

2. The EBARA Group innovates to supply technologies, products, and services that delight its customers.

## Precision Machinery Company

### Supporting Semiconductor Evolutions to Sustain Societies of the Present Day and the Future

The precision machinery company continues to support further evolutions of semiconductors with its repertoire of two nanotechnological developments - CMP systems\*1 capable of processing at the nano level (one millionth of 1 mm) and super-high vacuum making essential to super-miniaturization of semiconductors.

Semiconductors are indispensable to digital appliances (personal computers, cellular phones, thin-screen televisions) and various types of information and telecommunications technologies that drive the growth of various industries. As semiconductors develop at a higher level of performance, they would make for the realization of businesses that could accelerate business globalization and mutual understanding by developing smart community (Environment-conscious city) and facilitating transnational communication. The precision machinery industry has its mission to continue evolving in the fields of semiconductor manufacturing systems and device development and manufacturing to support the present-day society and realize the future society.

### For the Stability of Customers' Businesses

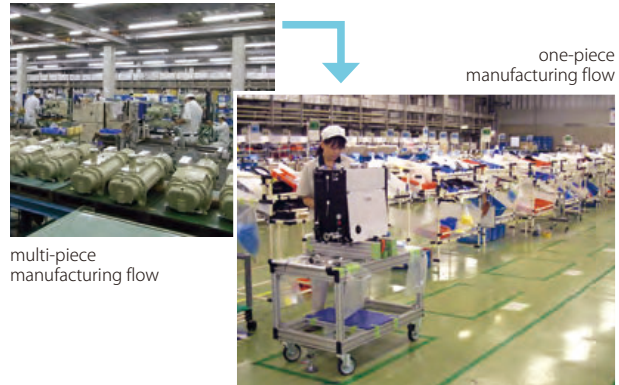
We at the precision machinery company pursue an active policy of building a Business Continuity Management System (BCMS) to keep our jobs uninterrupted, with no harm to our customers' businesses, in times of emergencies, such as natural disasters.

- Once an emergency situation occurs, the Business Continuity Plan (BCP) is launched and emergency action headquarters is set up at Fujisawa Plant.
- A network of contacts with our global sites is in place to support our customers in their efforts to continue with businesses.
- The precision machinery company has system products, such as CMP, manufactured at two plants, Fujisawa and Kumamoto. Skills to assemble component products, such as dry vacuum pumps, are available at domestic overhaul plants (EFT\*2), as well as at Fujisawa Plant.

### Pursuing Customer Satisfaction

Launched in 2009 to win better customer satisfaction, the production process innovation activities have iterated ingenious innovations over the following three years, such as converting the assembly line from multi-piece manufacturing flow to

one-piece manufacturing flow, with the resultant benefit of the manufacturing lead time in the dry vacuum pump manufacturing department reduced to a quarter.



And the manufacturing manpower requirement in the CMP system manufacturing department has been cut in half. Success experiences derived from these activities have been incorporated in other product implementations, such as Gas Abatement system and excimer laser fans. These activities have been escalated to our global production sites to help develop improvement-conscious human resources.

### For the Trust of Our Customers

Because CMP systems and dry vacuum pumps are expected to provide 365 days a year of unfailing operation round the clock, an exhaustive implementation of quality control at their production sites is essential to keeping up with a supply of reliable products. To this end, quality improvement activities based on a quality management system adhering to ISO9001 are in progress.

Specifically, FMEA\*3 is implemented in the stages of new product design and production, and findings are translated into a scheme (such as a work standard) to preclude nonconformities. Once a nonconformity occurs, Why-Why Analysis\*4 and a tree diagram (FTA\*5) are employed to get a PDCA cycle into motion and prevent its recurrence and pursue continual quality improvement.

The Precision Machinery Company's products are favored by customers around the globe, pump overhauls and equipment maintenance service are made available from the service sites closest to these customers. These sites are quality-audited and trained continually so that all sites will provide the same quality of service.

\* 1 [CMP system] Chemical mechanical polishing system, which processes wafers into a super-flat profile.  
 \* 2 [EFT] Ebara Field Tech. Corporation, a group company that provides product maintenance service.  
 \* 3 [FMEA] Failure Mode and Effect Analysis. A technique for identifying and preventing defects in a product before they develop.  
 \* 4 [Why-Why Analysis] A method for looking for the actual underlying cause of a problem.  
 \* 5 [FTA] Fault Tree Analysis. A technique for determining the causes of defects.

