



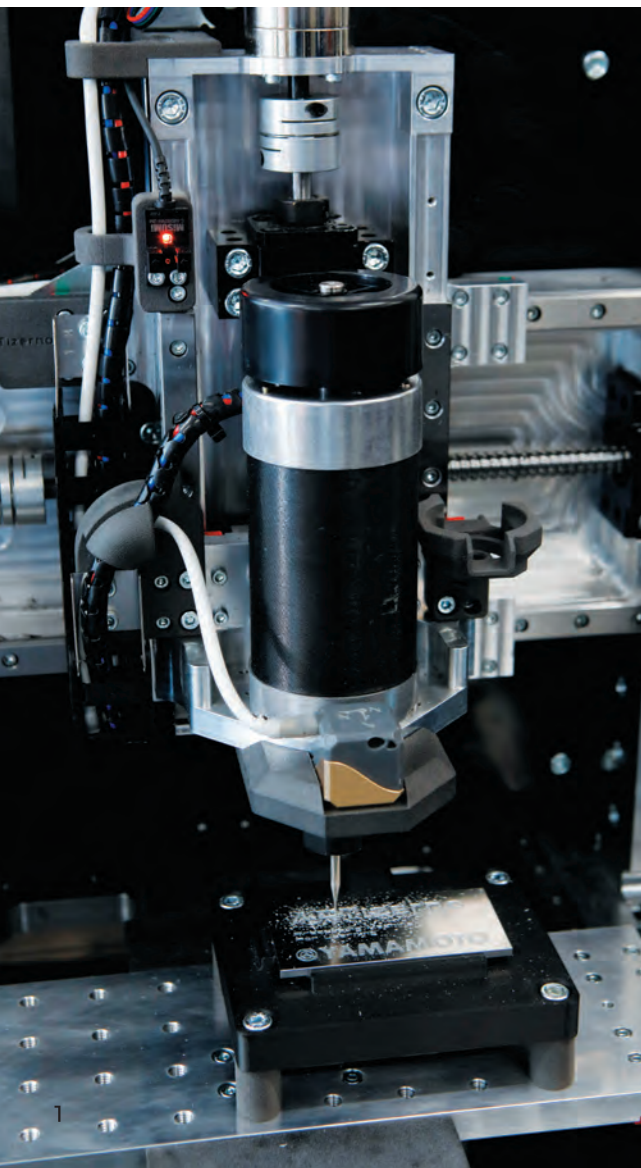
business with OSAKA

Cutting-edge Technologies & Manufacturing Companies in Osaka

CONTACT OSAKA BUSINESS DEVELOPMENT AGENCY

Mail bw-osaka@obda.or.jp HP <https://www.obda.or.jp/en.html>





The Unparalleled Technology of Osaka's Companies is the Backbone of Our Daily Life and Business.

Osaka has a large concentration of highly skilled manufacturing companies, making it one of Japan's leading industrial areas. In addition, there is a wide range of diverse industries.

- **Metal components used in cutting-edge research institutions**
- **Advanced resin materials developed proprietarily which are capable of application in various fields**
- **Products that contribute to the rapid development of the chemical industry**

The proprietary technology and quality support our society.

In this edition, we will introduce nine Osaka-based manufacturing companies with these unparalleled technologies and materials.

※Please contact the listed companies individually for the status and information of their patents and trademarks inside/outside of Japan.



Cartridge filter developed by applying fuel filtration filter technology



Filter materials for humidification of HME used in ventilators

Featured Business 1

One of the Few Experts in the World for Filter Paper Development

President
AZUMI Satoru



Only a handful of companies in the world specialize in filter paper. One of them is located in Higashiyodogawa-ku, Osaka. Since its establishment in 1919, AZUMI FILTER PAPER has engaged in integrated in-house operations from development to production, focusing on paper filters, filter cloth, non-woven fabrics, and other types of filters.

To date, the company has continuously contributed to the development of filtration technology. The company's main product is diesel fuel filter for automobiles, which is used domestically and internationally. In light of the current shift from gasoline-powered vehicles to EVs, the company has pivoted to identify a new innovation: cartridge filters developed using the fuel filter technology. Although industrial filters are commonly used for liquid filtration, hydrophilic treatment is no longer necessary due to the miniaturization of highly hydrophilic cellulose fibers. This ensures stable filtration even for high-viscosity liquids. The company has successfully created eco-friendly products that not only remove foreign materials with precision but also reduce costs, energy consumption, and waste.

