

M THE YAMAZAKI MAZAK MUSEUM OF ART

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



Collection Showcase 1

GALLÉ, Émile "Chest of drawers"

This is a chest of drawers composed of two sections, four drawers behind a door in the smaller upper section and five in the lower and larger sections. A landscape scenes with water, mountains, and trees in created on the front of the chest with marquetry in several types of wood over walnut. The inlay parts are sliced very thin, 0.7 to 1.5 millimeters (0.03" to 0.06") in thickness, and attached with animal glue.

A magnificent pine tree with large pinecones visible through the needles appears on the front of the drawers in the lower section. Jays are perched in the branches and there are two cicadas flying in the air. A fuchsia design is inlaid on the right side panel and treble clef signs on the left. The door panel of the upper section displays a joyous image of fourteen jays, perched on sorrel vines and practicing their singing.

Elm burl is applied to the back of the door and the front of the drawers and inlaid with images of falling maple leaves. The variety of woods used in the marquetry demonstrates Gallé's fascination with imported wood.



GALLÉ, Émile [1846-1904]
"Chest of drawers"
c. 1900

SIGNAC, Paul "Saint-Tropez"

Collection Showcase 2



The Neo impressionist movement, led by Signac, they further developed the method of divisionism used by the impressionists, constructing their pictures with many discrete spots of color, a method known as Pointillism.

This view of Saint-Tropez was painted in 1906, right at the time the Fauvist movement was getting underway, partially due to the influence of Signac's Pointillism. This paint is applied flatly in the picture, which portrays a sailboat anchored in the port of Saint-Tropez. Although Signac is mainly known as a Pointillist, this is an interesting example that shows how he was influenced by the Fauvist approach to color.

SIGNAC, Paul [1863-1935]
"Saint-Tropez"
1906
Watercolor on paper

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CYBER WORLD



Feature

Laser Technology Utilized in Various Fields

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2021
No. 63



History of Mazak's Laser processing machines



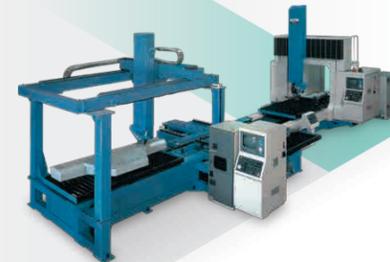
1984 LASER PATH 40/40

The first CO₂ laser processing machine. Succeeded in developing high accuracy, high performance and compact laser processing machines by using an extensive accumulated knowledge of more than 60 years of machine tools.

1988

LASER PATH 50/100 3D

The first 3D laser processing machine with simultaneous 5-axis control in the LASER PATH series.



1999

3D FABRI GEAR 300

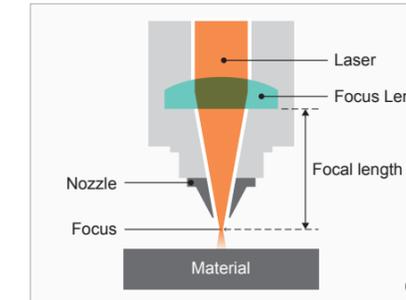
The first model of "3D FABRI GEAR series" laser processing machine can cut pipe materials at any desired angle. The automatic cutting of long pipe is performed, which was conventionally done manually, resulting in a significant reduction of production lead time.



2011

OPTIPLEX 3015 FIBER

The first fiber laser processing machine. Performs stable cutting of highly reflective materials such as copper and aluminum and is effective for thin materials. Productivity is increased by 30% compared to conventional CO₂ laser machines.



01. Industrial CO₂ laser resonator
02. Principle of processing by irradiating laser

Laser technology that continues to evolve along with the times

The history of laser began when the famous Albert Einstein advocated the theory of "stimulated emission" in 1917. By 1954 through various studies that proved the theory, Charles Townes and other researchers invented the maser, which became the origin of the laser and in 1960, Theodore Maiman succeeded in the generation of the first laser beam using a solid ruby.

Laser is currently used in all manufacturing processes such as cutting, marking, and welding. Laser processing is performed by condensing the laser beam with a special lens and focusing it on the material to generate heat energy. In 1963, Kumar Patel applied this principle and developed a laser processing machine that utilizes CO₂ as a medium for amplifying laser. This development established the foundation of laser in manufacturing.

From early on, Mazak focused on laser as the next generation processing machine without requiring any tools and in 1984 started manufacturing CO₂ laser processing machines for sheet metal processing. At this time, Mazak also began replacing its own sheet metal production equipment with CO₂ laser processing machines. In conventional production method, punch press machines*2 were used for sheet metal processing

and required for dies. CO₂ laser processing machine installment eliminated dies in sheet metal production and established a quiet factory environment by achieving reduction of noise in processing.

