

Developing “the metal solution” Through Daring Capital Investments and Technological Developments

— The springboard to development was the introduction of vacuum heat treatment furnaces, HIP, and machining equipment



Interviewer: Hisaharu Obinata
Chairman*, ULVAC, Inc.

Guest: Mr. Kazuhiko Hasegawa
President, Metal Technology Co. Ltd.

Metal Technology Co. Ltd. was established in 1960 as a pioneer in the metal heat treatment industry. Since then the company has made numerous technological breakthroughs and, under the slogan “the metal solution,” it now possesses a diverse range of processing technologies, including metal heat treatment, hot isostatic pressing (HIP), sintering, bonding, welding, superplastic forming, additive manufacturing, analysis, and machining. By combining these outstanding technologies, the company is developing its business as one of the world’s leading manufacturers specializing in metal processing. By bringing the industry’s leading cutting-edge technologies to the forefront, Metal Technology is contributing to the industry through its advanced metal processing technologies in a wide variety of industrial sectors, from liquid crystal displays and semiconductor fabrication to aerospace development. The driving force behind its sustained growth is its approach of anticipating advanced needs and working proactively to open up new growth markets. For this “Executive Guest” section, we invited Mr. Kazuhiko Hasegawa, President of Metal Technology Co. Ltd., to discuss, among other things, how the company has grown, its aims for the future, and what areas of growth it expects in the future.

*As of July 1, 2017

*All product trademark notices are omitted in this document.



Vertical single-chamber vacuum furnace (Japan's largest)



Aircraft component



Giga-HIP (The world's largest)



Powder metal sintering using a hot press



500-ton single-axis hot press



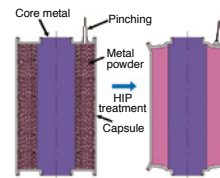
Horizontal single-chamber vacuum furnace



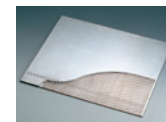
Horizontal three-chamber vacuum furnace



Bonded samples of dissimilar materials



Powder metal sintering using HIP treatment



A heat exchanger plate

HIP

Processing and sintering powder, producing high-density semi-sintered powder, eliminating the internal defects of cast products

Sintering

From metals to ceramics

Bonding

Vacuum brazing and diffusion bonding

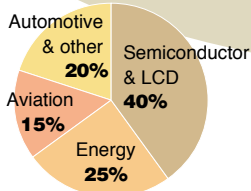
Welding

Electronic beam welding and specialized robotic machines

Heat Treatment

High-vacuum heat treatment, atmosphere heat treatment, and special heat treatment

Design / Machining



■ Sales by industrial sector

Precision Machinery

Automotive

Aerospace

Energy

First turning point: The installation of an ULVAC vacuum heat treatment furnace

Obinata: You have been using ULVAC vacuum heat treatment furnaces for a long time. I was also pleased to hear that you have decided to install a new vacuum heat treatment furnace at your Toki Plant, which is scheduled to start operation in the fall of this year.

I have been looking forward to today's interview and I have a lot of questions that I would like to ask you. One is how our vacuum heat treatment furnaces contribute to your success, and another is what type of vacuum heat treatment furnace you would like to see developed in the future. Dr. Kazuya Saito, Executive Officer and Manager of ULVAC's Research & Development Planning Department, will also be joining us for this interview.

First of all, could you tell us a little about how Metal Technology was established, how it has grown, and what its current organizational structure is?

Hasegawa: There have been several turning points over the past 57 years.

Let me start with a brief description of the company's history. Metal Technology was founded in 1960 by a number of researchers who were then working at the Institute of Physical and Chemical Research (Riken). As Riken was being relocated that year from Komagome in Tokyo's Toshima Ward to Wako City, Saitama Prefecture, several of its researchers decided to create a spin-off group that founded Metal Technology with the aim of validating research results in the industrial world.

Riken researchers had conducted research into titanium and heat treatment for magnetic materials, but the latter quickly led to business opportunities for Metal Technology.