The company also focuses on filter paper for medical applications. One example is the HME, Heat and Moisture Exchanger filter components used in ventilators. Although most HME are imported, the products developed by the company have demonstrated equal or better performance in terms of moisture loss and pressure loss data compared to overseas products. The company is considering exporting the product in the future. One of the products they are heavily focusing on is filter paper for test kits used for influenza and COVID-19.

Additionally, the domestic market share of functional papers is increasing. These include decolorizing and deodorizing paper for liquids used in the filtration of fryer oil in restaurants, and supermarkets as well as water-absorbing and evaporating paper with antibacterial and mold-resistant properties used in vending machines and frozen cases in supermarkets, is also increasing.

The company is also involved in social contribution activities, such as visiting school classes and events demonstrating filter papers. The company continues to explore new possibilities for filter paper in the future.

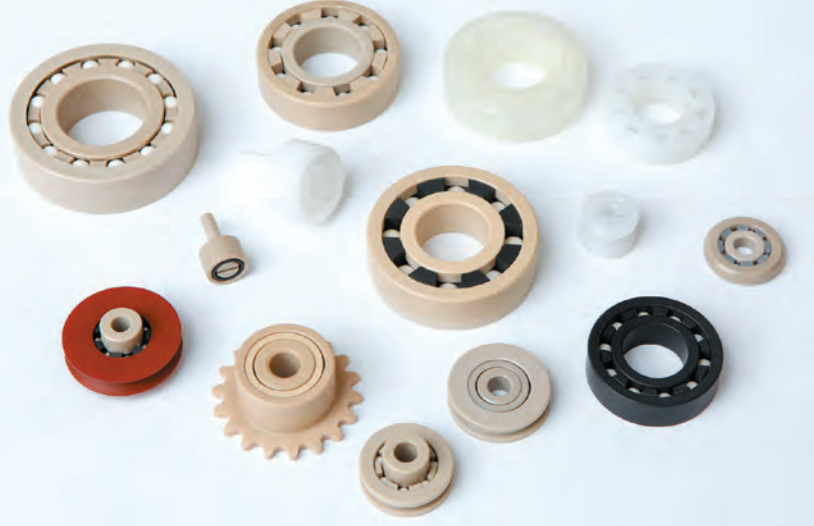
AZUMI FILTER PAPER CO., LTD.

[Address] 4-2-15 Komatsu, Higashiyodogawa-ku, Osaka City

[Business details] Research, development and manufacture of filter papers



▲HP



Featured Business 2

Japan's World-class Plastic Ball Bearings Giving Shape to Customers' Needs Through Precision Machining

Founded in 1961, Kashima Bearings is engaged in the manufacture of plastic products, such as ball bearings. Although ball bearings are generally made of metal, maintenance can be difficult since they are vulnerable to, among other things, water and chemicals, and they tend to rust easily. On the other hand, the strong points of ball bearings made of plastic are that they are lighter, rust-resistant, and are impervious to magnetic forces and electricity. Due to these strong points, this material is used in equipment in a wide range of fields where cleaning and sterilization are required, such as the semiconductor, medical, and food industries. The company has earned a worldwide reputation for the development and manufacture of these plastic bearings. Based at the Osaka headquarters, they also have sales offices in Tokyo and Bonn, Germany, and are expanding both domestically and internationally.

The company's plastic bearings are characterized by crafted bearings produced through precision plastic machining rather than injection molding. This allows them to handle the production of orders from small lots of only one piece. In addition, they can propose customized products with special dimensions, shapes, and materials that cannot be found in standard products. Another strength is the ability to propose and handle customized products that combine ball bearings with other parts, such as screws, to reduce labor and costs. Their precision machining skill makes it possible to meet a variety of requests from the clients.

Of course, the company is capable of meeting all standards prescribed by JIS (Japanese Industrial Standards) and ISO (International Organization for Standardization) for ball bearing specifications. Their strength is the ability to propose a myriad of plastic materials since they cover approximately 90% of the plastics available in the world. Based on the technology and data they have accumulated over more than 60 years, the company provides high-precision, high-quality products using different shapes, sizes, and machining methods depending on the application, plastic material, among other factors.

Even though the company is a leader in the ball bearing industry, Mr. Kashima has said that "We still need to raise awareness about ball bearings since this is a niche market". The company will continue to promote the usefulness and functional beauty of plastic bearings both in Japan and overseas.