Initially, we developed machines only for flat plates processing, but in 1988, the LASER PATH 50/100 3D performed processing of 3D shapes was developed, expanding the range of workpieces. In 1999, the 3D FABRI GEAR 300 specialized in pipe and structural material processing was developed. The model is equipped with a 3D laser head that can process freely at any desired angle and is utilized in various industrial fields. In 2000, production of fiber laser processing machines including the OPTIPLEX 3015 FIBER began. Compared to CO₂ laser processing machines, fiber laser has higher productivity for processing of highly reflective materials and thin worksheets. Furthermore, it can reduce laser gas and electrical power consumption, enabling production with less impact on environment.

Mazak's laser processing machines are continuously evolving with the times in order to contribute to solve customer's problems and meet your production requirements.

*2: Machine used for punching and molding sheet metal

L A S E R T E C H N O L O G Y

Laser technology utilized in various fields

Laser technology is utilized in various fields, ranging from telecommunications, medical care and beauty to measurement, and enriches our lives.

Due to its wide range of usage, the global market for laser is estimated to reach \$16.9 billion*1 in 2024, and is expected to further increase in the future.

*1 Source : Industrial Laser Solutions

Mazak's laser processing machine processes various sheet thicknesses and materials with high speed and precision

Using laser processing know-how accumulated throughout its long history, Mazak has provided various laser processing machines. These diverse machines support customer production activities with total solutions including automation systems and software in addition to laser processing machines.

Mazak offers the optimum 2D and 3D laser processing machine from an extensive product range. 2D laser processing machines are designed for processing sheet metals and 3D laser processing machines can process 3D shapes and pipe materials. Additionally, laser outputs are offered from 2.0 kW to 10.0 kW to meet diverse production requirements.

2D laser processing machine series including the OPTIPLEX and SUPER TURBO-X FIBER series provide the optimum machine in response to differing requirements such as the size of sheet metal for processing and floor space.

In 3D laser machines, the FG-220 can perform 3D laser cutting of long pipes and structural materials at any desired angle, whereas the FT-150 FIBER is designed for high speed cutting of small diameter pipe for large volume production. The optimum 3D laser machine*1 can be selected according to material diameter, length and production volume.

*1 Available models vary by market.

We have been continuing to challenge the development of our CNC system as well as laser processing machine. CNC system development leads to superior processing control and setup time reduction by operator. Cutting function allow continuous high speed cutting of features without stopping axis for high speed cutting of thin plate and calling up set-up information by scanning QR code significantly contributes to improved productivity.

In response to an increasing demand for automation, we provide the optimum automation system with a wide variety of specifications to meet your production demand. Automation systems can be expanded even after the initial installation according to production requirement change.

CNC system



64 bit CNC for 2D laser processing machines with high performance

MAZATROL PREVIEW G

New generation CNC system with improved touchscreen operability

Automation system



EXTENSIBLE MANUFACTURING CELL

Flexible system expansion by adding stockers and additional laser machines in response to increased production volume



QUICK CELL 3015

Automation system in compact floor space

2D laser processing machines



OPTIPLEX FIBER series

A variety of resonators available from 2.0 kW for small beam diameters to 10.0 kW, suitable for cutting of thick plate



SUPER TURBO-X FIBER

Table feed system provides excellent table access and convenient processing of a wide variety of workpieces

3D laser processing machines*1

*1 Available models vary by market.



FG-220

3D laser processing machines for flexibly processing of different shapes and sizes in long pipes



FT-150 FIBER

High speed / high precision laser processing machines suitable for large volume production and automation for processing of pipe materials

Mazak's unique laser technology

Due to changing market needs, the manufacturing industry has been faced with complex and increasing challenges such as reducing costs, shortened delivery times, a declining workforce and skilled workers. The industry has to tackle those problems while simultaneously enhancing productivity. To solve these problems, Mazak is developing its own laser technology.

Multi-Control Torch for stable processing quality

In order to realize high quality processing and productivity improvement of fiber laser processing machines, Mazak is developing underlying technologies. Among them, we are strengthening the development of the torch. The torch irradiates the material with laser beam and processes it, and torch quality is directly linked to processing quality.

"Multi-Control Torch" uniquely developed by Mazak has a variety of automation functions for ease of operation and reduced set-up time. The optimum laser beam diameter can be automatically determined according to plate thickness and material for stable processing quality even when operator doesn't have a rich experience in processing. Additionally, an inexperienced operator can perform operations efficiently by using automatic setup. These functions incorporate the expertise of experienced machine operators.

3D laser head performs processing of long pipe and structural material

The 3D laser head mounted on the 3D laser processing machine enables bevel cutting from various angles and directions on the cross-sectional surfaces of the pipe. This improves accuracy for joining pipe and reduces some required process in marking and welding. These features contribute to reduction of production lead time and providing solution for quality deterioration due to skilled worker shortage.