When the company was first established, it began carrying out heat treatment for metal components in a hydrogen gas atmosphere as well as vacuum brazing. However, in 1970 we installed ULVAC's FHH-45L vacuum heat treatment furnace and acquired certification from Japan's then Defense Agency (now the Ministry of Defense) and entered the modern heat treatment business in earnest. This was our first turning point.

Obinata: I heard that our plant manager at the time, Mr. Takei, was involved in the installation of your vacuum heat treatment furnace. In those days, he was considering the development of a new vacuum heat treatment furnace. As Metal Technology intended to enter the aircraft sector, it had been planning to install a vacuum heat treatment furnace rather than an ordinary atmosphere furnace, but the high cost of such a furnace had caused the company to waver. At that point, Mr. Takei visited Metal Technology and offered that we develop a new vacuum heat treatment furnace jointly with you. Metal Technology readily agreed to this offer. Ever since then, ULVAC has enjoyed a close working relationship with Metal Technology.

Hasegawa: At that time, Japan had just started repairing aircraft engines. New materials were beginning to appear, but there was a limit to the capabilities of atmosphere furnaces. That was why we considered installing a vacuum heat treatment furnace.

Obinata: It was due to this that ULVAC became involved in developing cutting-edge vacuum heat treatment furnaces, so I'm glad you made the decision you did.

EXECUTIVE GUEST

ISO 9000 Series

ISO 14000 Series

Nadcap

(International certification system for special processes)



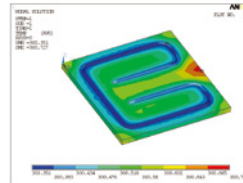
Stirling engine heat exchanger



Hot-forming machine



Direct metal laser sintering



Heat transfer analysis for aluminum alloy



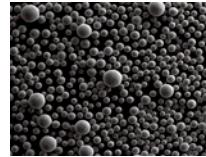
Superplastic forming machine



Electron beam melting



Examples of additive manufacturing



Rapidly solidified spherical powder

Superplastic Forming

Aluminum / titanium alloy

Additive Manufacturing

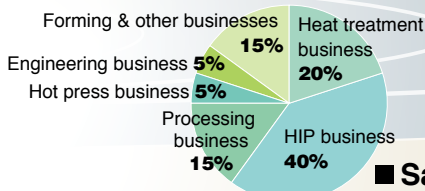
EBM & DMLS

Analysis

Manufacturing process simulation / Material analysis

Machining

From two- to three-dimensional processing (various machining centers and NC lathes)



■ Sales by business segment

Research & Development (R&D)

Accelerators & Nuclear Fusion

Medical Equipment

Electricity & Electronics

LCD & Semiconductor Production

Second and third turning points: The introduction of HIP and machining

Hasegawa: The second turning point for our company was the launch of the hot isostatic pressing (HIP) business. The HIP process facilitates the sintering of powder metal materials, the removal of defects from inside a casting, and the use of diffusion bonding by increasing the pressure of argon gas to 1,000 atm or more and containing it within the furnace at a high temperature. The most attractive aspect of this process is that it allows us to apply sintering technologies in the development of new materials that meet our objectives.

Since installing its first HIP equipment in 1984, Metal Technology has developed its HIP business with a focus on increasing the density of cast and sintered products. We now have a total of 18 HIP machines, including those installed at our Chinese subsidiary. We choose which of the various machines to use based on the needs of the customer.

The third turning point was the commencement of machining.

In 1990, Metal Technology began machining in earnest for the first time. As a late comer to this line of business, we needed to differentiate our company from our competitors, so we choose to start a business specializing in a hard but viscous nickel-based alloy called Hastelloy. Even though we were new to this field, we were able to succeed for two reasons: the first reason being that it is easier for a heat treatment business to enter the machining industry than it is for a machining business to enter the heat treatment industry, and the second being that our entry into this industry helped improve the way clients, particularly those in the aircraft industry, placed orders by eliminating the need for “zigzag orders”^{*.}

As a result, Metal Technology is now involved in six major business segments: metal heat treatment (the company’s original line of business), HIP, hot press, machining, forming, and engineering.

