

SHIGIYA

COMPANY PROFILE



SYSTEM SALES, INC.

R. Kent Baker
President

(317) 251-2770 Office

(317) 251-2888 Fax

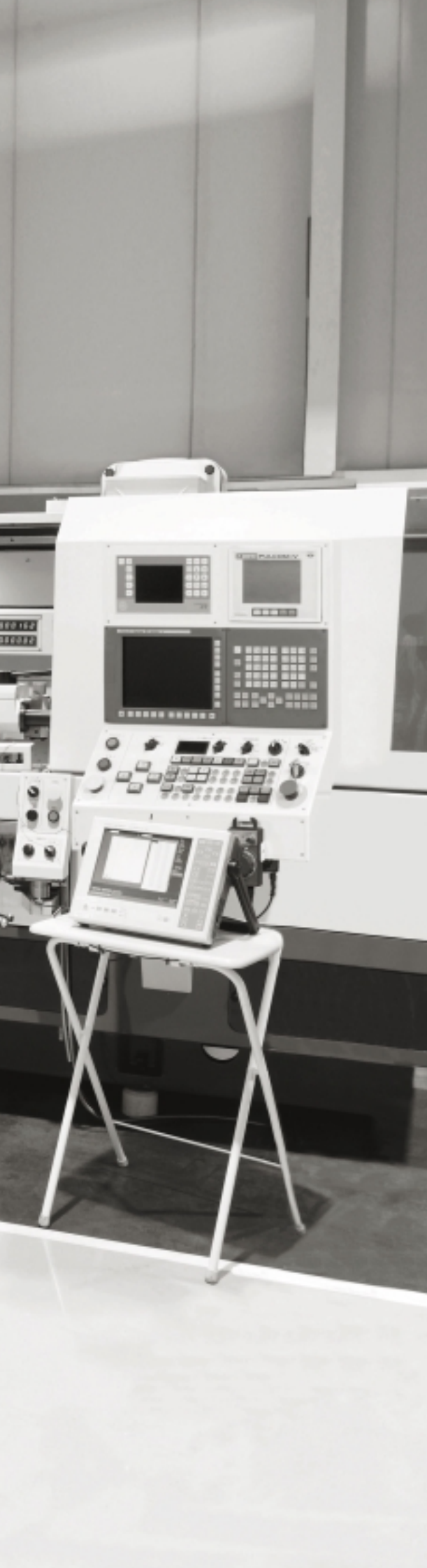
(317) 431-7191 Cell

kbaker@cncsystemsales.com





Accuracy analysis on work spindle rotation for the Ultra-precision CNC Cylindrical Grinder "GPX II-30"



**We are a global business that pushes the envelope
in cutting edge technology.**

**That track record has produced the next stage in
technology, and that technology is changing the future
in cylindrical grinding.**



Quality control using in-house manufactured ring gauges



We are aiming to be the world's best in the field of cylindrical grinding technology, and we continue to challenge ourselves.

As a global business, we maintain strict quality assurance and production standards.



Non-concentric, taper shape grinding test using the CNC Polygon Grinder "GPES-30B"



As a global business, we strive to offer high quality before and after-market services to respond to customer needs.

“It starts with a challenge”



We continue to refine precision through skill and quality.

An extremely important topic concerning the high precision required in cylindrical grinders is the pursuit in making high precision equipment. “Element technology” investigates the development of motion precision such as straightness, rotational accuracy and positioning accuracy. For actual grinding, “Processing know-how and processing technology” helps improve dimensional accuracy, finishing accuracy and shape accuracy. These elements are brought together, and “design & control technologies” help combine and optimize the units that configure, the automated systems and the peripheral devices. Then, we effectively apply these technologies and resources to complete a cylindrical grinder with the highest quality that customers seek.

Nothing is obtained overnight, and since changing our business model from loom manufacturing to machine tool manufacturing, we have spent more than 50 years on cylindrical grinders, accumulating and cultivating technology and skill, and earnestly pursuing and making high quality products.

Our customers are full of people from remarkable businesses in the fields of automobiles, motorcycles, electronic home appliances, electronics, construction machinery and general machinery. The fact that we have been able to contribute to the development of these customers behind the scenes with SHIGIYA products has not only been a source of pride but also become the driving force to aspire for more. In addition, being close to the customers has been our main priority, which is reflected in our response to their needs, and we are convinced that materializing this in future product concepts and product development is the road that will lead to even more company development for us and the customer.

