Mr. Yamada. It must also represent Shion's approach to manufacturing.



Some of the 100 prototypes



ZION, a spinning top with a diameter of 19.8 mm, and its duralumin shaft

# The Latest Productivity Tools from Mazak

## ● Automation for worksheets

Automation incorporating a 10 pallet stocker



### OPTIPLEX 3015 COMPACT MANUFACTURING CELL

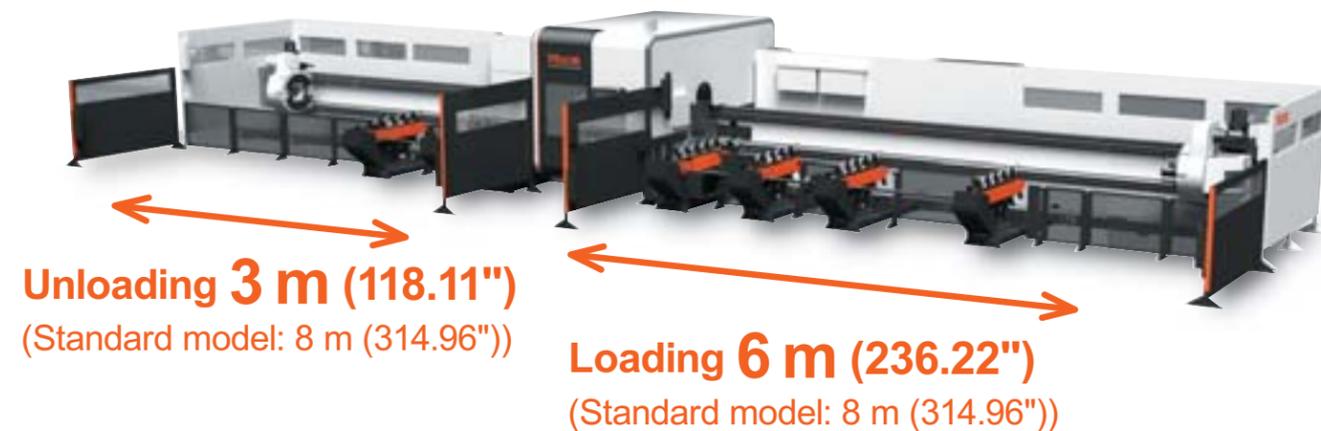
Designed for laser cutting automation thanks to the 10 level stocker. Cycle time for high-mix low-volume production is significantly reduced.

#### Productivity

- A variety of pallets can be prepared according to the type and size of material since the system automatically loads/unloads the worksheets from each pallet.
- The number of micro-joints can be minimized since the finished worksheet is unloaded to the pallet which returns to the stocker. The time required for finishing can be reduced as well.

## ● Automation for pipe material

Floor space is reduced 32 % when compared with standard model



### 3D FABRI GEAR 220 MkII

Unloading 3 m (118.11") / Loading 6 m (236.22") specification

A new version of the 3D FABRI GEAR for shorter finished workpieces up to 3m (118.11") long is now available. As a result, the floor space requirement is considerably smaller when compared to the standard model.

## ● Newest member of the "NEXUS series", designed for large workpieces



### Vertical CNC turning center MEGATURN NEXUS 1600/1600M

Designed to efficiently machine large workpieces such as those found in the construction machinery, industrial machinery and jet engine industries with its high-torque, high-power spindle and high-rigidity 12 drum turret. The MEGATURN NEXUS 1600M which can mount rotary tools on the turret is also available.

MEGATURN NEXUS 1600 specifications

Table size	ø1250 mm (ø49.21")
Travel (X / Z)	1140 / 905 mm (44.88" / 35.63")
Tool storage capacity	12 (23 tools:with optional ATC and magazine)
Floor space	4140 mm × 3678 mm (162.99"×144.8")



### Large horizontal machining center HORIZONTAL CENTER NEXUS 12800-II

Large horizontal machining center designed for the high-efficiency machining of large, heavy, large workpieces such as those found in the construction machinery and industrial machinery industries. A high torque 6000 rpm spindle specification is optionally available for difficult to machine materials. By incorporating the HORIZONTAL CENTER NEXUS 12800-II in a Pallettech, even higher productivity can be realized by unmanned operation.