These businesses are underpinned by technologies for the following types of processing work: heat treatment control; brazing; diffusion bonding and sintering through the use of vacuum hot presses and HIP equipment; superplastic forming (SPF); welding assembly through the extensive use of electron beam welding (EBW) and robotics; processing through the use of large machining centers; surface processing through the extensive use of various thermal spraying systems; and additive manufacturing.

Evolving like a living creature metal processing requires not only equipment but also engineering know-how

Obinata: As metal processing is Metal Technology’s core technology, could you explain what makes metal processing technologies appealing or interesting and tell us a little about the difficulties involved?

Hasegawa: At first glance, metal may appear to be just a cold, hard object, but it transforms when heated, cooled, or pressurized. Also, with each type of metal having clearly defined properties, the way a particular type of metal changes when processed can be established.

Nonetheless, even if metal is processed in the same way using the same furnace, a completely different change can be observed if the processing conditions vary even slightly.

Changes in the way a piece of metal is polished can significantly affect its bonding properties and the slightest

* A “zigzag order” is a form of transaction in which a component goes back and forth between the client and its contractors (mainly small and medium-sized enterprises) as it proceeds through each of the production processes. Since the aerospace industry in particular requires strict certification, it is difficult to adopt an integrated production system and the order placement, product delivery, and product acceptance processes tend to be inefficient because they all require time and labor. This results in higher costs and a longer lead time for delivery.

error in the calculation of its predicted expansion or contraction can change its form considerably. Although metal is clearly a material object, it exhibits changes or possesses different properties as if it were a living creature. This is why we not only need equipment but also engineering know-how as well.

Saito: You have the world's highest processing capacity in terms of HIP, as well. How did you first become interested in this area?

Hasegawa: HIP was already being used in the field of super hard materials for products such as cutting tools, but it was manufacturers that were using it. Metal Technology may have been the first company to introduce HIP as part of its processing services. At first, we had a few doubts about its potential, but when we tried using HIP with powder materials, the results were far better than we had anticipated. HIP allowed us to achieve things that would not have been possible with melting. We firmly believed that this was a technology that would change the world.

In fact, almost all devices—from mobile phones to large TV sets, semiconductors, and electronic components—have been reduced in size and weight. Many of these devices benefit from HIP technology as it enables manufacturers to produce goods by solidifying powder materials.

Saito: You experienced the potential of HIP first hand, didn't you?

Hasegawa: "Change" is necessary—not only in the narrow field of metal processing technologies but in all other fields as well—because modifying the shape of something or improving the performance of a device, for example, can make the previously impossible become possible today. Companies constantly evolve and develop by doing this repeatedly, which can be an extremely interesting experience for the people involved in this process. This not only improves how we go about meeting our customers' demands and expectations, but also helps us to develop large-scale projects that make the most of these technologies. Our engineering business unit operates in precisely that world. It is constantly taking on new challenges.

Obinata: What is your engineering division involved in?

Hasegawa: It's involved in what might be described as 'national projects.'

For example, our accelerator project team is conducting research into technology that utilizes neutrons for various purposes such as cancer treatment. We are also participating in a project to develop a type of atomic fusion laboratory equipment called 'artificial sun' with the aim of developing technologies to be utilized as future energy sources. This initiative is completely different to anything we have done in the past. Our previous projects have been customer led but in our engineering business, to a certain extent, we prioritize our own way of thinking.

Furthermore, as we have gained experience in the jet engine repair business which we launched about five years ago, we have found that it requires a level of stringency that is considerably different from our first impressions because passengers' lives depend on the quality of such work. In this line of business, we require overseas certification from regulators such as the U.S. Federal Aviation Administration (FAA) and the European Aviation Safety Agency (EASA). For a small or medium-sized Japanese enterprise like us to have entered this line of business is unprecedented, so the industry is carefully monitoring our performance.

Realizing a 30-year ambition by establishing a new plant in Toki, Gifu Prefecture

Obinata: Could you give us a brief description of your Toki

Plant in Gifu Prefecture, which is scheduled to start operation soon, and tell us what your expectations for the plant are?