Another very important matter is to build a global service network. Going forward, even in a global society, it is crucial to have before and after-market services, to be close to the customer and develop the business locations. We are adding to our current business locations in the U.S.A. and China, and expanding to Southeast Asia and Korea. For other regions as well, we will continue to strengthen the relationship with our sales partners even more and develop the service toward our customers.

We shall continue to challenge ourselves refining our skills and quality going forward, so we can make our contribution for everyone’s growth and development.

Norikazu Shigitani
President and CEO

The head office and factory where high performance and high precision cylindrical grinders are born.

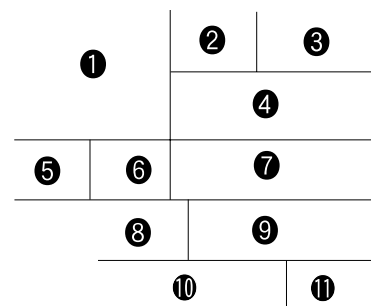
With mindset focused purely on “building products” that directs each and every individual, we shall continue our legacy in the new generation.

Manufactured in Fukuyama, Hiroshima and among the jostling of machine tool manufacturers, SHIGIYA offers their cylindrical grinders, to countries all over the world. As an environment for building superior machine tools, the factory is set on perfectly solid ground, and is built on a small rise of land that overlooks the Seto Inland Sea. (Soil bearing capacity: 70 tons / 1 m², 10 times the norm)



Within this perfect environment, all employees work together to focus on “making high quality products.” With the mindset that SHIGIYA perpetuates “It starts with a challenge,” we offer products that go beyond customer satisfaction and trust, with constant improvements and pursuing a desired level of quality through full employee participation to respond to customer needs.

Each of our employees does not just stop at mastering the work they are given, but they actively improve the work process and offer suggestions to issues that arise throughout the work flow, and focus uncompromisingly on making products. SHIGIYA products, based in the idea that “We build our products with our own hands and deliver them to the customer with pride,” are also supported by the fundamental work ethic of building each product consistently one by one with this confidence and responsibility.



- ① Panoramic view of head office and factory, area: 63.813 m²(1.4 times bigger than Tokyo dome)
- ② Machining factory
- ③ No. 1 assembly factory
- ④ No. 2 & 3 assembly factories
- ⑤ Show room and temperature-controlled factory (The room temperature is controlled to within ±0.5°C)
- ⑥ Temperature-controlled clean room (Collect more than 99.99% of dust bigger than 0.3 μm)
- ⑦ Quality inspection room (The room temperature is controlled to within ±0.1°C of 20°C)
- ⑧ Technology Department
- ⑨ Sales Department
- ⑩ Show room (New product display and test grinding)
- ⑪ Panel for registered personnel carrying national test



Machinery group with committed to high precision machining.



Large size machinery in temperature-controlled factory

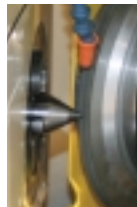
The gate form surface grinder that requires precision processing, and the jig borer are installed in a factory controlled at a constant temperature within $\pm 0.7^{\circ}\text{C}$.



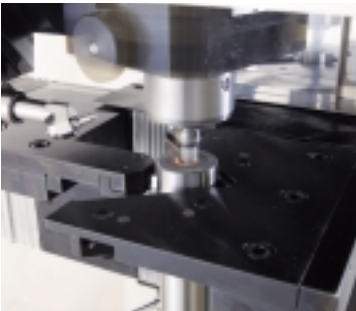
In order to manufacture high precision cylindrical grinders that meet all customer needs, a varied and proven track record and high technological capabilities are a given, but without high precision in the assembly of products, from components that are painstakingly made one at a time by the hands of workers skilled with the machine resources, it cannot be achieved.

The machine resources SHIGIYA possesses are thought to be the core in making products with precision. As a result, on top of controlling the factory room temperature, for those critical components that severely impacted the final product's quality and reliability, we check them based on machining parts inspection standards, and only send those components down the line which are compliant with said standards.

As the most critical component for the cylindrical grinders, the wheel spindle is completed with ultra-high precision, using enhanced and specialized devices that are developed in-house.