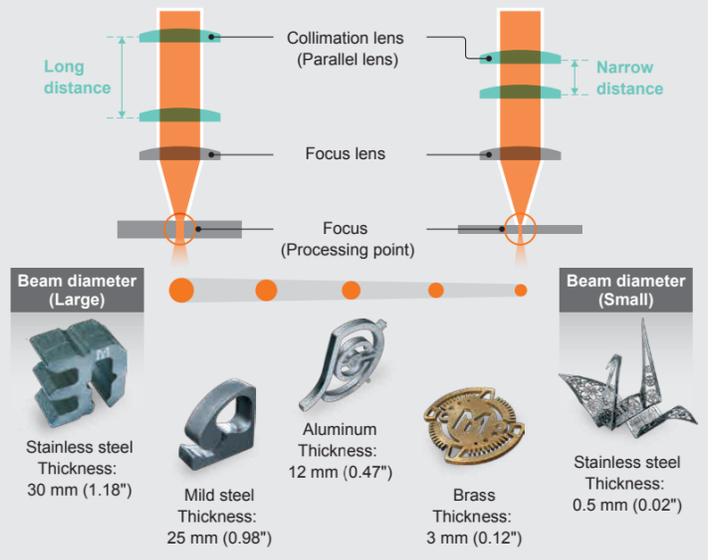
In addition, the 3D laser head can cut complex contours to produce an extremely tight-joint fit when pipe and other structural material are assembled. These 3D laser processing machine features expand cutting versatility for a wide range of applications. In the construction and industrial equipment manufacturing field, 3D laser processing machines are highly regarded and have been installed to reduce the production lead time and manufacturing cost.



Mazak's unique Multi-Control Torch

Beam Diameter Control

By changing the distance between the collimation lenses, the beam diameter can be adjusted to optimum condition for various materials and plate thicknesses



3D shape and bevel cutting by the 3D laser head



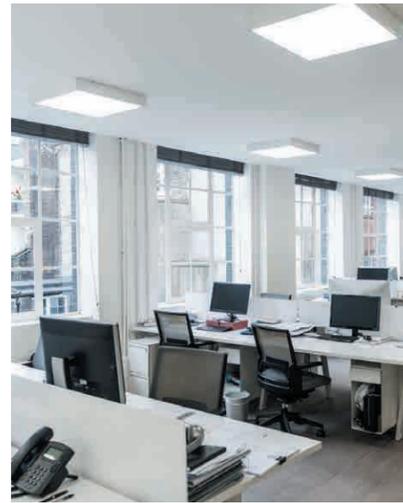
Structural applications



Complex joints of pipes



Cutting complex contours provides extremely tight-joint

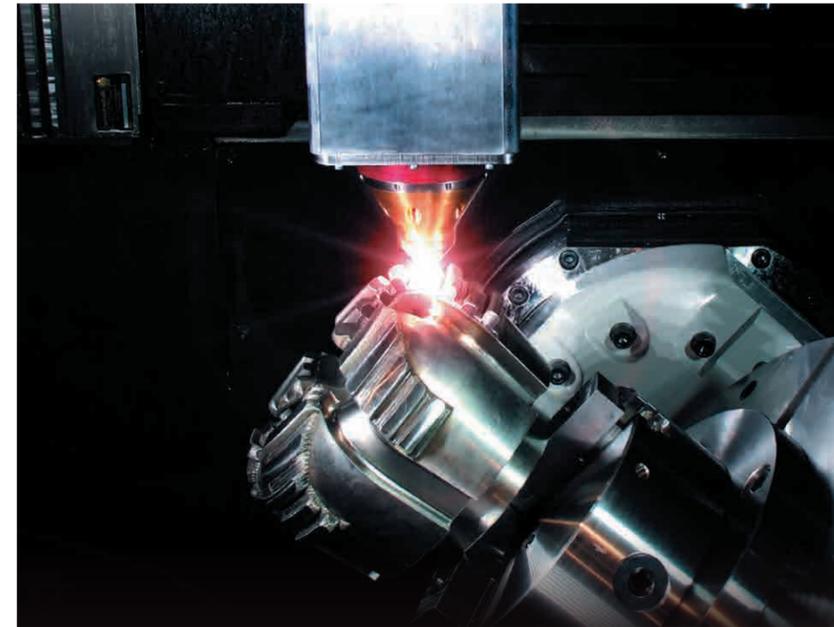


Laser technology playing an active role in our daily life

Laser processing technology plays an active role in our daily life. For example, components processed using laser technology are incorporated in stair railings, railroads, and high-rise constructions such as buildings and towers. It also supports a wide variety of industrial fields includes constructional machinery such as a crane truck, agricultural equipment, satellite communication antenna and even renewable energy systems like solar power generation.

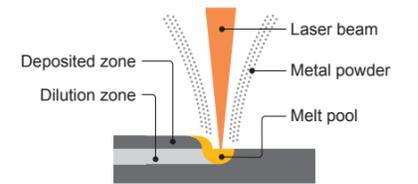
Especially in recent years, the number of people working from home has been increasing in the business due to the rapid development of network technology. As a

result, people are getting interested in new lifestyle that actively enjoy time spent at home in their private time, and this trend leads to a growing demand for home training equipment. On the other hand, more people are seeking an open-air atmosphere and enjoy leisure activities on their weekend. The demand for camping equipment has been increasing due to the lifestyle change. Most frames of home training equipment and camping equipment such as bonfire stands, tables and chairs incorporate components processed by laser processing machines. Incorporated in various industrial products, laser technology underpins our daily lives everywhere.