President
KASHIMA Yuji



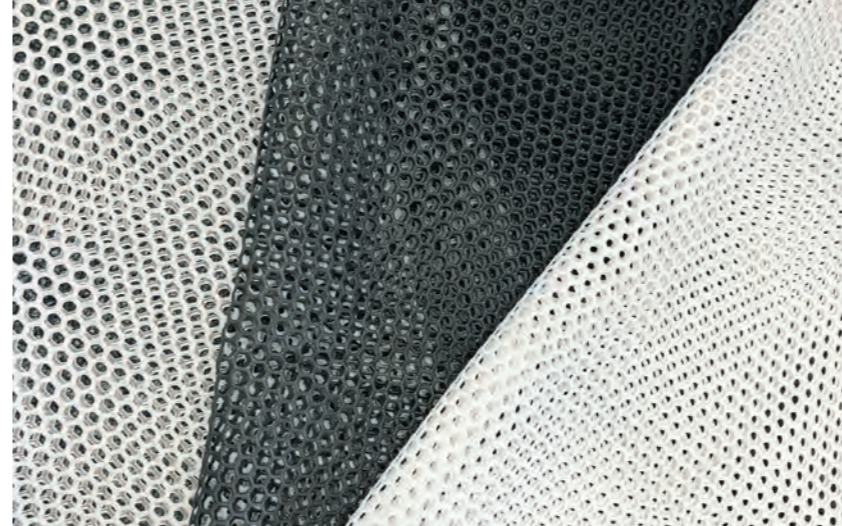
Kashima Bearings, Inc.

[Address] 2-9-21 Himesato, Nishiyodogawa-ku, Osaka City

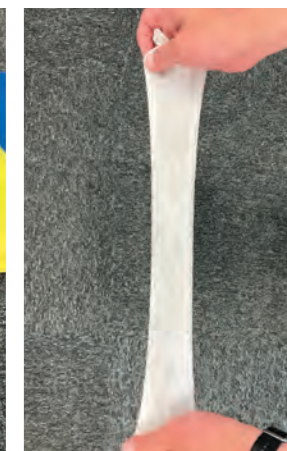
[Business details] Manufacture of plastic bearings



▲HP



Mesh type sheet, with raw material made from "EARNESTON". You can expect to improve elasticity and suppress vibration



Stretches better with a lighter strength than PU (polyurethane)

Featured Business 3

Development of Special Materials that Support Our Daily Lives is a Result from Technology Cultivated Over Many Years of History

KURARAY PLASTICS is a group company of Kuraray co., Ltd., a specialty chemical company, and has been supporting the rubber and plastic fields since its establishment in 1905. The business is divided into three main segments: rubber and chemical products business, which manufactures industrial hoses and water pipes; the film and laminate business, which handles tent membranes and screens; and the compounding business.

In the compounding business, they manufacture "EARNESTON", a compound molding material made mainly from styrene elastomers to which they have added their proprietary compounding technology.

The Film & Downstream Products Sales Section then utilizes the technology of the Kuraray Group and outside processing plants to process the "EARNESTON" into various sheet forms, including mesh, film and sheet, nonwoven fabric, and synthetic leather. The technology that the company has cultivated over the years makes it possible to propose such different types of materials.

"EARNESTON" comes in two types: a high resilience grade that expands and contracts quickly, and a low resilience grade that expands and contracts slowly to absorb shock and dampen vibration. In line with the concept of being "more flexible than rubber", the hardness range that can change from the softness of human skin to the hardness of a cutting board, is the greatest feature of this product. Of course, it stretches like rubber and is lighter than rubber. It is resistant to deterioration (hydrolysis) and yellowing and has shock-absorbent properties.

Resins (pellets) is widely used for pen grips, daily necessities, medical supplies, electronic devices, and automotive parts.

By proposing various new sheet shapes, it has been adopted in the fashion industry, such as innerwear and sportswear.

Also, when combined with CFRP (carbon fiber-reinforced plastic), vibration damping can be controlled and applied to tennis and badminton rackets, snowboard boards, and others. Although "EARNESTON" has already been adopted in a wide range of fields in Japan and abroad, the possible uses are endless. This is a unique material that we want you to see, touch, and imagine how it can enrich people's lives.

※ "EARNESTON" is a trademark or trademarks of KURARAY PLASTICS CO., LTD.