Corrective grinding on the center with a high-precision hydrostatic workhead (roundness at $0.2 \mu\text{m}$)



SHIGIYA developed ultra-precision center hole grinder aims for roundness at $0.1 \mu\text{m}$ of wheel spindle.



CNC universal grinder that grinds at a roundness of $0.1 \mu\text{m}$ with wheel spindles that are the core of cylindrical grinders.

Approach to making more thoroughly.



Measurement equipment in the quality inspection room



Measurement equipment for surface roughness



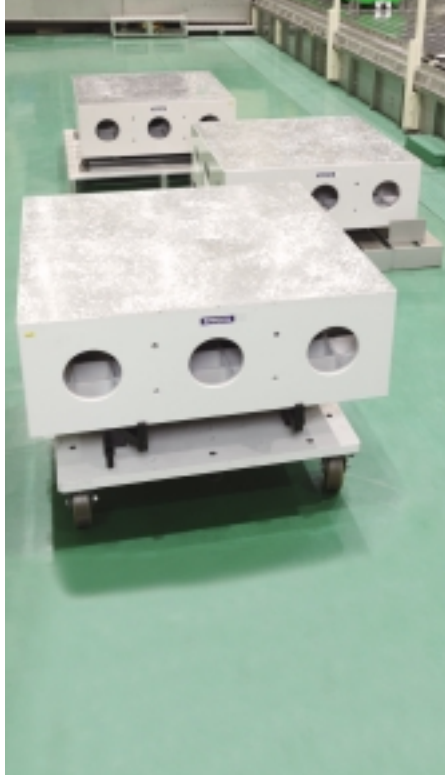
Measurement equipment for roundness



3D measurement equipment

All workers, which are concerned in each step of the workflow, strive to improve the technical capabilities each day, by always maintaining the highest awareness and harnessing creativity.

Making the high quality products that we seek starts from an approach to make products more thoroughly with in-house technology. To achieve this, what is critical for use is being “perfectly flat.” Accurate right angles can only be given from being perfectly flat. In machining, internal stress within materials is caused by processing heat, and is prone to deformation. Flatness can be provided at 1 μm because scraping is performed manually and therefore processing heat is reduced and deformation controlled. In addition, depressions from scraping can create oil pockets, and a high damping, desirable slide surface can be obtained. This scraping technique is fundamental in “SHIGIYA product making technology.”



3 surface plates used for the flatness standard



Centering for ball screw attachment



Measuring the straightness with an autocollimator



An in-house fire pit installed for man-made scrapers



Scraping work for sliding surfaces

The critical components are measured in the quality inspection room under controlled temperatures, and after passing inspection, they are integrated into each unit in the clean room, also maintained at a constant temperature. The unit is then integrated into the main body for which the person in charge takes responsibility under a cellular manufacturing method. SHIGIYA product making continues to rely on this thorough approach to making products.



Easier to use and supporting more people.



SHIGIYA software development is constantly advancing toward: "Faster, easier to use and with even greater precision."

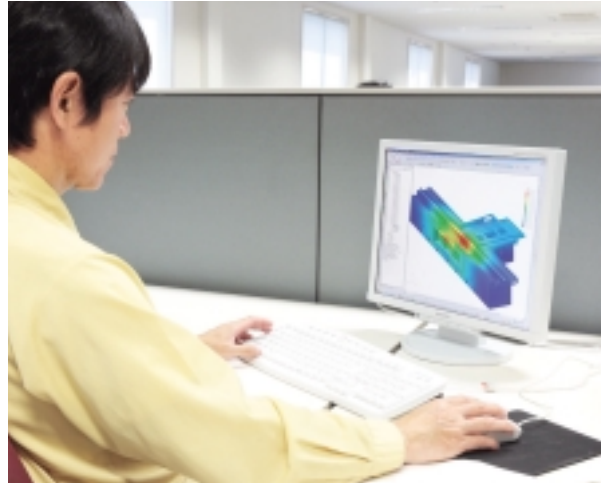


The designers themselves check and adjust completed machines.

SHIGIYA technical staff achieve with certainty and more swiftly for all customer needs, with flexible concepts and development capability from the planning stage to design development through to the prototype.

In addition, we are aiming to be a group that makes new offers for the market needs, constantly trying to raise the bar.

