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

Feature Article
An interview with NTT Communications and Virtual Engineering Company & Virtual End-user Community

Protecting Japan's Monozukuri-style of manufacturing by establishing a secure MECHATROLINK as a bridge between FA and IT

We deliver the latest news and information to MMA member companies and MECHATROLINK users in our feature articles. In this edition, we spoke to NTT Communications (NTT Com) and the Virtual Engineering Company & Virtual End-user Community (VEC) about the information security and IoT (Internet of Things) solutions they are promoting.

MMA MMA has positioned 2015 as the start of the IoT era, and we wish to offer appropriate solutions for our customers. Today, we are speaking to our strong partners, NTT Com and VEC, about their IoT solutions. First, can you tell us about the global trend toward the Industry 4.0, which is a keyword in the business world?

VEC Due to the spread of Industry 4.0, which originated in Germany in 2012, and the Industry Internet, which was transferred to North America in 2013, the number of IEC62541 (OPC UA) related inquiries from vendors that sell machine tools, robots, large- and medium-size printing machines, and packing machines to European and North American markets is increasing. The preparation for international standardization of Industry 4.0 that is required to share information models that take lifecycles into account is progressing.

In the United States., ANSI is taking on a leading role in preparation of international standardization of information modeling at the object level. We believe that the United States aims to construct a system by which failures and problems can be predicted by machines and equipment, and such predicted information can be transmitted to a specific person or place via the Internet. The communications protocol used in both the IEC/TC65/WG16 and ISO/TC184/SC5 is IEC62541 (OPC UA) only. Both IBM and SAP have designated the use of OPC UA, as a result of the development of the UA communications driver. In other words, the communications protocol IEC62541 (OPC UA) is designated for ERP (Enterprise Resource Planning), SCM (Supply Chain Management), MES (Manufacturing Execution System), and cloud services because it is a secure protocol for networks and Internet communications in factories or facilities.

Masashi Murakami
Bureau Chief
VEC

Roles of MECHATROLINK Compliant Products in Industry 4.0

MMA Can you tell us about the Industry 4.0 trend in Japan?

VEC Industry 4.0 and Industry Internet based on IoT are solutions that are offered in combination with government measures. The threat of cyber-attacks on control equipment and machinery has grown since about 2009 in the manufacturing industry in Japan. Since there are many production sites where internet cables for production-use control networks have been removed, there will be no action taken regardless of how earnestly we promote solutions for IoT and M2M (machine-to-machine) via the Internet. Tablet-type or iPad-type devices that use a public wireless communications system for monitoring and tuning of machines and equipment are not suitable for production sites because they cannot be prioritized for use even when connected.

MMA Although it is said that all devices are connected via the Internet in the world of IoT and Industry 4.0, this is not so in Japanese-style manufacturing sites. To connect all devices via the Internet, there must be a device that acts as a gateway. Here, we want to emphasize that a MECHATROLINK compliant controller can act as such gateway without extra cost.

NTT Com The optical cables of NTT Com form the infrastructure needed to connect industrial areas in both developed countries and developing countries. We have cloud servers in every major region all over the world. By using such infrastructure environment, we can help companies securely implement the B2B (business-to-business) model of integration of company management information, globalization of supply chains, and enterprise cooperation.

Akira Sakaino
Manager
Technology
Development Div.
NTT Com

VEC We will soon enter an age where the public cloud will manage the sales, services, and education of B2C (business-to-consumer), and the private cloud will manage domains that implement information modeling and sharing of control systems of factories and facilities, on-site operation navigation, and

the personal training of B2B. We refer to this age as "Industry 4.1J". It is difficult to achieve the concepts of Industry 4.0 by using an Internet that is exposed to the risks of cyber-attacks. The use of the Internet via the private cloud will create a secure and ideal environment.

Next Development Phase of Message Communications Functions

MMA During cyclic communications of the MECHATROLINK-Ⅲ communications, data can be transmitted between the master and slaves using the message communications function, in addition to normal command/response transmissions. The use of this message communication function enables the exchange of tool data for MECHATROLINK-Ⅲ connected slaves, which adds value to systems.

We are working hard to achieve the goals of the project, "Visualization of all device information by using MECHATROLINK". We wish to link this project and the development of IoT and Industry 4.0 together.

Hana Tsuchiya
Chief
Planning Sec. Technology
Development Div.
NTT Com

NTT Com This is an interesting area not only for equipment manufacturers and factory automation experts, but also for those who work in information-related fields. Our major customers are end-users; however, we will be happy to suggest solutions together with you.

MMA We should construct MECHATROLINK systems together with NTT Com and VEC, as well as all the MMA member companies, to allow cooperation among the member companies to solve problems that cannot be solved within one company.

Enhance the Security of MECHATROLINK

VEC One of the future tasks of Japanese equipment manufacturers is based on the security of products when connecting them to an external network or a private cloud.
For software, security quality management, such as secure coding, security checks via networks, and vulnerability assessments via an external interface, must be introduced in the production process. In addition, the vulnerability information and responses to customer's requests for handling incidents must be managed.
Regarding hardware, there are chips that perform communications processing and board computers that have preinstalled programs saved in ROM. Therefore, the number of customers who request acquisition of SSA or/and EDSA certificates will increase.
A security testing tool specially designed according to MECHATROLINK specifications should be developed in order to conduct a security test of MECHATROLINK network. For this, it may be a good idea to add MECHATROLINK to the Achilles communications robustness test platform or the beSTORM security testing tool.