HORIZONTAL CENTER NEXUS 12800-II specifications

Pallet size	1250 mm × 1250 mm (49.21"×49.21")
Travel (X / Y / Z)	2200 / 1600 / 1850 mm (86.61" / 62.99" / 72.83")
Tool storage capacity	80 , *120 , *160 , *180 , *240 , *348
Floor space	7047 mm × 10826 mm (277.44"×426.22")

\*option

## ● New system installed at Yamazaki Mazak Oguchi cyber factory (Japan)

A new Pallettech System has been installed at the Yamazaki Mazak Oguchi Plant in Japan. This system consists of 3 HORIZONTAL CENTER NEXUS 12800-II machining centers, a pallet stocker with storage capacity of 17 pallets and 2 robots. This system is designed for unsurpassed productivity and efficiency thanks to its capability to perform unmanned machining over extended periods of operation. This system will be used for the production of large components of horizontal machining centers.



New automation system for the machining of large components (Oguchi factory, Japan)

## HRH Prince of Wales visited Yamazaki Mazak UK and showed interest in the development of young engineers and vocational training



His Royal Highness, The Prince of Wales, and machine operators (upper and lower photographs)

European Technology Center

His Royal Highness Prince Charles visited Yamazaki Mazak U.K. on June 6, 2013. With a keen interest in the development of young engineers to play active roles in industry, as well as vocational training, the Prince selected the company as a place to visit. His Royal Highness and his delegation saw the Solutions Gallery which exhibits a wide range of parts processed by Mazak machines, and then visited the European Technology Center to see the VARIAXIS i-700 processing artificial knee joints and experience Mazak's state-of-the-art technology. In the plant, the Prince spoke to young employees and apprentices (trainees from local colleges and technical institutes)



Visit to manufacturing facility

and had conversations about acquisition of skills to operate machine tools.

**Strongly impressed with Mazak's initiatives**  
The advance of Yamazaki Mazak to the UK

started in 1984 with the discussion about an invitation of factories to the country in the summit meeting between then UK Prime Minister Thatcher and then Japanese Prime Minister Nakasone. In response, Mazak completed its production plant in Worcester in 1987. Since the start of operation, 85% of its products are exported to other European countries. The UK subsidiary has been awarded the Queen's Award for Enterprise twice for its contribution to exports from the country, in 1992 and in 2007. His Royal Highness was also thankful that a company with highly advanced technology like Yamazaki Mazak continued investment in the UK. Marcus Burton, Group Managing Director of Yamazaki Mazak Europe, showed his respect to His Royal Highness's in-depth knowledge, stating "The Prince was very impressed by our state-of-the-art manufacturing facility and the commitment shown to developing young engineering talent."



UK plant staff with the Queen's Award for Enterprise in 2007



From left, Hiroyuki Yamazaki, Deputy Managing Director of Yamazaki Mazak Europe, His Royal Highness, The Prince of Wales, and Marcus Burton, Group Managing Director Yamazaki Mazak Europe

## MAZAK PEOPLE

MEET MAZAK No. 15

### Takayuki Nishira

Group Leader, Small & Medium CNC Turning Centers Design  
Minokamo Product 2, Engineering  
Yamazaki Mazak Minokamo Corporation, Minokamo Plant 2  
March 1998 Graduated from the Kanazawa Institute of Technology Graduate School  
April 1998 Joined Yamazaki Mazak



Takayuki Nishira discussing solar car racing

## Finished second place in international solar car race

Mr. Takayuki Nishira, who is in charge of mechanical design of special items, is also a solar car driver. While he was in college, he won a race at the Suzuka Circuit in 1997, and finished second in the FIA Solar Cup in the same year. As the vehicle relies only on solar power, the balance between battery charge and discharge is the decisive factor in the race. His skill in driving with attention to energy saving seems to be helping him in his manufacturing job at the company as well.