Faster, easier to use and with even greater precision. SHIGIYA's mantra, "It starts with a challenge," means working towards supporting all needs by employing a persistence toward technology innovation.



Analysing the rigidity of the bed sliding surfaces



A quarter of the employees are engineers



Design review meeting



Grinding research and development are performed from academic and industrial collaborations, for both software and hardware.

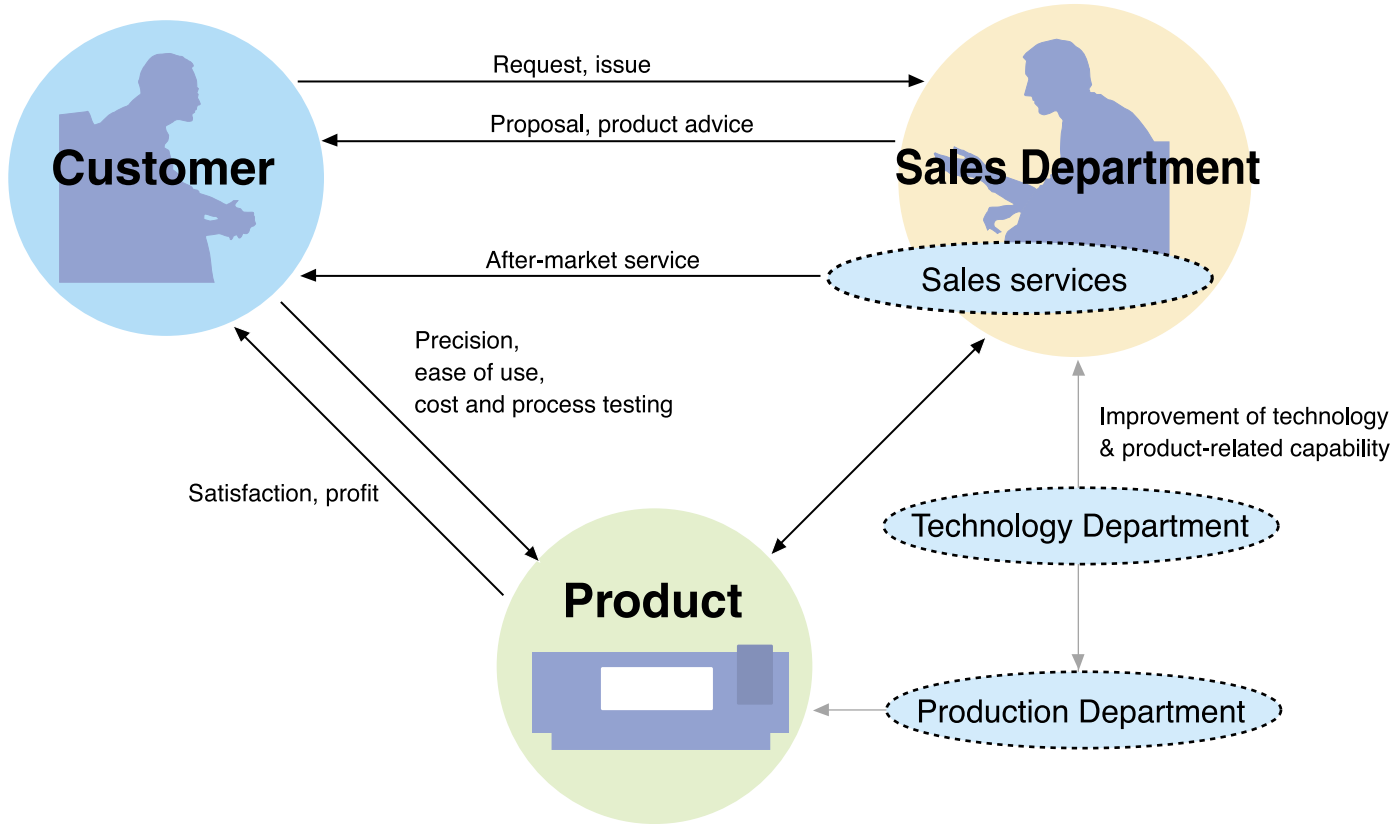


New technology development is actively pursued and we participate in thesis presentations as well as academic conferences.

All for the customer.