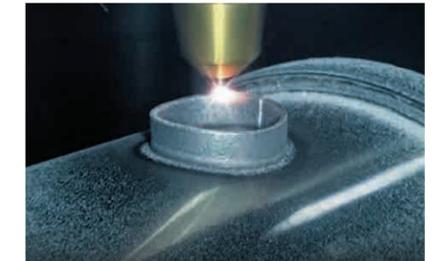


Laser metal deposition

Laser metal deposition method



Laser from the nozzle center melts the base material, and the melt pool is produced. The metal powder is supply from around the nozzle to the melt pool.



Deposit Inconel on stainless base material

Cladding with different types of metal by blue laser



Cladding with copper

A machine tool equipped with blue-laser multi-beam head



Electrodes built into the motor of an electric vehicle

Applied laser technology in new fields brings technology evolution

From its invention to the present, laser technology has been utilized as the fundamental technology in various fields, such as telecommunication, material processing, medical care, beauty, measurement, analysis and sensors. In recent years, laser technology is utilized for new applications such as depositing a different kind of material, laser hardening and cutting carbon fiber reinforced plastics (CFRP). Mazak has been committed to researching additive manufacturing technology for further development in deposit, material cladding and repair as a new utilization method of laser technology. Additive manufacturing melts metal powder by laser and then solidifies it to form a shape. Thanks to the integration of additive manufacturing and machine tools, all processes from additive manufacturing to machining are done in a single machine for process integration and production lead time reduction.

Furthermore, we are currently continuing the development of blue laser in collaboration with research institutes. Blue laser has a short wavelength which makes it possible to melt copper materials that were difficult with conventional infrared laser. Taking advantage of the high bactericidal and antibacterial effects with copper, it can contribute to improvement on public hygiene by copper cladding on handrails and door-knobs. In addition, copper has excellent electrical and thermal conductivity. Due to these features, it has high expectations for improvement on electrode performance that are incorporated in motors for electric vehicles and reduction of the motor size. In this way, the development of laser technology has a great potential to further enrich people's lives. Mazak will continue to challenge ourselves in research and development of laser technology to offer the optimum machines that meet your requirements.



01

Customer Report 01

Playing a part in the manufacturing of paper machines rooted in the local community

Japan KAWANOE ZOKI CO., LTD.

You can find various paper products used for different purposes in your life. Tissue paper, toilet paper and other sanitary paper products for domestic use, which are especially essential in daily life, are all manufactured with paper machines. Located in Shikokuchuo city, Ehime, KAWANOE ZOKI CO., LTD. is a leading company in the production of paper machines with a domestic market share of 80%. It is highly likely that a sheet of tissue paper you have casually pulled out was made with a paper machine manufactured by the company. While its head office is situated in a region where the paper industry is active, why was the company able to become the dominant manufacturer of paper machines in Japan?



Ehime, Japan



02



03



04

- 01. The INTEGREX e-H helps KAWANOE ZOKI improve productivity
- 02. A large component to be incorporated into a paper machine produced by the company
- 03. Complex-shaped long shaft machined with high efficiency
- 04. Mr. Masatoshi Sato, Executive Officer of Manufacturing Department, (second from left, first row) and employees of Mishima Factory

COMPANY PROFILE



Mishima Factory

KAWANOE ZOKI CO., LTD.

President : Takahiro Shinohara
 Head Office : 1514 Kawanoe-cho, Shikokuchuo, Ehime, Japan
 Mishima Factory : 154 Muramatsu-cho, Shikokuchuo, Ehime, Japan
 Number of employees : 235

www.kawanoe.co.jp



Customer Report 01

Japan KAWANOE ZOKI CO., LTD.

Almost all machining processes are handled with Mazak machines

Simply put, the processes in a paper machine consist of removing water from diluted raw materials to make paper, pressing the paper and then drying it. One of the parts that plays a key role in this mechanism is the rolls used to wind and feed paper to the next process. KAWANOE ZOKI machines them with Mazak machines. "We considered the use of CNC turning centers for shortening the processes for the workpieces that require many machining processes and reducing costs, and then introduced our first Mazak machine in 1987. The decisive factor was that its machine accuracy and rigidity were higher than competitors." A total of 12 Mazak machines are now operated in its head factory and the Mishima factory. "Almost all of the processes for the roll machining of main parts are handled with Mazak machines. The INTEGREX e-670H is used for deep hole drilling in the roll length direction, and machining with the ejector drills of the machine reduces the machining time in comparison with conventional machining with gun drills. The ease of operation of MAZATROL is also helpful because even inexperienced operators can use it."