Hasegawa: Aircraft manufacturers have asked us if we could increase our production as they are in the process of transitioning from previous models to new ones. We have no room for expansion at the Shiga Plant, which is responsible for handling orders from these manufacturers, so we needed to secure a new plant site to further expand our facilities. Given this, we decided to expand into the Chubu region, a key market in the aviation industry that is located close to our customers. Expanding into the Chubu region is actually the realization of an ambition that Metal Technology has had for about 30 years. A variety of conditions had to be met for Metal Technology to reach where it is today.

What makes the Toki Plant different is that it was designed with the aim of building a plant based on the concept of streamlining operations to pursue labor savings and personnel reductions. Naturally, we are looking to develop our business with the global market in mind.

Obinata: The Toki Plant is being built to serve the aerospace industry, isn't it? Up to now, ULVAC's heat treatment furnaces have generally been used in automobile-related industries, but we will endeavor to develop them for the aircraft industry as well. Going forward, what will the requirements for vacuum heat treatment furnaces be in the aircraft industry?

Hasegawa: One benefit of ULVAC's vacuum heat treatment furnace business is that it supplies multi-chamber vacuum heat treatment furnaces that deliver high productivity, but we are keenly aware that it is difficult to measure substance temperatures during heat treatment processing.

In the aviation sector, it is sometimes necessary to measure substance temperatures as a key part of quality assurance, so we need a method or system that will enable us to measure substance temperatures while the products being treated move from one chamber to another. The other day, we received an innovative proposal from ULVAC. If this can be developed to cater to the needs of the aviation industry and you can obtain the approval of a certification body, the proposal will have tremendous potential. We look forward to this—if you succeed in this, it will bring about a revolution!

Constantly reevaluating our company's perspectives! Overdependence ruins a company

Obinata: You said that the ability to measure substance temperatures in a multi-chamber vacuum heat treatment furnace would be a revolutionary development—these are very encouraging words! In its management policy, Metal Technology states that it will work constantly to anticipate changes, provide numerous solutions, attempt to deliver technological innovation perpetually, and further increase its potential. In line with the spirit inherited from the company's founders, you are developing new products with a view to future developments. Can you tell us about the structure and creative ideas that you employ to accumulate know-how and develop new processes?

Hasegawa: What we learnt from our predecessors was the need for active capital investment, but that doesn't necessarily mean that equipment must always come first. When the objective of introducing new equipment is clear and it is necessary as a source of income in the future, we introduce it early on by adding our own specifications and making improvements to it.

Saito: You mentioned that you introduce new equipment early on if it will become a source of income in the future, but this can be difficult to judge. Actually, HIP sintering is what you might describe as a "source of income," so

what criteria did you use to make the decision to adopt this technology?

Hasegawa: The liquid crystal display market was the original trigger for our introduction of HIP, but we ended up using it for aircraft, particularly for turbine cases and compressors. With engines now becoming smaller and lighter, our targets are shifting but we are still operating at full capacity.

In any case, it is important how equipment is used. Where small and medium-sized enterprises like us have an advantage is our agility and adaptability. Due to the ongoing globalization, there are no longer any barriers between large and small businesses and there is no longer a tendency for large corporations to take care of their contractors like they did in good old days. What a difficult time we live in!

Given this, agile small and medium-sized enterprises that are capable of making swift decisions must always stay ahead of the competition, and if they are overtaken, they must take the next step. Otherwise, they will be beaten. I do not mean this as a criticism of large corporations at all. I simply mean that we now live in an extremely challenging world and that small and medium-sized enterprises need to change their management setup as well. Overdependence will ruin a company.

Obinata: You made a considerable investment in HIP, didn't you?

Hasegawa: Many objected to the adoption of HIP, but I gave my approval and introduced it resolutely. Our investment totaled about six billion yen, and if I may exaggerate a little, that amount was close to our total annual sales at the time.

Obinata: That's amazing. We worry about making investments even if they represent only 10% of our annual sales [laughs].

You are known to believe that the more hardships you undergo, the greater the results you will achieve and I totally agree with you. My opinion is that the more energy a company puts into development, the greater the benefits that will follow. Companies that save their efforts in development will neither grow nor generate any profit. First and foremost, companies need to spend money on development. How is development conducted at your company?