Manager
Film & Downstream Products
Sales Section
Film & Sheet Sales
Department
Business Division
SASAKI Shu



KURARAY PLASTICS CO., LTD.

[Address] 39F, Osaka Umeda Twin Towers North. 8-1, Kakudacho, Kita-ku, Osaka City

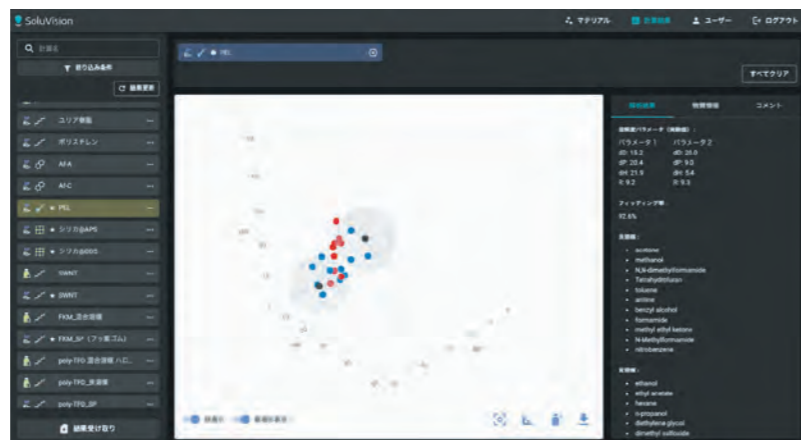
[Business details] Manufacture and sale of rubber, sheets, membrane materials and synthetic resins



▲HP



Image of using the software



Actual screen of the software

Featured Business 4

Long-awaited Software that will Save Laboratory Chemists' Tremendous Amounts of Time and Cost

CEO
SHIRATAKI Hiroshi



One of the challenges that developers in the chemical industry have long faced is the enormous time and cost required to move from research and development into practical application. Experimental chemists continuously go through countless trials and errors for years, even decades, to figure out "what to make and how to make it". This requires a high level of expertise and steady work, and in some cases, dangerous work. Also, due to the degree of difficulty in research and development, many experimental chemists end up with no practical applications throughout their lives.

Trying to improve this situation through the power of IT, Material Doors was established in 2022 by members with expertise in experimental chemistry, physical chemistry, and information technology. As a first step, they focused on "affinity of material", which is a source of worry for experimental chemists, such as "I can't find out what materials dissolve in it", "It is a simple but time-consuming task to consider appropriate solvents", and "The material I took the trouble to synthesize is wasted because it is not soluble in a solvent". Based on a physical theory called solubility parameters, they have developed and provided "SoluVision", a cloud-based software that instantly suggests the optimal solvents and purification methods to dissolve materials depending on the purpose.

The software handles a wide range of materials, from small organic molecules and polymers to inorganic materials, and can search for single solvents and mixed solvents. The optimal solvent is proposed in as little as 3 minutes from approximately 200,000 combinations calculated from up to 155 solvents and combining ratios in 5% increments. By using proprietary databases and algorithms developed through machine learning, the deduction of physical properties is highly accurate. It is expected that further improvements in accuracy will occur in the future as the database is improved. Without the necessity of prior studies of physical theory or information technology, another attractive feature is the graphic user interface, which is intuitive and easy for anyone to operate.

In addition, the resulting data can be managed directly on the software. Know-how, which tended to rely on the experience and intuition of each individual until now, is properly converted into data and accumulated. It is easy to search and share with others. It will prevent wasteful repetition of the same experiments and maximize the organization's development potential!

This software is a great help for experimental chemists. Further dissemination and upgrading in the future are expected to dramatically improve the industry's research and development capabilities.

Material Doors Corporation

[Address] Room 1-1-1, 29F Osaka Ekimae 3rd Bldg. 1-1-3 Umeda, Kita-ku, Osaka City

[Business details] Sale and development of software



▲HP



Featured Business 5

Japan's World-class Bellows Ultra-thin and Flexible, yet Highly Durable

CEO,
Representative Director
TAKASHIMA Hiroshi



Established in 1974, Mitsumoto Rasenkan Kogyo designs and manufactures bellows and flexible tubes with a high degree of flexibility. Since Mr. Takashima's appointment as President, the company has switched from manufacturing and wholesaling to direct sales and has independently acquired the international standard ISO9001 for quality management systems in order to enhance its customers' satisfaction. The company has shifted from mass production to customized production orders for a wide range of products with short delivery times and is also focusing on making each employee multi-skilled and capable of handling multiple functions. The bellows, the main product, is a metal pipe component capable of expanding and contracting. Its applications include sealing materials for valves, piping components, vacuum equipment, accelerators, semiconductors, liquid crystals, and a wide range of other uses in general industry and the chemical field.