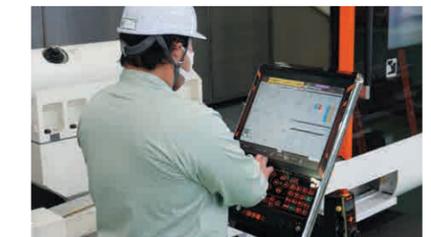
KAWANOE ZOKI was an ironworks established in 1944 by Mr. Shigeichi Shinohara, the grandfather of Mr. Takahiro Shinohara, President. After World War II, the company shifted its business from manufacturing parts to the manufacturing of paper and pulp machines. Currently, in addition to machines to make paper for domestic use, it also focuses on the development and production of equipment for functional paper and nonwoven fabric. The foundation for its current solid business was established through the development of BestFormer Yankee Paper Machine in 1973. "We developed the product as the fruits of our technologies to not only satisfy customer demand but also contribute to the local paper-making industry through the development of original products," Mr. Takahiro Shinohara said.



Mr. Takahiro Shinohara, President, talking about the strength of the company

Along with paper machines, KAWANOE ZOKI also manufactures processing machines used in the post-processes, which allows the company to provide an integrated production system that covers from paper-making processes to finish the paper and produce final products. This is the strength of the company. "Our approach will be very uncommon in the industry because multiple machinery manufacturers are usually involved according to the types of the processes. The integrated system enables us to maintain the stable quality of products. I believe that such efforts have resulted in our high market share in Japan."

According to Mr. Shinohara, the company reduced machining time and production lead time by introducing Mazak machines to increase the operation rate through automatic operation. "With the shortening of delivery time as a result of it, orders and shipments have both been increasing."



The MAZATROL conversational CNC system is highly valued for its ease of operation

Customers are consistently put first

Mr. Shinohara mentions that paper making is a process industry "because equipment must be operated 24 hours a day, 365 days a year by using water, electricity and steam to produce only the predetermined volume of products with certain quality in a sustainable manner. It is ordinary to provide maintenance services after delivery and respond to any unexpected troubles promptly so that the equipment can be used stably for decades. We will continuously make every effort to ensure that customers can always use our equipment in the best condition and this attitude is more important than anything else for a manufacturer." The system of KAWANOE ZOKI to not only deliver products but also promote after-sales support properly coincides with Mazak's customer-oriented management philosophy. It will be the key to maintaining a dominant share of 80% in the paper machine market in Japan.



A row of large Mazak machines in Mishima Factory

▶ Toilet roll converting line offered by KAWANOE ZOKI
 The winding, cutting and wrapping of the paper are operated fully automatically





Customer Report 02

Working to ensure all customers select the company's products

Japan MEIKIKOU CORPORATION

Auto-related companies from Japan and other countries gathered at the Tokyo Motor Show 2019. In the booth of a major car manufacturer, part of the stage where the presenter stood was designed to rise to enable many visitors to see the presentation effortlessly even from a distance. This design was literally supported behind the scenes by Scissor Lifts, a table lift manufactured by MEIKIKOU CORPORATION, located in Toyoake-city, Aichi. This flagship product of the company has a share of 60% in the Japanese table lift market. In addition to table lifts, the company manufactures conveyors and offers handling systems to establish a unique position in the material handling industry. The approach of MEIKIKOU to product development, as well as its future plan based on its technological capabilities accumulated in the past, is explored below.



- 01. Automatic machining line that integrates a ceiling-mounted robot with three QUICK TURN units
- 02. Arms of Scissor Lifts are precisely machined with the FJV, a double column machining center
- 03. Hydraulic cylinder parts machined with the QUICK TURN
- 04. Mr. Seiichiro Hoga, President (fourth from left, first row) and employees of MEIKIKOU CORPORATION

COMPANY PROFILE



MEIKIKOU CORPORATION

President : Seiichiro Hoga
 Address : Higashi 180, Okute, Toyoake, Aichi, Japan
 Number of employees : 230
 www.meikikou.co.jp



Original carrier equipment integrated with a line of three QUICK TURN units

MEIKIKOU introduced its first Mazak lathe around 50 years ago. "Since the then manager fell in love with Mazak machines and introduced one, our double-column machining center, CNC turning centers and multi-tasking machine have been all Mazak machines. A total of 11 units are currently operated. The user-friendliness of MAZATROL, which can be programmed easily on site, was the key to the introduction."

In 2019, the company established a handling system that connects an arm robot with a line of three CNC turning centers of QUICK TURN 200MA. The technological abilities of MEIKIKOU, which is also a robot system integrator, enable the company to handle various steps ranging from design and production to electric control and establish automated lines with Mazak machines.

"While we conventionally operated a machine tool at full capacity 24 hours a day, it has been replaced to set up a structure for increased production we aim at. In this automated line, which machines the parts that serve as the heart of hydraulic cylinders, a ceiling-mounted robot travels between the three machines to convey workpieces. Its set-up is easier than that of an automated system using a floor-mounted robot, which has enabled us to

MEIKIKOU CORPORATION was established in 1955 as a related company of a major heavy industry manufacturer. While initially engaging in parts machining, the then manager aimed to convert the company into a manufacturer and started to supply roller conveyors as the first item of its own brand. Later, the company made a full-scale entry into the material handling industry through the production of table lifts and established the position it has today.