SHIGIYA does not merely offer products and services for sales but also evaluates creative jobs for solving problems.

Triangle structure showing the relationship of trust with the customer



We put our latest grinders and sample workpieces on display in our showroom.



In trade shows, we actively promote our latest products.
(Image from JIMTOF exhibition)



(Image from IMTS exhibition)



(Image from EMO exhibition)



Presentation to the customer

We listen to the requests and issues from our customers and offer the most suitable product.

It goes without saying that the Sales Department is the most important section for understanding and relaying the “voice” of the customer. This means that all of SHIGIYA’s sales staff is a seasoned expert familiar with the ideas from the product concept to grinding technology. The customer’s requests are treated with the same enthusiasm as shown in solving the current problems that the customer faces. We first make certain that we completely understand the problem and issue, and then we find the clue for solving it and offer the best possible solution. In addition, SHIGIYA also offers complete support for customer requests, and even performs grinding test in order to attain full customer satisfaction. We have a number of grinders available to meet all types of specifications, and we follow up with active support until the customer is satisfied.



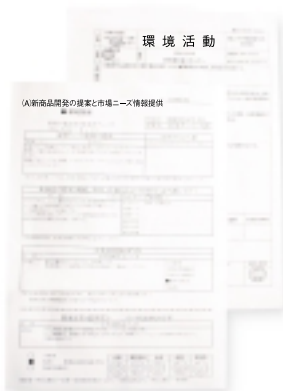
Providing feedback and relay the customer’s voice to the Design Department



Perform grinding test so the customer can confirm the precision level and understand how to use it.

We offer peace of mind with after-market service to our customers.

We enrich customer experience with our after-market service subsequent to delivery, and the support system in place for quick access to any further requests is an essential part of our Sales Department. Because we advocate the previously mentioned idea “All for the customer,” we make products based on customer needs and issues and everything including after-market service is performed smoothly and accurately.



The information and problems provided by the customer are collected and presented by each sales member for new product and modification proposals.

The basics behind everything stems from building a relationship of trust with the customer.

In this way, SHIGIYA does not merely offer products and services for sales but also values the Sales Department for its creative work in solving problems. We are experts that respond to what the customer seeks and to the problems and issues they face at production sites, and at the same time we are a long-term collaborating partner who has formed a relationship of trust with the customer. This represents the SHIGIYA Sales Department.

Furthering SHIGIYA Cylindrical Grinders together with the customer.

SHIGIYA technology makes high precision and high efficiency possible.

I want to grind with high precision. I want to reduce the grinding time. I want to manufacture more efficiently.

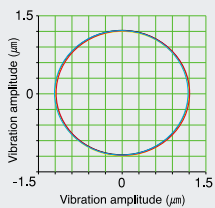
I want to lengthen the life span of the grinding wheel.

This type of thinking represents never-ending issues that always confront the customer and us.

SHIGIYA continues to respond to these issues with its technology.

1 Low temperature hydrodynamic bearings

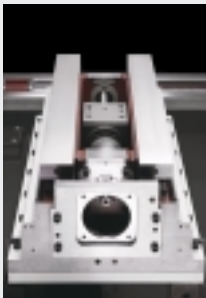
2 probe analysis for all motion variation



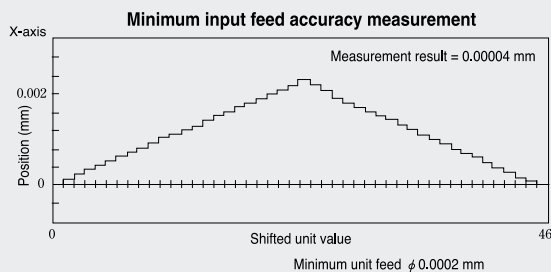
Wheel spindle rotational accuracy (hydrodynamic bearings) 0.006µm (NRRO-1)

The hydrodynamic bearings represent the method used to support the load, where stress occurs on the film of the lubrication fluid that intervenes in the bearing spaces because of the opposing slide motion of the bearings and the spindle. The bearings are comprised of 3 or 5 wedge angles, and that stress and friction coefficient are determined by the viscosity of the lubrication fluid, the spindle's peripheral speed, the amount of bearing space, and the wedge angle. The "low temperature hydrodynamic bearings" are set to the optimal amount of bearings space and wedge angle, according to the theoretical investigation and practical verification. This results in bearings that have high rigidity and a low rise in temperature. That rotational accuracy had a non-repetitive rotational run-out (NRRO) of 0.006 µm at 1,400 min⁻¹ according to the graph on the left. The rigidity is higher than that of hydrostatic bearings, and the damping performance is better than that of the rolling bearings.