Solar car that won race in 1997

### Victory achieved with an original device for visualization

Mr. Nishira was introduced to solar car racing when he was studying efficiency analysis of solar cells as his research subject at university. To put theory into practice, he started to participate in races. Key elements for winning a race are wide ranging, from hardware aspects such as the car body and solar panel and software aspects such as power control and driving technique, to external factors including the weather and road surface condition on the day of the race. Mr. Nishira, who majored in electrical engineering, also served as an engineer in charge of energy management of solar cells. He designed an indicator display to help control the charge and discharge of solar cells and secondary cells in an optimal manner. He recalls that he won the race in 1997 because the information obtained from the visualization display was used effectively. In the race, Mr. Nishira's car ran 78 laps of a course approximately 5.8 km (3.6 mi.) long in eight



Podium at 1997 race



Coaching younger staff as Subgroup Leader

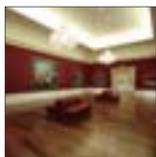
hours to win. While the runner-up and the third-place finisher were two and four laps behind the winner respectively, he gained huge confidence because the third-place finisher was a major automobile manufacturer's factory team.

### A Team Mazak sometime in the future?

Mr. Nishira is now involved in solar car racing as a driver and electrical system adviser for the team of Nakanihon Automotive College, for which his father serves as the manager. The team's three-wheel car has solar panels on a light body in a combination of an aluminum skeleton structure and CFRP honeycomb panels. The team competes in the 480 watt or less class, the lowest among the three categories divided by power generation capacity. "As the Suzuka Circuit has many slopes, it is key to consume power as efficiently as possible. You have to use your head quite a bit because you also need to consider aerodynamic characteristics and rolling resistance while driving the car," Mr. Nishira explained his strategy for the race at Suzuka. After starting to work at Mazak, he designed a machine status indicator light using LEDs for the e-machine series as his first job. "I did everything to illuminate the tower uniformly with low power consumption." The status indicator, in which Mr. Nishira's energy saving idea was used, was the first of its type in the industry using LEDs. "I often receive requests for replacement of the hydraulic system with an inverter type even in the design of special order nowadays." Mr. Nishira thus pays attention to changes in the awareness of energy saving among customers. Yamazaki Mazak is contributing to motor sports as an official supplier to the McLaren F1 team. Sometime in the future, A Team Mazak led by Mr. Nishira may participate in solar car racing.



2013 solar car



vol. 6

## Masterpiece

THE YAMAZAKI MAZAK MUSEUM OF ART

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 TEL: +81-52-937-3737 FAX: +81-52-937-3789 www.mazak-art.com

VIGÉE-LEBRUN, Marie Élisabeth Louise  
 (Princess Catherine Feodorovna Dolgorouky)

This painting was completed during the period when Élisabeth Vigée-Lebrun, court painter to Louis XVI's queen, Marie Antoinette, resided in Russia to escape the French Revolution. The model for the portrait, Princess Catherine Feodorovna Dolgorouky, was an extremely intellectual woman, and had an enormously popular salon in St. Petersburg which was on the cutting edge of the latest trends. Wearing an exotic turban and a loose, voluminous dress cinched below the bust, the princess is depicted with romantically upturned eyes and a smile on her lips. The book opened before her is Abbé Jean-Jacques Barthélemy's *Voyage du jeune Anacharsis en Grèce* (Travels of the Young Anacharsis in Greece), first published in Paris in 1788. There are records noting the popularity of the novel at the time, which depicts everyday life and culture in ancient Greece as the Scythian protagonist travels through the country. Tremendously popular as a portrait artist, Vigée-Lebrun often painted women wearing exotic and theatrical costumes. This painting is an excellent example of this and shows particular care put into the piece by the artist. It is recorded that, as payment for the portrait, Vigée-Lebrun received a magnificent four-wheeled carriage and a bracelet inscribed in diamonds with the phrase "Ornez celle qui orne son siècle" ("adorn her who adorns her century") from the princess.



VIGÉE-LEBRUN, Marie Élisabeth Louise [1755-1842]  
 Princess Catherine Feodorovna Dolgorouky c.1797

Emile Galle  
 (Engraved vase with a hazel tree)

The vase is engraved with hazel flowers, which bloom in the early spring. In ancient Europe, the hazel tree was a symbol of wisdom and was believed to have power to find something hidden. The twigs were used as dowsing rods to detect a mine or water. The tradition also says that stray travelers used a hazel branch as a magical stick to find their way. On the vase, knotty, rigid branches and the flowers are depicted, which represent the strength of the hazel tree to grow in harsh natural environments. On the other hand, the bluish background looks like gentle rays of light coming out of the darkness of the night just before dawn. This piece shows that Galle portrays not only plants, the main motif, but also the universe including light and air.



Emile Galle [1846-1904]  
 Engraved vase 1890-1900

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