The distinctive feature of the bellows manufactured by the company is the thinness of the plates. While a typical bellows has a thickness of about 1-2mm, the company is capable of manufacturing bellows with a thickness of 0.1-0.5mm. It has flexibility and elasticity, with a low spring constant and a long life. It overcame the issue of the decreased pressure resistance by developing multi-layered bellows with two to four layers to achieve the compatibility of contradictory functions: the bellows can maintain the same softness as a single-layered bellow while also supporting high-pressure resistance.

In addition, since the bellows are manufactured using proprietary molding and welding technologies, it is available in 1 mm increments from 35 to 850 mm in diameter. The strength of Mitsumoto Rasenkan is that they can manufacture using not only general stainless steel but also specialized materials such as cemented carbide, which are highly functional but difficult to process, even in small lots. The company's bellows are all custom-made without the use of molds.

The meticulous technology of the company which is world-class and the pride of Japan, is backed by the aspirations of the next generation of engineers and the guidance and training from skilled technicians. The company's clients include more than 1200 companies that are mainly research and educational institutes involved in cutting-edge research in Japan which clearly is a proof of trust in their technology.

Mitsumoto Rasenkan Kogyo Co., LTD.

[Address] 1-2-37 Nagata, Joto-ku, Osaka City

[Business details] Manufacture of bellows and flexible tubes (flexible piping)



▲HP



Toilet paper printed with "FLEXO Water-based Bio Series"



Featured Business 6

Achieving Customers' Ideals with Printing Inks Based on Proprietary Dispersion and Compounding Technology

President
KATO Yasunobu



OPI was established in 1920. It is a chemical manufacturer based in Osaka with three factories in Japan and the company engages in the research, manufacture, and sales of various types of printing inks, such as gravure inks for printing on plastic film, flexographic inks for printing on corrugated paper and paper rolls, and screen inks for printing on cloth and plastic.

The company's strength is its ability to perform contract processing and produce custom-made inks and coatings for companies. The underpinning dispersion technology and compounding technology are the company's core technologies. The dispersion technology which stabilizes pigments and other particles by mixing them in a solvent or resin solution is indispensable for beautiful printing, such as the practical application of special pigment production. Compounding technology, on the other hand, mixes multiple materials in appropriate proportions. By using the technology to create materials with the desired functionality, it is possible to manufacture small-lot, multi-variety products with the required colors and physical properties. Thanks to these technologies, the company has been able to continuously meet the detailed and strict needs of the clients over the years.

Many of their products have been created at the request of their clients. A typical example is the "FLEXO Water-based Bio Series", a water-based flexographic ink for paper. At the request of an environmentally-conscious client, the company embarked on the development of biomass ink which can be printed on toilet paper. In addition to basic experiments, compatibility experiments between biomass materials and existing materials were conducted, and materials were reformulated based on the data. Finally, the ink used for toilet paper is converted into biomass ink! Ever since then, the company has focused on the development of gravure inks and water-based flexographic inks with higher biomass content that is environmentally friendly.

The company's response to each order leads to an optimal solution, if it is related to ink, whether it be color, material, or the function of printed matter. This includes packaging for daily necessities and food products, shopping bags and cardboard boxes, and PTP sheets for pharmaceuticals. Using the company's technology in these everyday items helps to make our lives more colorful.

OPI Corporation

[Address] 9F Shinsei Bldg. 2-7-26 Minamisemba, Chuo-ku, Osaka City

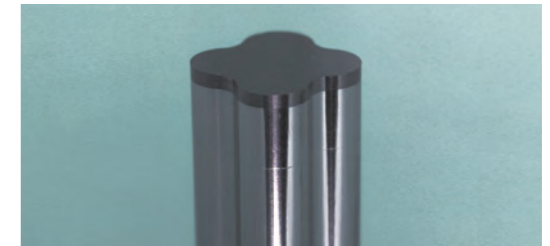
[Business details] Manufacture and sale of printing inks and chemical products, sale of printing machinery, materials and pigments