2 Hydrostatic guide using an automatic and active flow control



Hydrostatic guide using an automatic and active flow control
The hydrostatic guide using an automatic and active flow control is applied to a wheelhead feed guide that is completely enclosed. Because there is no metal contact, the sliding resistance is extremely minute, and a reliable smooth-motion is maintained for a long-time with high positioning accuracy and high precision, from the averaging results of the lubrication fluid film. This differs from fixed flowing, such as orifice flow, and because the nature of the flow is automatically adjusted according to the load fluctuation, an extremely large motion guide rigidity can be obtained. The following data shows accuracy measurement for the minimum input increment (0.0001 mm) infeed. The margin of error is a max. of 40 nm.



3 Extremely low vibration wheel spindle motor



We developed a wheel spindle motor with extremely low vibration in order to improve the roundness and surface roughness even more. This motor uses a frame with high rigidity and makes the rotor rotation more precise, in order to reduce the rotational vibration from magnetic oscillation and the rotor imbalance. For the motor cooling method, there is an oil based cooling and an air cooling method. Compared to the conventional standard motor, the vibration is controlled to half the normal vibration level.

4 MeisterHandwheels®

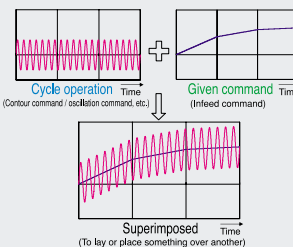


The MeisterHandwheels is configured with a handwheel for the wheelhead feed, a table traverse handwheel, and operation buttons on the front side of the CNC Cylindrical Grinder. As such, both automatic grinding via the program and manual grinding via the handwheel operations are possible. With singular grinding processes, after checking the interactive automatic programming system and NC program, there may be cases where it is faster to conduct manual grinding than automatic grinding. In addition, with workpieces that require even more demanding precision, rough grinding can be performed automatically with the finishing allowance leftover from the program, and then the technician can also perform precision grinding on the previously finished product using a grinding technique with careful handwheel operations.

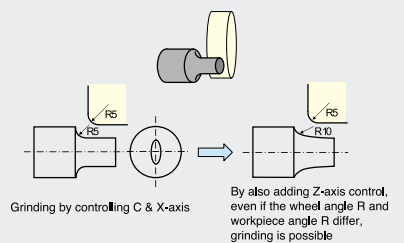
5 Superimposed control

The superimposed control is a system that superimposes the simultaneous control of the X-axis and Z-axis (table traverse) onto, the dual axis control for the X-axis (wheelhead feed) and C-axis (workhead spindle rotation). Non-concentric, taper traverse grinding and contour grinding are possible.

Superimposed control for high speed cycle grinding

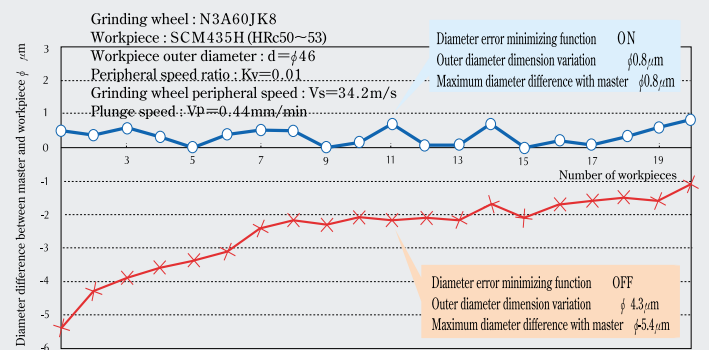


Superimposed control for high speed cycle grinding



6 Smart System for Automatic Selection of Optimum Grinding Conditions

The "Smart System for Automatic Selection of Optimum Grinding Conditions" has a signal integrated for the parameter that monitors grinding phenomena, and based on the grinding conditions the system always conducts ideal grinding, which includes the diameter error minimizing function, a rough surface improvement function, and an optimizing infeed process function. The "diameter error minimizing function" measures the amount of thermal distortion that occurs with the 1st piece during grinding, and while accounting for that amount of thermal distortion, the function minimizes the diameter error with the wheel infeed. The following graph shows the experimental data.