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### Environmental Approaches

#### ◇ Silicon Wafer Recycling

Since 2001, used waste silicon wafers have been recycled. Silicon wafers that have been used in various verification tasks in the development processes are collected separately and delivered to recycling manufacturers as a material of solar light panels. The rate of waste silicon wafer recycling has sustained virtually at 100% since 2001.



Waste silicon wafer

#### ◇ Recycling Waste Deionized Water

In the past, deionized water used in the inspection and other processes on product shipment had been treated by waste water treatment equipment in the Fujisawa District and then discharged to rivers. In FY2012, a line furnished with new equipment to recover and filtrate waste deionized water was constructed to recycle recovered and filtrated waste water as raw water to supply to the deionizing equipment. Commissioned into service in October 2012, the line has recycled about 3,270 m<sup>3</sup> of waste deionized water by March 2013, a saving of about 3% of the tap water requirement for the precision machinery company in the Fujisawa District for FY2012. Efforts to save tap water requirements will continue.



Deionized Water Recycling Equipment

#### ◇ Chemical Substances Content Information Management

While the precision machinery company serves a large number of customers in the electrical and electronic component industries, including semiconductor manufacturing, it has begun receiving requests to survey the content of chemical substances from these customers since around 2001, continuing with chemical substances content information management to meet these requests.

In FY2012, the precision machinery company assessed the categorization of company's products and prepared its views in response to the RoHS2 Directive\*1 (an updated version of the RoHS1 Directive\*2 enforced in Europe in July 2006) effective since January 2013. It now aims to approach the CE marking requirement for RoHS2 in accordance with the guiding standard for compliance with technical documentation requirements defined in EN50581\*3.

#### ◇ Green Procurement Promotion Committee

A committee was formed in 2003 to expedite the work of handling the chemical substances contained in products. Composed of about 20 members selected from the sales, design, manufacturing and service departments each year, the committee meets periodically to share information about the chemical substances contained in products. In FY2012, RoHS2 measures were mainly discussed.

#### ◇ Promoting Supply Chain Management

Starting from FY2012, the environmental management group has been placed under control of the Procurement Department to streamline the flow of supply chain management, including chemical substances content surveys.

#### ◇ Future Developments

The examination of operation system by JAMP-IT\*4 has been started to meet growing needs for chemical substance content surveys.

### Safety Before Anything

An occupational safety and health management system is being built on the guiding principle of "Safety before anything!" to create a workplace environment in which all employees can work safe and in good health.

Because various kinds of chemical substances and special gases are used in the development and manufacturing sites, a high level of sensitivity is required to ensure early detection of hazards associated with these substances. The promotion of KYT\*5 and risk assessments has, therefore, been taken up as a prioritized task of our safety and health activities. To get this task done, the precision machinery company has been continuing with various efforts for preventing occupational accidents, such as preparing operating procedure manuals that cite additional hazardous points, assessing risks at the start of new product manufacturing and mitigating facility risks. Sharing safety consciousness to adhere to what has been decided, such as observing work routines and rules, is essential to building a safe workplace environment. The precision machinery company conducts safety education tailored to characteristics of each individual workplace.

Educational sessions designed to foster employees with an enhanced sense of safety consciousness have been held on a planned basis, including Semiconductor Equipment Association

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of Japan education for clean-room workers, visitor education preparatory to adhering to customer rules and company-common education, regardless of where they are held, in-house or at a customer site.

A plant that volume-produces CMP systems, the Kumamoto District acquired certification under OHSAS 18001, an international standard of OHSMS\*6, in November 2008, to launch continual improvement actions since. Other districts follow suit, aiming to consolidate their respective systems of safety and health assurance further in compliance with OHSMS.