"We were able to grow with the trend of increasing demand for customized items in preference to standard items. Using this trend in an unordinary way, we standardized all of the dimensions demanded by customers. In other words, we have made efforts to ensure that all products selected by customers are included in our lineup. This approach was very effective." Mr. Seiichiro Hoga, President, explained how the company was able to make a breakthrough.



Mr. Seiichiro Hoga, President, talking about the company's future growth strategy

In fact, the number of the standard models of Scissor Lifts was initially 50 and has increased to 2,400 by now. When MEIKIKOU receives a new order, it responds to requests from the customer and designs and produces the ordered items according to their intended use and specifications based on standard models. "Our designers have pursued and achieved safety and durability of the products without compromise by trial and error over many years. Our customers also appreciate that they can use our products with a sense of security due to our extensive maintenance services and a wide variety of options."



The Mazak lathe introduced around 50 years ago is still in good operation

▶ A conveyor (left) and a lift produced by MEIKIKOU They support logistics, nursing care, entertainment and various other industries



Customer Report 02

Japan MEIKIKOU CORPORATION



Even an urgent order can be addressed promptly thanks to the easy programming with the MAZATROL

significantly improve productivity."

Tackling new markets with the compilation of all material handling technologies

Having celebrated its 65th anniversary in 2020, MEIKIKOU now sets the further improvement of work efficiency in truck yards and the establishment of a clean factory environment as the initiatives on the next stage. The first initiative aims to reduce the time and labor required for loading and unloading into trucks. "Taking advantage of our strength to handle all of the lifts, conveyors and handling systems internally, we will work for the initiative by combining our material handling technologies."

The second initiative proposes a factory of the new generation using the company's technologies developed through engagement in the production process of liquid crystal panels and organic EL. MEIKIKOU will enhance proposals that combine products specialized for use in a clean environment with new technologies such as AI, IoT and imaging techniques. "Like we are a MAZATROL fan, it is important for manufacturers to have the strength that enables them to keep customers. I believe that our strength is our ability to propose energy-saving devices and carrier systems that are most suitable for customers in an integrated manner."

The company's efforts to explore new markets with a focus on its collective strength seem to be making steady progress.



01

Customer Report 03

Building a solid position with strong enthusiasm and superior technology

Australia Harrop Engineering Pty Ltd.

Motorsports is a sophisticated fusion of a driver's superb driving skills and a machine that is the embodiment of outstanding technology. Harrop Engineering Pty Ltd., located in Victoria, Australia, is well known for manufacturing automotive performance parts that bring out superior performance in the fiercely competitive world of motorsports. The company's passion for manufacturing and superior technological capabilities have earned strong trust not only in motorsports but also in a wide range of other fields. Mr. Heath Moore, General Manager said, "Mazak machines are indispensable to our renowned manufacturing system that drives our business growth."



02



03



04

- 01. High-precision and high-efficiency machining was realized by Mazak machines
- 02. Many Mazak machines are in operation
- 03. The company's flagship product, supercharger parts are machined by Mazak machines
- 04. The INTEGREX j-200S multi-tasking machine with robot arm to facilitate automation

COMPANY PROFILE



Harrop Engineering Pty Ltd.

General Manager : Heath Moore
 Operations Manager : Tim Harrop
 Head Office : 96 Bell Street, Preston, VIC 3072, Australia
 Number of employees : 70
 www.harrop.com.au



Harrop Engineering Pty Ltd. was founded in 1955 by Mr. Len Harrop and his wife Ms. Elsa Harrop who started out producing weaving machines from a small shed in the Victorian suburb of Brunswick, Australia. As the business grew, the company expanded into other areas, including industrial food-processing equipment and heavy haulage and earthmoving accessories. The company's current core business, the automotive performance parts business was established by Mr. Ron Harrop, a son of Mr. and Ms. Harrop. He had a strong interest in 'making things' since his childhood, so after joining the company, he started to develop performance parts with great enthusiasm. His father supported him with his technical expertise, and together they were able to evolve the new business.



Mr. Heath Moore, General Manager (left) and Mr. Tim Harrop, Operations Manager (right)

Today Harrop Engineering offers several core product groups including supercharging and induction, braking, driveline and cooling over several different market segments, all products are highly regarded and reliable, with a rich history of decisive roles in the precision and design of performance products for motor racing over the past 50 years.

Mazak machines contribute to the core business

Harrop Engineering experienced a leap forward by supplying an all-inclusive solution from design to manufacturing including casting and machining. Specialist Engineers across Design, Quality, and Production are employed to solve problems from every angle and thus won the trust of customers. The company is not only renowned for its core business of automotive performance parts, but also in the Aerospace and industrial machinery. "Our ability to swiftly switch between differential products to a crankshaft and then mining and aerospace components is critical to our operations and our diverse needs. Mazak are key contributors to our renowned manufacturing capabilities and growth, providing world class machining equipment to provide the flexibility and agility that Harrop needs to meet customer needs." Mr. Heath Moore, General Manager, evaluates the contribution of Mazak machines to its business.