Graph. This is the diameter error variation when the diameter error minimizing function is "ON" and "OFF"

From over 300 select models, pick out a product family according to the features

GPS series

Standard cylindrical grinder model that achieves high precision grinding at a low price



GPL series

High performance model that supports a number of different specifications with a grinding technology base fostered over many years



GPH series

As "a user-friendly tool and easy-to-handle" the Meister Handwheels is made for the workpiece with the operator in mind



GAE-30B series

CNC Angular Cylindrical Grinder supports the details for a wide variety of needs, with operability as its priority



GPC/GAC series

Wheelhead Traverse type CNC Cylindrical & Angular Grinders for compact needs



GPES-30B series

CNC Eccentric Pin & Polygon Grinders for roundness and shape accuracy needs



GSU-30B series

CNC Universal Grinder with selectable wheelhead NC swivels, and wheel options for O.D., I.D. and face, is able to do complex grinding with one chucking



GP-65D series

Large size, Table Traverse type CNC Cylindrical Grinder with the highest capacity class in Japan



GPV-10/GAV-10 series

The Vertical CNC Cylindrical & Angular Grinders take the concept of greater compactness one step further.



SHIGIYA's proud ultra-precision grinders

GHC-15-130

The ultra-precision NC Center Hole Grinder was developed for supporting ultra-precision cylindrical grinding



GPX II-30 series

The cutting edge ultra-precision CNC Cylindrical Grinder that has combined SHIGIYA's technologies has taken steps away from the micro world and into the Nano realm



As a global player, we are striving to be able to respond to customers' global strategies.

Global Network



SHIGIYA(USA)LTD.

SHIGIYA(THAILAND)LTD.

SHIGIYA(SHANGHAI)LTD.

The cylindrical grinders are formed from SHIGIYA's philosophy on making products, which are not just recognized within the domestic borders, but in the world today.

SHIGIYA is expanding its service network for Japan's main domestic locations, as well as for the U.S.A., China, Southeast Asia, and Europe, in order to establish a global "SHIGIYA brand" to gain customer confidence throughout the world and to strengthen sales and after-market service.

Business Network

Head Office/Factory

Minoshima-cho 5378, Fukuyama City, Hiroshima,
721-8575 Japan
Phone: +81-84-953-6631 Fax: +81-84-954-2574

Tokyo Sales Office

Kamiya Sakae-cho Building 2F
2-1-25 Sakae-cho, Kawaguchi City, Saitama,
332-0017 Japan
Phone: +81-48-250-6085 Fax: +81-48-250-6086

Nagoya Sales Office

2-2 Nishida-cho, Minami-ku, Nagoya City, Aichi,
457-0073 Japan
Phone: +81-52-822-7011 Fax: +81-52-822-7021

Osaka Sales Office

Room # 705 No. 8 Shin-Osaka Building
5-7-11 Nishinakajima, Yodogawa-ku, Osaka City,
Osaka, 532-0011 Japan
Phone: +81-6-6304-1105 Fax: +81-6-6306-1897

Ota Branch Office

Wakatabi Building 14-1 Komaigi-cho, Ota City,
Gunma, 373-0818 Japan
Phone: +81-276-49-3661 Fax: +81-276-49-3663

Hamamatsu Branch Office

326-7 Nishizuka-cho, Higashi-ku, Hamamatsu
City, Shizuoka, 435-0044 Japan
Phone: +81-53-465-2700 Fax: +81-53-465-2708

Overseas affiliates

U.S.A.
SHIGIYA(USA)LTD.
651 E.State Parkway,
Schaumburg, IL 60173 USA

Thailand
SHIGIYA(THAILAND)LTD.
888/37 Moo 9, Soi Roongcharoen,
Lieb Klong Suvarnabhumi Road,
Bangpla, Bangplee, Samutprakarn,
10540 Thailand

China
SHIGIYA(SHANGHAI)LTD.
A7-202 Shanghai Jiahua Business Center,
No.808 Hongqiao Road, Xuhui-qu,
Shanghai, 200030 China

