

MECHATROLINK News "MMA-FLASH" brings the latest MECHATROLINK information.

Feature Article

An interview with TOWA Corporation

Expecting the Added Values Created by MECHATROLINK

We deliver the latest news and information to MMA member companies and MECHATROLINK users in our feature articles. For this edition, we asked Kazutaka Noritake, Supervisor of Equipment Development Dept., TOWA Corporation, to talk about how TOWA came to the decision to adopt MECHATROLINK, and what he expects from the MMA.

Q1.TOWA provides various solutions as a semiconductor equipment manufacturer. Tell us for which semiconductor production process your products are used.

—We develop, manufacture, and sell the products to be used for the post-process of semiconductor production.

The major lineup of our products are molding equipment and singulation system. The molding equipment is used in the sealing (molding) step to protect IC chips and gold wires on a substrate. The singulation system is used in the singulation step to cut a substrate packaged by molding.

TOWA has the world's No. 1 share of molding equipment. We have developed, manufactured, and sold various types of molding equipment centering on the world's first multi-plunger transfer molding equipment we developed in 1980. And now, our product lineup includes the molding equipment that uses compression technology that eliminates the loss of resin to achieve 100% first pass yield.

We process molds, the core of molding equipment, with micron-level accuracy to assure product quality and reliability. We continuously develop new technologies to provide products that customers can rely on.

Q2.What are the recent needs for semiconductor equipment industry?

—For packages, the number of compact but large capacity and energy saving products, such as MEMS devices and multi-chip packages, is increasing and further cost reduction is demanded. In addition to the conventional demands of short delivery time, high-reliability and low-price, the technologies to enlarge the molding section and to make products thin are demanded. Our product lineup includes molding equipment and wafer-level packaging equipment that are capable of processing large workpieces. They are rather small for their processable size of workpiece but still have high-reliable molding capability. We engage in technology development to rapidly respond to individual demand of customer.

The information management function of equipment becomes also important as the demand for information on system operating condition and product traceability is growing. Under such circumstance, the number of requests to introduce a vision inspection system into an equipment is increasing, therefore, the number of equipments with the function to check material feeding and resin filling state after molding are increasing. Also for such inspection, high speed and high accuracy are demanded.

Networking, Essential to Flexibly Respond to Changes in Production Volume

Q3.Tell us about the advantages and effects that networking actually gave to your products.

—One of the features of our products is the flexible response to changes in production volume. We design such semiconductor equipments that the number of modules can be easily and quickly changed according to the production volume and product type. Additionally, a controller is placed on each module to enable the process from testing up to production in units of module.

The deployment of network makes it possible to supply modules to the appropriate positions timely and start up the equipment quickly.

To construct such system, networking that implements distributed control with minimum wiring is essential and "Higher speed" and "Communication protocol standardization" are required.

Integrating motion network for servo drives, thermostat, I/O units, etc. and I/O network into one network enables unified management of each device data, such as parameters and status, which is required for an equipment. Such unified management not only improves the equipment reliability and maintenance performance but also reduces the number of wires in the equipment resulting in cost-reduction and simple system configuration.

Kazutaka Noritake
Supervisor of Equipment Development Dept.
TOWA Corporation



Q4. Tell us about the awaiting solutions to the field your products are used for.

—To solve the problem of increased number of processings due to multi-functionalization of control equipment, these processings need to be distributed to each unit. Our approaches for such distribution includes:

- implementation of servo amplifier to serve the function that is carried out by the controller's processor, which improves control response as well
- implementation of testing unit that is capable of processing a large amount of data and standardization of interfaces between testing unit and host controller
- high-speed data sharing among controllers to implement transmission of a large amount of information.

For maintenance, the technology to eliminate each setting tool or to centralize setting tools by using the host controller is demanded. It is necessary to construct a maintenance system that enables failure restoration as intuitively and rapidly as operation of equipment.

Continues Providing the Cutting-Edge Solutions Together with MECHATROLINK Technology

Q5. Tell us about your future expectations for MECHATROLINK and the MMA?

—Various network protocols for industrial devices have been developed and different standards are competing with one another. Each standard has its own characteristics. However, our selection of products is limited when we develop a new device.

We hope that a technology that provides a compatibility among different standards will be developed.

Also, we expect the MECHATROLINK-compliant product line-up to be widened so that all components of semiconductor equipment, including image process system, 2D barcode reader, and resin measuring controller, can be covered with MECHATROLINK-III compliant products.

In the semiconductor industry where technology innovation is always required, we have continuously developed unique and cutting-edge technologies that attracted attention to the world. And, we will continue providing forefront solutions, developing our service & marketing strategy in communication with semiconductor manufacturers all over the world.

For the above, evolution of control devices and network that are embedded in an equipment is essential.

And, the speed of such evolution is also important.