Hasegawa: This is a weak point of small and medium-sized enterprises— they cannot easily appropriate large budgets to projects with an uncertain outcome. In the past, we promoted development by establishing a development headquarters, but this initiative was not linked directly to our plants and it tended to focus on production technologies, so its work ended up overlapping with that of the production engineering department at our plants. As a result, we failed to get the results we were hoping for.

Our technology headquarters is responsible for development now. Plant personnel are also added to our development teams. Based on the information that our plant and sales personnel have on markets, customer needs, and future trends, we focus on two aspects in our project style: ensuring that newly developed technologies take root and advancing research and development.

Suzhou Plant in China supports the ever-expanding aircraft sector

Obinata: I understand you are growing your business in Suzhou, China, too. We are very grateful that you use the vacuum heat treatment furnaces produced by our Chinese subsidiary. Please tell us a little about your business in China.

Hasegawa: Our ULVAC vacuum heat treatment furnaces



Profile of Mr. Kazuhiko Hasegawa

President, Metal Technology Co. Ltd.

Mr. Hasegawa was born on August 5, 1953. Having graduated from the Hokkaido Institute of Technology with a bachelor's degree in mechanical engineering, he joined Metal Technology Co. Ltd. in 1976. He was appointed manager of the Himeji Plant in 1988, elected as a director in 1997, became director and head of the Sales Division in 1999, and then was promoted to the post of Managing Director in 2001. In 2005, he took office as president, a post he holds to this day.

Company profile

Metal Technology Co. Ltd.

- Head office: Harmony Tower 27F, 1-32-2 Honcho, Nakano-ku, Tokyo
- Establishment: February 10, 1960
- Representative: Kazuhiko Hasegawa, President
- Capital: ¥288 million
- Net sales: ¥9,460 million (2017)
- No. of employees: 521 (as of May 2017)
- Main business lines:
 - (1) Heat treatment for metal components
 - (2) Bonding of metals and ceramics
 - (3) HIP treatment
 - (4) Sintering of metals and ceramics
 - (5) Electron beam welding and assembly, etc.
 - (6) Superplastic forming
 - (7) Additive Manufacturing
 - (8) Analysis
 - (9) Precision processing



are doing a great job at our Chinese subsidiary. They meet the manufacturing requirements for aircraft specifications. As they are Nadcap-certified, we are using them in the heat treatment and vacuum brazing of components used in aircraft as well as those used in industrial equipment such as thermal power gas turbines and medical devices.

Similarly to our vacuum heat treatment furnaces, our main HIP equipment is used as a type of certified aviation furnace in the removal of defects from precision castings for components used in products such as aircraft, thermal power gas turbines, and automobiles. This has enabled Metal Technology to grow its business in China as a dedicated



Hisaharu Obinata,
Chairman, ULVAC, Inc.



Kazuya Saito,
Executive Officer and Manager of the
Research & Development Planning
Department, ULVAC, Inc.

contractor for special processes, such as aviation. It is four years since our Chinese subsidiary entered full-scale operation and we are confident that it will start making a profit this year.

Obinata: You mention that you're confident that, after four years of operation, your Chinese subsidiary will soon go into the black, but it actually took five years for our large equipment assembly plant in Suzhou to do so. It finally started making a profit last year.

One of the various reasons for our lack of progress was a problem with the supply chain. At first, we couldn't find a supplier capable of delivering products that met our requirements, but we worked steadily to improve our product quality. Also, to raise the capabilities of our engineers there, we had Japanese and Korean personnel visit China to train them. In fact, the greatest obstacle we faced was that Chinese customers did not trust the quality of Chinese products. They asked us to supply them with products manufactured at plants in Japan, but we obviously couldn't continue to manufacture our products in Japan forever. Given this, we actually decided to produce some large-scale equipment in China and ask our customers to check the quality. By taking this bold step, we were able to gain the confidence of our Chinese customers, who confirmed that the level of quality was acceptable. Today, our

Chinese subsidiary is operating at full capacity.