▲HP



High-performance machine tools are installed to its own specifications to manufacture products



"Diamond mold parts" with long lifetime and the possibility to reduce maintenance cost



"Heat Barrier Hat" to solve the problems of plastic injection molding

Featured Business 7

Specialist in Super-precision Mold Components that Also Strive to Solve Mold Issues

CEO & President
Dr. IZUMI Yasuo



Originally started in 1953 as a manufacturer of slide zippers, the company's name changed to the current name of Shin-Nihon Tech in 1975 to reflect the establishment of a new mold division. Currently, the company mainly manufactures and sells super-precision mold parts for electronic components and precision equipments and has earned the trust of leading clients in the industry, including major electronic manufacturers. Their technology is highly acclaimed. They have pride in their leading technology in ultra-precision machining in Japan, as evidenced by the award for excellence we received at the 4th Monodzukuri Nippon Grand Awards sponsored by the Ministry of Economy, Trade and Industry for our "laser processing to prevent slug pulling during press stamping process".

Of particular note is the processing technology for sintered diamonds (a composite material consisting of diamond particles sintered on top of cemented carbide with a binder such as cobalt). The research and processing of diamonds has long flourished in Osaka, in fact, industries, and academia have been collaborating for more than 20 years in the research and processing of sintered diamonds. This resulted in the "diamond mold parts", which were the brainchild of Mr. Izumi, their CEO & President, who is justifiably proud of this in-house product which he refers to as the "best mold components in the world". This is achieved by using high-hardness sintered diamonds as cutting edges of press die used to process metals, which results in a life that is approximately 50 times longer than the commonly used cemented carbide. Sintered diamonds are resistant to wear and tear, and products are stable even in continuous use in production. The company receives inquiries not only from Japan but also from countries around the world, including Malaysia, where the semiconductor industry is thriving.

In addition to "diamond mold parts" the company also produces many of its own products. They listen to their customers' concerns and strive to develop "functional mold parts" that address any concerns in the production process of using molds. The "Heat Barrier Hat" is one such product. With a jig that is inserted between the injection nozzle and the mold during the injection molding process, it is effective in eliminating stringing (molding defects where resin that has not solidified extends from the apex of the sprue in a thread-like shape) that may cause defects in the appearance of the product or damage to the mold. Mr. Izumi has said that "I grew up and studied technologies in Osaka, a place where people care about others from the bottom of their hearts and mutually enhance each other. I hope that our products, which incorporate these technologies, will be used by people all over the world". Why not consider incorporating the company's precision machining technology into your business?

Shin-Nihon Tech Inc.

[Address] 2-2-81 Hama, Tsurumi-ku, Osaka City

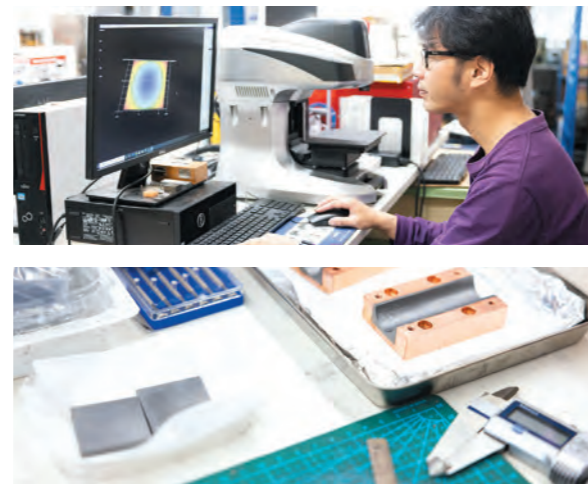
[Business details] Manufacture and sale of super-precision mold components



▲HP



"Comporoid", a high thermal conductivity composite material for various specifications



"Learning Factory" that visualizes data and optimizes production lines



Using "MULTI INTELLIGENCE" for process learning

Featured Business 8

"Comporoid", a High Thermal Conductivity Composite Material Created Through the World's Most Advanced Thermal Management Research

Managing Director, CEO
CHIKUBA Katsuhiko



In recent years, as mobility and mobile devices have become more sophisticated, thermal management has become an issue. THERMO GRAPHITICS is taking on the challenge of such "heat". It is an R&D-oriented venture company that develops, manufactures, and sells primarily heat dissipation and heat diffusion components for thermal management. They have a small staff of 6 comprised of highly skilled engineers who formerly worked at, among others, major electrical equipment manufacturers, foreign semiconductor manufacturers, and other companies.