### Enhanced System of Corporate Globalization

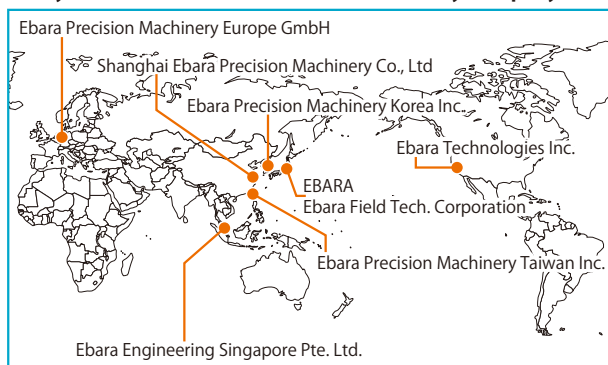
#### ◇ Responsiveness to Conflict Minerals Use

Our policy on the nonuse of conflict minerals has been declared and publicized at our Website. Relevant confirmation work, such as refinery surveys, pursuant to the EICC\*7 format is in progress in coordination with our suppliers. We take the issue of Conflict Minerals very seriously and address it as one of the most important CSR issues and approach it while maintaining exhaust exchanges of information with the suppliers.

#### ◇ Production and Procurement Activities Responsive to the Policy of Regional Production for Regional Supply

Production and procurement activities responsive to the policy of regional production for regional supply are underway in coordination with the EBARA Group's overseas sites to build a better system of corporate globalization. In particular, fair supplier selection and purchasing activities consistent with the CSR Procurement Guidelines are practiced jointly with Ebara Precision Machinery Taiwan Inc. to support locally oriented dry pump production together with 20 or more Taiwan suppliers. As the precision machinery company is set on a path to expanding production in the future, we are keen to consolidate the ties of collaboration with our suppliers further and to continue with and reinforce our system of compliance with procurement and subcontracting code.

#### » Key Business Sites of the Precision Machinery Company



### CSR Activities at EPMT

Living Up to Customers' Expectations with the Concept of Regional Production for Regional Supply



Wang Da Nian  
Product Manufacturing Division  
Ebara Precision Machinery Taiwan Inc. (EPMT)

#### Dry Vacuum Pump Production in Taiwan Reaches 1,000-unit Mark

In Taiwan, one of the largest producers of electronic components, such as semiconductors and liquid crystal displays, more than 30,000 EBARA dry vacuum pumps are in service. EPMT's customers are Taiwanese electronic component manufacturers catering for the world's leading electronics companies. EPMT has contributed to the stable operation of its customers' plants by offering them after-sale service on vacuum pumps, such as maintenance check and repair.

Since new pumps were put into production in July 2011 in accordance with the basic policy of "Regional production for regional supply" declared in the Medium-Term Management Plan (E-Plan 2013), the cumulative total production reached the 1,000-unit mark in March 2013.

#### Reflecting Accomplishments of Production Process Innovation Activities in Japan

Some models of dry vacuum pumps are fabricated of mixes of more than 300 kinds of parts. Being precision machinery that dictates precision on the micron order, dry vacuum pumps demand advanced quality control. Experts were invited from Japan, therefore, preparatory to commencing production in Taiwan in an effort to introduce Japan's quality control techniques and control systems. The production line was also laid out to reflect accomplishments of the production process innovation at Fujisawa Plant.

Production commenced successfully with help from Fujisawa Plant and the departments concerned. We now feel most happy with the opportunity for manufacturing afforded by the EBARA Group. We are committed to



New Production Line

concentrating our efforts on achieving further leaps in productive efficiency while seeking help from those concerned at home and abroad.

\* 1 [RoHS2 Directive] Restriction of Hazardous Substance Directive. The ban on the use of six regulated substances, including lead, remains unchanged but the scope of the directive has been expanded gradually and CE marking and other measures added.  
 \* 2 [RoHS1 Directive] Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) (2002/95/EC).  
 \* 3 [EN50581] A standard published by the European Commission on September 21, 2012, "Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances."  
 \* 4 [JAMP-IT] An information sharing platform envisioned by the Joint Article Management Promotion-consortium (JAMP).  
 \* 5 [KYT] Short for Kiken Yochi Training in Japanese, meaning "danger prediction training."  
 \* 6 [OHSMS] Occupational Health and Safety Management System.  
 \* 7 [EICC] Electronic Industry Citizenship Coalition, an association that is committed to promoting CSR in the electronic industry.