Hasegawa: I'm glad to hear that. ULVAC is now better known in China, and we have great hopes for the future of your company.

Demand for aircraft is expected to continue to grow around the world, particularly in China. As the intentions of the Chinese government are consistent with those of foreign-affiliated companies, Western manufacturers are expanding their local production through joint ventures.

Given the degree of technological growth and costs involved in such joint ventures, China is suddenly attracting a lot of attention. However, the quality and reliability of special processes are a separate matter, and there aren't really any local companies that can be relied upon in this sector. Even if such a company were to be established, it would not be able to achieve the quality we demand overnight. The level of quality needed to meet the requirements for aircraft can be trusted in other industries too, so such a level would also meet the needs of many customers in other sectors.

Obinata: What are the main difference between China and Japan? Have you experienced any difficulties in China?

Hasegawa: Similar to a laundry, we receive articles from our Chinese customers and then return them after we have processed them there in China. As a result, we have to solve

any problems locally. Also, in China, there are almost no Japanese-affiliated companies producing high-value-added products that require HIP, so we couldn't rely on business rights brought over from Japan or on receiving work from the Japanese-affiliated companies that we deal with in Japan. Consequently, we had no choice but to raise the technological capabilities of our Chinese subsidiary.

Half of the current site for the Suzhou Plant is still vacant. As well as working to ensure that we can meet aircraft and power generation-related demand going forward, members of our Chinese subsidiary are also proactively seeking to secure sales in engineering and other fields and requesting additional equipment.

All acts lead to "the metal solution"

Obinata: You became president of Metal Technology in 2005. In this management role what do you endeavor to achieve? Also, please tell us your views on personnel training.

Hasegawa: We are proactive in addressing environmental issues. In a sense, our guiding principle of considering both the environment and people as important means much the same thing as saying that the environment and people are closely interrelated. The word "environment" basically means not only the Earth itself, but also society, workplaces, and people's lives. Essentially, people are involved in all of these, and recently there has been a shift to people wanting a comfortable place to live and spend time in rather than just convenience. We may not be able to achieve anything significant immediately but, as a responsible member of society, we are trying to begin by focusing on the small things that we can do. Since Metal Technology was established as a heat treatment business, its work environment is less favorable than that of other industries. With most of our plants having acquired ISO 14001 certification, we keep in mind the need to create a workplace and environment in which our employees can work comfortably and aim to undertake measures that will lead to the company developing further. It is people that can ensure that this goal is achieved as planned, so they will play a key role in this.

Obinata: People are the most important aspect of all management resources.

Hasegawa: As I have said both inside and outside our company ever since I took office as president, people are, as you say, an important factor. Given this, I have continued to this very day to run the company under the slogan "A company is its people—they are its most valuable assets." This will not change in the future. You can obtain whatever equipment you want if you pay for it, but this is not the case with people. You need to hire people who have high aspirations and then train and develop them.

At orientation meetings and interviews for prospective employees, when I talk about matters such as the technologies we possess, our main lines of business, our aims, and my enthusiasm for management, many of the students respond favorably to what I am saying. Ideally, we want to employ students who feel a connection with Metal Technology's guiding principles. In this way, we are striving to ensure that Metal Technology remains an attractive company with "shared values" as its keyword.

We emphasize "growth" over "expansion". In other words, we strive to achieve what we have been unable to do so far. This means that we constantly improve what we do and that we run the company based on the enthusiasm of each and every one of our employees.

■ Offices & plants



Shiga Plant



Toki Plant



Himeji Plant



Metal Technology (Suzhou) Co. Ltd.

● Overview of the Toki Plant

Address: Aqua Silva industrial Park, Izumi-cho, Toki-shi, Gifu Prefecture

Site area: Approx. 35,000m² (flat area: approx. 22,000m²)

Building area: Approx. 5,000m²

(total floor area: approx. 7,400m²)

The plant will be completed in September 2017. Its main business lines will include heat treatment, superplastic forming, and hot forming for aircraft components.