As the thermal conductivity of stand-alone metallic materials has reached its limits, the company focused on graphite (crystalline carbon) as an alternative to metals because of its high thermal conductivity and lightweight. Until now, it was thought that joining different materials would be impossible; however, throughout the many years of research, the company was able to achieve the compounding of different materials by modifying the surface or crystalline of graphite and other processing conditions. The result was the development of "Comporoid," a composite material with high thermal conductivity that combines graphite with other different materials. This composite process achieves thermal conductivity that cannot be achieved with a single material by lowering the thermal resistance of the composite interface to the limit while taking advantage of the characteristics of the composite counterpart materials such as metals and ceramics. It boasts a thermal conductivity of 1700 W/mk, far exceeding that of aluminum and copper. There are two types of "Comporoid" graphite bonded to a composite counterpart material and surface coating. By selecting mate material, size, and thickness according to specifications, characteristics such as thermal conductivity, heat transfer direction, and insulation properties can be freely designed. The products can be processed into heat sinks, heat spreaders, and high heat dissipation insulating substrates, as well as composite materials themselves.

The company's innovative research and development of thermal management has attracted the attention of renowned global companies both domestically and internationally. In fact, it is fair to say that the company gets many inquiries from regions where the heat dissipation capabilities of metals such as aluminum and copper are not sufficient. Mr. Chikuba said, "We would like to move on to the optical and telecommunications businesses, such as industrial lasers, power devices (semiconductors that control and convert electric power), and then to the mobility business". He continues to take on challenges as he looks two or three steps ahead to a brighter future.

THERMO GRAPHITICS CO., LTD.

[Address] #405 TECHNOSEEDS IZUO. 6-2-29 Izuo, Taisho-ku, Osaka City

[Business details] Production of graphite composite materials



▲HP

Featured Business 9

Initiatives for "Learning Factory" to Automate and Optimize Production Lines

General Manager, Technology Development Department
YAMAMOTO Takamasa



Based on precision machining technology and measurement evaluation technology cultivated in metal cutting, YAMAMOTO METAL TECHNOS is a company that is dedicated to the theme of "bringing innovation to machine processing". Prompted by the Lehman Brothers shock in 2008, the company shifted to DX, and established a new business model in which the company not only undertakes component parts processing, instead of subcontractors but also provides its own in-house proprietary products and solutions. Representative examples are the robot system integration business and the machining optimization support service (LAS, which stands for "Learning," "Advanced," and "Support").

"MULTI INTELLIGENCE" is a product that the company has worked on from design to sales. It is a digital device capable of monitoring temperature, vibration, and power in real-time during machine processing, such as cutting and friction stir welding. Since temperature sensors are built into the tool cutting blades and probe tools, and acceleration sensors and force sensor wireless transmitters and receivers are built into the holders, data such as temperature, vibration, and force of tool cutting tools and friction stir welding tools can be measured and transmitted wirelessly and checked on a PC monitor. The tool itself is intelligent and the visualization of machine processing allows the detection and predictive detection of abnormalities during processing, determination of a tool's life, and selection of optimal processing conditions.

They are also undertaking initiatives for "Learning Factory", a smart factory that automates and reduces manpower by using such digital devices, and automatically feeds back data on materials information, and the process phenomena and product quality for each process in order to perform predictive and preventative maintenance. 3D simulation identifies bottlenecks in the production line and anticipates production efficiency, cost-effectiveness, and even changes in work styles with 3D models and graphs. The company is optimizing production by visualizing it as data and is considering "Learning Factory" for the future with multiple locations and an automated production line reconfiguration system capable of handling a wide variety of products. By optimizing production throughout Japan, they are looking to achieve manufacturing that can compete with the rest of the world.

With a declining birth rate and an aging population, the shortage of human resources and successors in SMEs that make a living from manufacturing is becoming more serious these days. "Learning Factory" concept promoted by the company may be the best solution to the problems faced by such SMEs.

※ "MULTI INTELLIGENCE" is a trademark or trademarks of YAMAMOTO METAL TECHNOS CO., LTD.

YAMAMOTO METAL TECHNOS CO., LTD.

[Address] 2-4-7 Setoguchi, Hirano-ku, Osaka City

[Business details] Processing business, processing solution business, robot system integrator business, and technical training support business



▲HP