Specialist Engineers offer competitive solutions to meet customer needs

Currently the production line is composed of only Mazak machines. "Mazak machines fulfill quality and reliability to meet the diverse needs of our production requirements. MAZATROL programming is intuitive and easy to use and combines well with EIA CAM programming." Mr. Tim Harrop, Operations Manager explained the reason to select

Automotive performance parts machined by Harrop Engineering



Customer Report 03

Australia Harrop Engineering Pty Ltd.

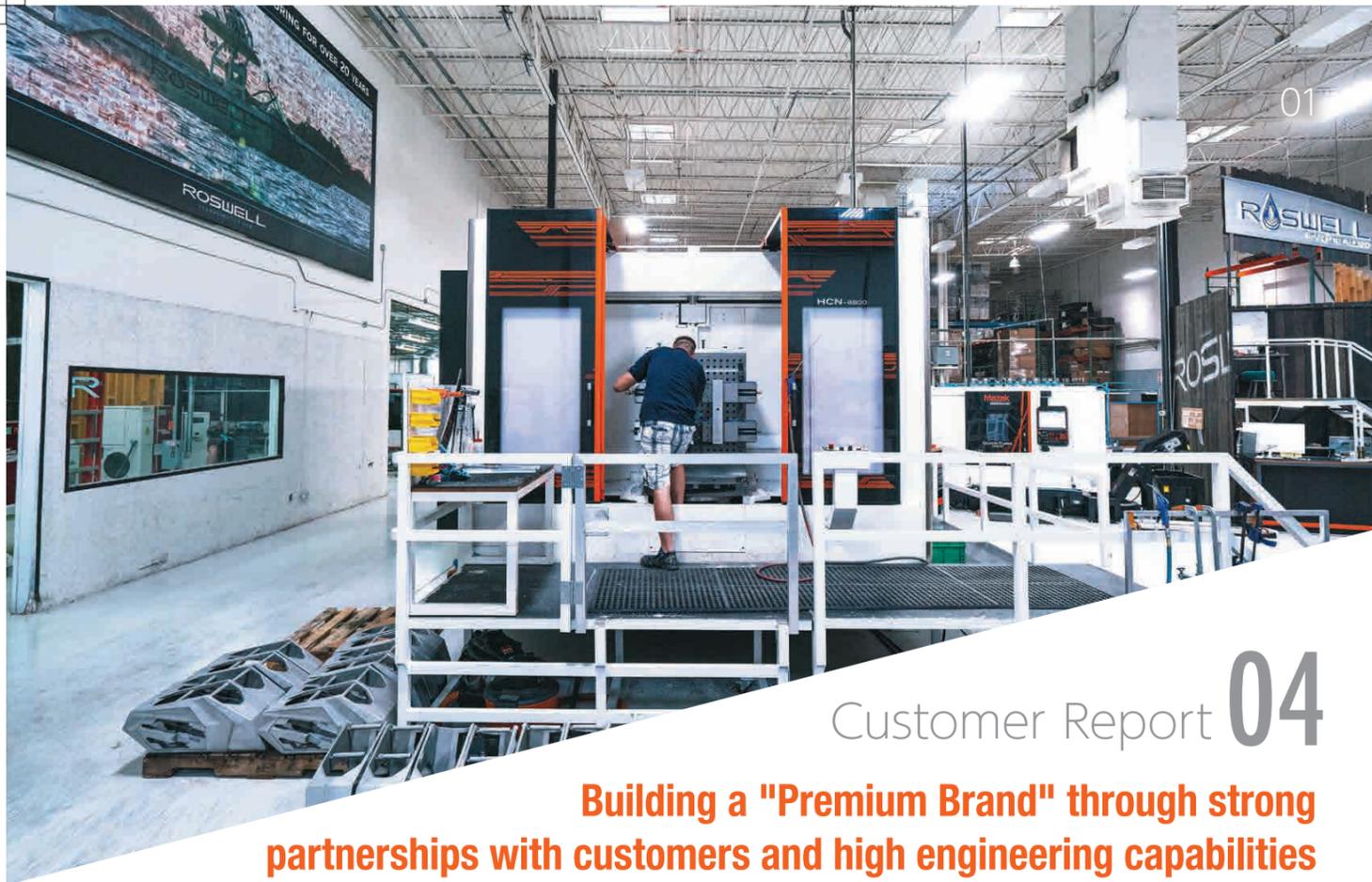
Mazak. "The INTEGREX, multi-tasking machines reduced number of setups and improved accuracy. Example being an aerospace component where setups were reduced from 4 to 2 and cycle time reduced by 25% whilst also increasing accuracy," he said about the effect of the investment. In 2020, Harrop Engineering introduced the VARIAXIS i-700 with MPP, multi-pallet stocker system to enhance its automation production capability.



Investments in automation is essential for the company's growth

Aiming to grow the brands in overseas markets

Harrop Engineering remains agile to capitalize on new business opportunities not only in Australia but also in overseas markets. In 2019, with the aim to support the brands growth in the USA market, Harrop Engineering USA was established and opened their R&D and warehouse distribution facility in Dayton, Ohio. The company is also actively developing the Middle East market for continued growth. "On going investment in our staff and manufacturing solutions to support global customer needs and further investment in automation will support our further growth," Mr. Tim Harrop talked about the future outlook of the company. With its strong enthusiasm and superior technological capabilities, Harrop Engineering will keep attracting customers domestically and overseas and achieve further growth.