Gunma Plant



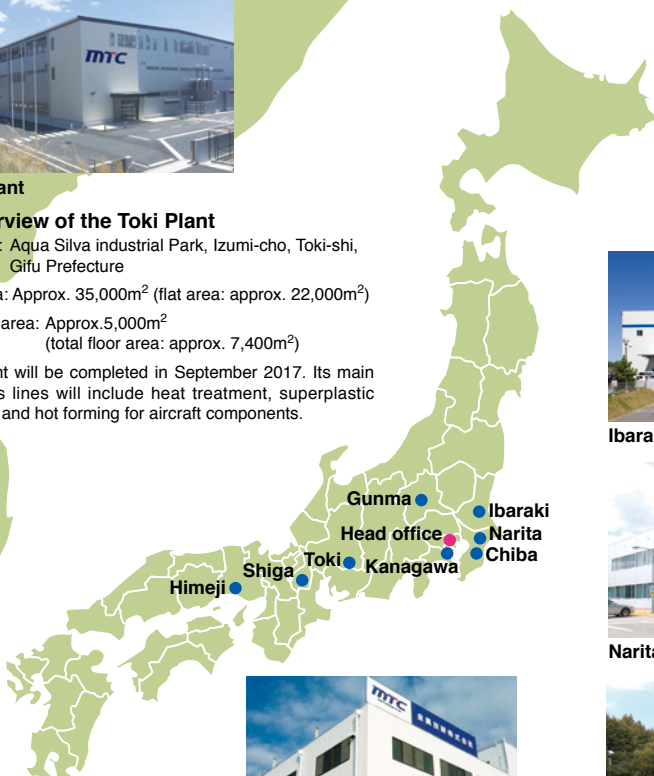
Ibaraki Plant



Narita Plant



Chiba Plant



(China)

● Suzhou



Kanagawa Plant Technical Center

We also keep diversity in mind at all times, of course. We have no intention of putting up barriers due to cultural differences, in fact, we actively seek to hire foreigners, a practice that is rarely seen in Japanese companies, to promote women to managerial posts, and to assign engineers to our sales departments. We manage the company based on the belief that all of our current efforts will lead to “the metal solution.”

Obinata: Engineers and researchers came together to establish Metal Technology out of their desire to help the world through heat treatment technologies. ULVAC was also founded by young engineers who wished to help support postwar industrial reconstruction through the use of vacuum technologies. Just as you have adopted the slogan “the metal solution,” we have adopted the motto “ULVAC solution” to help contribute to society through our comprehensive vacuum technologies. A company is a public entity of society. Our intention is to ensure our company’s future by helping society rather than simply pursuing profits. Five years have passed since I took the helm at ULVAC, and our top priorities are people’s safety, consideration for the local community’s environment, and product and service quality. I have told our employees that if they address these three priorities appropriately, profits will follow automatically. I want us to do a good job sincerely and properly. This is the driving force behind our company as an ongoing concern. To that end, I share your opinion, Mr. Hasegawa, that the emphasis should be placed on people.

Adopting new equipment based on vacuum heat treatment furnace technologies

Obinata: Do you have any requests for ULVAC?

Hasegawa: As I mentioned earlier, ever since Metal Technology first purchased a vacuum heat treatment furnace from ULVAC in 1970, it has continued to install ULVAC’s industrial vacuum heat treatment furnaces in large numbers.

Furthermore, when we installed some additional furnaces, you met the requests of our field managers and offered furnaces tailored to our original specifications. This enabled us to establish a strong position as a company specializing in vacuum heat treatment and vacuum brazing in Japan.

Also, we are now concentrating on vacuum diffusion bonding and sintering technology. In order to advance these areas, we need even more innovative equipment that employs vacuum technology. Since these businesses are based on vacuum heat treatment technology, we believe that we can make full use of ULVAC’s technologies in these sectors. We have great hopes for your technology.

Obinata: In the course of this interview, I have come to realize that our vacuum heat treatment furnaces have been of great use to you and I am very proud of our contribution to your success. Going forward, I hope that you will give us the benefit of your advice as we continue with our efforts to develop vacuum heat treatment furnaces and applied vacuum equipment that will live up to your expectations.

Obinata and Saito: Thank you for joining us today.