Hoping the continuous innovation of technology and development of new products of each MMA member company, we appreciate your supports and suggestions for development of our technologies.



News & Topics

Exhibition & Event Information

Taipei Int'l Industrial Automation Exhibition 2014

Featuring more than 550 exhibitors

Event Information

Dates: August 27 (Wed) - 30 (Sat), 2014

Place: Taipei World Trade Centre Nangang Exhibition Hall (TWTC Nangang) No.1, Jingmao 2nd Rd., Nangang District, Taipei, Taiwan

Official HP: <http://www.autotaiwan.com.tw/>

Opening Hours: 9:00am to 5:00pm (9:00am to 4:00pm on Aug. 30)

No. of Visitors to Exhibition 2013: 71,506

MMA Participants:

- ALGOSYSTEM CO., LTD.
- ANYWIRE CORPORATION
- Art Control Systems, Inc.
- Digital Electronics Corporation

- M-System Co., Ltd.
- Micronet Co.
- NIKKI DENSO Co., Ltd.
- ORIENTAL MOTOR CO., LTD.

- YASKAWA ELECTRIC CORPORATION
- YASKAWA ELECTRIC TAIWAN CORPORATION
- YASKAWA INFORMATION SYSTEMS Corporation
- YOKOGAWA ELECTRIC CORPORATION

Showroom Renewal

The MMA changed the exhibits in the showroom. Here, you can see a wide variety of the latest models of MECHATROLINK compliant products and appreciate the merits of MECHATROLINK.

※To visit the showroom, contact the MMA secretariat.



Report of 2014 MMA General Meeting

The MMA general meeting was held at the UDX Conference Center in Akihabara, Tokyo, on June 6 (Fri), 2014. Hiroshi Ogasawara, the President of the Executive Committee of the MMA, started off the proceedings with a welcome speech. President Ogasawara expressed his appreciation for everyone efforts over the last year, offered a review of the MMA activities in FY 2013, and spoke about his resolution for FY 2014 to increase the number of MECHATROLINK vendors and users in order to further expand the use of MECHATROLINK. He spoke about his plans to achieve this by strengthening MMA promotional activities in ASEAN countries, and expanding MMA activities by working closely with all MMA members. After President Ogasawara's speech, Takuya Miwa, General Secretary, delivered a report on the activities in FY 2013 and plans for FY 2014. This was followed by a financial report of FY 2013 and a proposed budget for FY 2014. After these reports, the Marketing Group and the PC Engineering Group gave reports on their group activities in FY 2013 and plans for FY 2014.

After the conclusion of the general meeting, Shinya Yamashita of TOWA Corporation delivered a lecture on "Semiconductor Packaging Trends and Molding & Singulation Equipment." Mr. Yamashita engaged the audience and talked about the latest trends and future direction of semiconductors and some of the challenges that TOWA Corporation is facing. He also expressed the needs and demands of member companies from various perspectives.

This year, we invited Hao Sigang of TIANJIN ZIJINELECTRIC TECHNOLOGY CO., LTD. in China to give a lecture on "Motion Control Systems in the Chinese Market." In his lecture, Mr. Hao talked about what he expects from MECHATROLINK as an SI and introduced various examples of how MECHATROLINK has been adopted in the textile and battery manufacturing systems. His lecture provided valuable insight into how MECHATROLINK is operating in the Chinese market.

After the lectures, the MMA introduced a MECHATROLINK topic entitled "Modifications in message communication specifications and application of those modifications." MMA members then introduced their new products. New products were displayed in the meeting room for participants to examine in more detail during breaks.

This year for the first time, we allotted time to introduce member companies during the general meeting. At the reception after the lectures, conversations among participants was much livelier than in previous years, and members could exchange valuable opinions.

This year, we embarked upon a new start for another decade. The MMA will continue to work globally to expand the use of MECHATROLINK in close cooperation with its members.



General meeting



Display of new products

Report of Exhibitions and Seminars

TECHNO-FRONTIER 2014

The MMA participated in the three-day exhibition TECHNO-FRONTIER 2014 at Tokyo Big Sight, Japan, from July 23 (Wed) - 25 (Fri), 2014.

The MMA booth was arranged so that the display for the upgraded MECHATROLINK total solution attracts attention of visitors at the first glance and communicates the Beat of the Machine, the title of our presentation. And, we prepared the MECHATROLINK solution catalog in line with the display contents for visitors easy to understand the merits in the use of MECHATROLINK. Besides the display for total solution, the panel to show an entire MECHATROLINK system was displayed and solutions for specific applications were demonstrated.

In the individual product display space in the MMA booth, the MMA member companies demonstrated the advantaged of their products controlled through MECHATROLINK and gave detailed explanation on each product.

During the three-day exhibition, the MMA booth had more than 1650 visitors and some new members joined the MMA. Thanks to all who visited the MMA booth despite sweltering summer heat.