South Korea
SF PRECISION CO., LTD.
118-3, Sinchon-Dong,
Seongsan-Gu, Changwon-City,
Gyeongnam, Korea

Agencies
Australia, Germany and Taiwan



Outline

Name	SHIGIYA MACHINERY WORKS LTD.	
Founded	November 1911	
Incorporated	November 1960	
Capital	100 million yen, End of fiscal term: March 31	
Net Sales	7,210 million yen (fiscal year ended March 2014)	
No. of Employees	277 (as of March 2014)	
Head Office /Factory	5378 Minoshima-cho, Fukuyama City, Hiroshima, 721-8575 Japan Phone: +81-84-953-6631 Fax: +81-84-954-2574	
Sales Office	Tokyo, Nagoya, Osaka	
Branch Office	Ota, Hamamatsu	
Corporate Officers	President and CEO	Norikazu Shigitani
	Director	Masaru Yamamoto
	Director	Yoshiki Imagawa
	Director	Akiyoshi Mitani
	Standing Auditor	Yoshito Kambara
	Auditor	Shoji Matsumoto
	Auditor	Shinya Tsukamoto

Environment Beautification Activity

In SHIGIYA, to contribute to local area philanthropy, we help clean the neighborhood around the company and near Fukuyama station. Going forward, we shall also continue to be active in beautification programs as part of the local community.



History

- Nov. 1911 Nakajiro Shigitani established Shigiya Loom Works to manufacture looms.
- Jul. 1935 Current president's grandfather, Taiji Shigitani, became successor in the business.
- Mar. 1952 Started development of a universal and tool grinder. 
- Sep. 1958 Changed the company's trade name to Shigiya Seiki Kogyo. Current advisor, Sadamasa Shigitani, changed the company's business to exclusively manufacture machine tools, and started development of cylindrical grinders.
- Nov. 1960 Incorporated the company to become Shigiya Machinery Works Ltd., with a paid-in capital of 1.5 million yen. Sadamasa Shigitani became the president of the company.
- Jan. 1961 Moved the head office and factory to Nishi Kashima-cho, Fukuyama City in order to expand the business.
- Apr. 1963 Opened Tokyo sales office.
- Aug. 1967 Opened Osaka branch office (currently, sales office)
- Jul. 1970 Opened Nagoya branch office (currently, sales office)
- Feb. 1974 Established the marketing organization for eye-glass grinding machines. Separated its department, established "Grand Seiko."
- Oct. 1984 Completed the current head office/factory.
- Jan. 1985 Opened Ota branch office in Gunma Prefecture.
- Jun. 1986 Opened Hamamatsu branch office.
- Dec. 1988 Established an affiliated company, Shigiya Kiko Co., Ltd.
- Jul. 1990 Established Shigiya (USA) Ltd.
- May. 1992 Completed temperature-controlled factory.
- Oct. 1994 Designated Shigiya Kiko as a specialty factory for overhauls in order to strengthen the retrofitting and overhauling business.
- Mar. 1999 Acquired ISO9001 certification from Japan Quality Assurance Organization (JQA). 
- Jun. 2000 Sadamasa Shigitani became the chairman, and Norikazu Shigitani became the president of the company
- Apr. 2005 Completed No. 2 assembly factory and the precision measurement room. May. Opened Shanghai office.
- Oct. Acquired ISO14001 certification from Japan Inspection Company Quality Assurance, Ltd. (JICQA).
- Oct. 2006 Completed expansion of Technical building, Sales building and Administration building.
- Jan. 2007 Completed No. 3 assembly factory.
- Aug. 2008 Introduced ultra-high precision gate form surface grinder. Completed temperature-controlled factory.
- Set. 2010 Established SF Precision Co., Ltd.
- Oct. Established Shigiya (Thailand) Ltd. Established Shigiya (Shanghai) Ltd.
- Apr. 2013 Merged Grand Seiko and Shigiya Kiko.
- May. Completed office building.
- Jul. Moved Shigiya (Thailand) Ltd.
- Oct. Moved Shigiya (USA) Ltd.
- Nov. Completed area No. 4 in assembly factory.





SYSTEM SALES, INC.

R. Kent Baker
President

(317) 251-2770 Office
(317) 251-2888 Fax
(317) 431-7191 Cell
kbaker@cncsystemsales.com