01

Customer Report 04

Building a "Premium Brand" through strong partnerships with customers and high engineering capabilities

U.S.A. Roswell Marine

With a sub-tropical climate, and the Atlantic Ocean on one side and the Gulf of Mexico on the other, Florida is a popular destination for fans of boating, wakeboarding and other watersports. Roswell Marine, located in Florida, is a leading OEM manufacture of marine products and boat accessories such as board racks, towers, biminis and marine audio systems. The company is not a contract manufacturer but rather works in partnership with OEMs to optimize design and delivery, offering about twenty new products each year to keep pace with changing customer demands. Such a short development cycle allows the company to be agile and is regarded as a "Premium Brand" among boating and watersports enthusiasts. "We look for the best equipment and software that will keep us efficient and competitive, all while supplying the highest quality parts," Mr. Robert Oswell, CEO and Chairman said, relating the importance of Mazak machines in his business.



02



03



04

- 01. The 800mm (31.5") pallet size of the HCN-8800 Horizontal Machining Center (pictured center) is capable of handling larger parts
- 02. Parts for watersports equipment machined with Mazak machines
- 03. The PALLETECH HIGH-RISE SYSTEM is indispensable for high-mix, low-volume production
- 04. The dedicated data-driven software "Smooth PMC" provides operation status and real time simulation

COMPANY PROFILE //



Roswell Marine

CEO and Chairman : Robert Oswell
 Address : 2900 Murrell Rd, Rockledge, FL 32955, U.S.A
 Number of employees : 90
 www.roswellmarine.com



Roswell Marine was founded in 1998 by Mr. Robert Oswell in the garage of his home in Western Canada. Since its founding, the company has been granted a number of patents for marine products and expanded operations to plants in Asia and Australia. In 2007, with a bold willingness to build premium products in the United States, the company opened a production facility and headquartered in Brevard County, Florida.



Mr. Robert Oswell, CEO and Chairman

"With Florida being the largest boating state in the United States, it made sense for Roswell to manufacture there. Plus, it put us closer to the OEMs we supply", Mr. Oswell explained the reason to open the facility in Florida. From the day it started, the facility grew exponentially from a design, engineering and distribution center, to its current status as a full-fledged manufacturing plant with state-of-the art equipment. The company's manufacturing operations have always been in-house for quality control purposes, including everything from plastic injection molding to CNC machining, welding, fabricating and painting. "Based on our customer's boat designs, we take over the entire process from initial product concepts to design to developed products to installation. We truly view our OEM customers as partners and our successes are directly tied to one another, which enables us to create innovative products with assured quality."

Mazak's Automation System as the key to competitiveness

Mr. Oswell says that it isn't just superior planning and design capabilities that are key to building premium products, but also high-level production technology. In order to bring the new products to market as quickly as possible, Roswell relies on in-house manufacturing and, most importantly, on an extremely flexible and highly productive Mazak Automation System. Part production is typically in the thousands, and any one finished product might consist of 120 to 150 separate components. On the whole, the shop pumps out about 20,000 to 30,000 parts per month. At Roswell, Three HCN-5000 Horizontal Machining Centers with 36 pallets are part of their PALLETECH HIGH-RISE SYSTEM, allowing them to run lights out 24/7 to machine aluminum and stainless steel.



The HCN-5000 with the PALLETECH HIGH-RISE SYSTEM performs 24/7 operation

"We can be running one part, then two hours later, for instance, we must run a completely different one, then an hour after that a different one. So for shops like ours producing a lot of different products, the PALLETECH HIGH-RISE SYSTEM is quite beneficial, allowing us to prioritize and schedule prototyping parts in the middle of

- Boats with Roswell's watersports accessories. Roswell's marine audio systems, board racks, biminis and towers have high reputation among watersports enthusiasts



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our production cycles by allocating some of the pallets to prototype work all within the same cell," Mr. John Runske, Program Implementation Manager said that Mazak's Automation System is key to achieve manufacturing agility. "We incorporate the best equipment and software to supply the highest quality parts. Every aspect of Mazak we looked at - from the depth of its technology and experience to its customer service, training capabilities and warranties - further convinced us that Mazak was the best in class," Mr. Oswell said about the company's commitment and trust in Mazak.



Mr. Oswell (center) and employees

Further growth as a "Premium Brand"

In order to continue to be the best partner for customers and end users, Roswell's growth strategy includes a new R&D facility as well as continuing to provide best in class service capabilities. "Roswell is committed to grow in tandem with our customers to achieve mutual success and provide our end users better experience on the water," Mr. Oswell said. In only two decades since its establishment, Roswell firmly established its position as a leading company in the marine industry. With strong partnerships with customers and engineering capabilities, Roswell will continue to attract boating and watersports enthusiasts.