We continue to actively work for promoting the open network MECHATROLINK.



Panel display for entire MECHATROLINK system



MMA booth



Individual product displays by MMA member companies



Demonstration: Total Solution



Demonstration: Multi-tip Solution



Demonstration: PC Solution

Industry Open Net Exhibition 2014

The MMA participated in the Industry Open Net Exhibition 2014, held in Nagoya on July 2 (Wed) and in Tokyo on July 4 (Fri), 2014. The exhibitions both in Nagoya and in Tokyo were crowded with the visitors who are interested in open network. Besides the displays and demonstrations in the MMA booth, the MMA organized a MECHATROLINK seminar that was successful with about 200 participants.



New MECHATROLINK Products

YASKAWA ELECTRIC CORPORATION

“ Σ -7Series AC Servo Drives Model Σ -7S/ Σ -7W MECHATROLINK-II/III Communications”

Features

- World's highest response performance and 30% reduction in settling time (in comparison with Yaskawa Σ -V Series)
- Response frequency: 3.1 kHz (twice faster than the conventional models), Servomotor max. torque: 350%
- Servomotor equipped with a high-resolution 24-bit (approx. 16,770,000 pulses/rev) encoder, which implements micromachining and locus control more accurately than ever.
- Speed ripple compensation function to reduce speed ripples, which realizes machine motion smoother than ever.
- Yaskawa's original Tuning-Less function ensures stable operation for a load with 30 times (max.) of load moment of inertia.
- 2-axis SERVOPACK and DC bus connection allows the use of regenerative energy between axes as motoring energy, which contributes to energy saving.



Σ -7Series

Inquiries

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Column

Introduction of MECHATROLINK-III Demonstration Units ~ Demo Unit for Synchronized Turning Alignment ~

The MMA prepared the units to demonstrate the features of MECHATROLINK. In this edition, we introduce the demo unit for Synchronized Turning Alignment to demonstrate the multi-vendor support and synchronization performance of MECHATROLINK.

■ Features

① Multi-vendor system

The unit is composed of rotary motors and linear motors manufactured by two different companies, NIKKIDENSO Co., Ltd. and YASKAWA ELECTRIC CORPORATION.

② High-accurate synchronous operation using MECHATROLINK-III interpolation command

Realizes high-accurate synchronous operation by specifying the target position in each communication cycle using MECHATROLINK-III interpolation command (INTERPOLATE).

■ Motions

A rotary motor is installed on each linear motor, and a mechanical pencil is placed between rotary motors.

Two rotary motors rotates at high speed while two linear motors moves in parallel.

Demo Unit Image

Linear and rotary motors manufactured by YASKAWA ELECTRIC CORPORATION

Linear and rotary motors manufactured by NIKKIDENSO Co., Ltd.



Can the synchronization accuracy be maintained between products of different manufacturers?

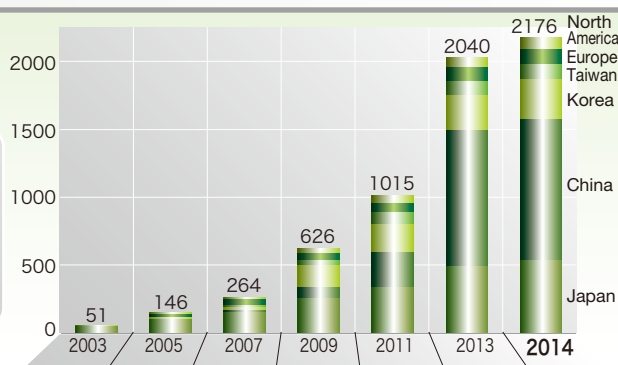


The command execution timing of each device can be controlled by using MECHATROLINK-III interpolation command. Therefore, high-accurate synchronized operation can be realized only by adjusting the motion characteristics of each device using the relative parameters.

⇒ The mechanical pencil lead will not be broken.

MMA Membership as of July 31, 2014

Japan (ASEAN) : 533
China : 1015
Korea : 291
Taiwan : 111
Europe : 114
North America : 82



Editor's Comment

Sweltering summer heat continues in Japan. How are you doing? Here in Saitama, the temperature reaches 40 °C during day time, which is too hot to go out. When I have a day off, I stay in my house, keeping out the heat by sprinkling some water around the house and closing window curtains. One day I played with my son a word game in which one player has to say a word starting with the last syllable of the word given by the previous player. When it came to the turn of my son to find out a word, he said “MECHATROLINK”. I was surprised because I did not expect him to say this word. But it can be a part of the result of our promotion activities. It's true that children learn by observing the behavior of adults. I'm inspired to renewed effort. (Written by Hiranuma)

Inquiries

For questions about joining MECHATROLINK Members Association and other inquiries, please contact the MMA.

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