Takashi Horikoshi
Technology
Development Div.
NTT Com

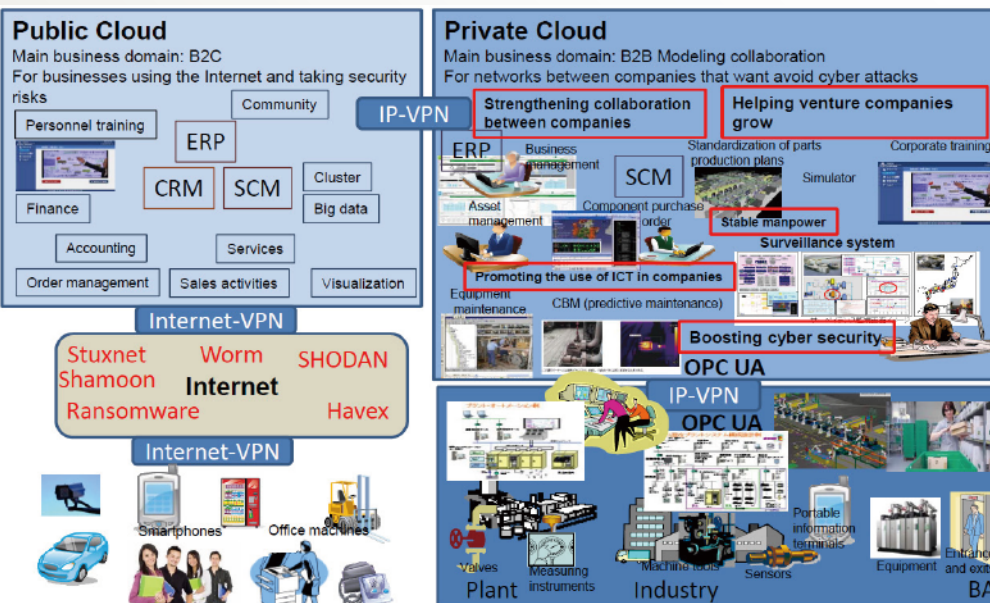**MMA** Indeed. The MMA wants to work together to form a bridge between FA and IT, and integrating the merits and challenges of these two items by sharing information. First, we will develop opportunities to exchange ideas, such as seminars for the MMA member companies.

NTT Com We will also arrange seminars to brainstorm solutions together with you. Let us design solutions together.

VEC It would be nice if you could participate in our field demonstration project. The communications server of NTT Com broadly covers the Asian area, including China. It is important to substantiate the establishment of the "MECHATROLINK World in Asia" as an open motion network.

MMA That's true. The MMA will work to develop its global network. We appreciate your continued support and thank you for your time today.

Japanese Technology Strategy "Industry4.1J" Use Case
Safe and Secure Economic Growth Solution Utilizing Japan's Strengths

Source: VEC

News & Topics

Exhibition & Event Information

AIMEX - AUTOMATION WORLD 2015

The MMA will participate in the 26th AIMEX held in Seoul, Korea, from March 18 (Wed) to 20 (Fri), 2015. The MMA will exhibit a variety of MECHATROLINK compliant products developed by the MMA member companies and demonstrate the best solutions for customers that can be achieved with the high-speed and high-performance of MECHATROLINK.
We are looking forward to seeing many of you at the exhibition.

Tentative design of the MMA booth

Event Information

Dates: March 18 (Wed) to 20 (Fri), 2015
Place: Hall A and B, COEX Exhibition Center, Seoul, Korea
Booth No.: F-100   Information: www.aimex.co.kr

MMA Participants

- ALGOSYSTEM CO., LTD.
- ANYWIRE CORPORATION
- DELTA TAU KOREA
- Digital Electronics Corporation
- FASTECH
- NIKKI DENSO Co., Ltd.
- Micronet Corporation
- M-SYSTEMS CO., LTD.
- ORIENTAL MOTOR CO., LTD.
- YASKAWA ELECTRIC CORPORATION
- YASKAWA INFORMATION SYSTEMS Corporation
- YOKOGAWA ELECTRIC CORPORATION

Report of Exhibitions & Seminars

Asia Monozukuri Conference 2014

The MMA participated in the Asia Monozukuri Conference 2014 – Innovation in Automotive Industry held in four ASEAN countries, Thailand, India, Indonesia, and Vietnam, as a supporting manufacturer from September to December, 2014.
This event was organized under the theme "Monozukuri" in the ASEAN region where the technology, know-how, and ethos that have built-up Japan's modern industries are attracting much attention.
At the MMA exhibit space, we introduced the merits of MECHATROLINK, a motion open network that originated in Japan, by demonstrating the operations can be controlled through it.
The MMA booths at all four conferences were popular with the attendees. The number of visitors to the booth at each conference exceeded 350, for a total number of 1500 visitors in the four countries.
  The MMA will continue promotional activities to expand the use of MECHATROLINK in the ASEAN region.

Conference in India

MMA display table in the conference in Thailand

Conference in Indonesia

Conference in Vietnam

Automation Components Fair 2015

The MMA organized the Automation Components Fair 2015 in Kyoto on February 12 (Thu) and in Hamamatsu on February 13 (Fri), 2015.
Twenty three companies gathered to display their products at this fair to allow visitors to appreciate the wide range of product lineups, including MECHATROLINK-related products and other system components. At the MMA exhibit space, four types of demo units were exhibited as examples of MECHATROLINK solutions to introduce the wide range of application possibilities of MECHATROLINK compliant products, in addition to a demonstration of the excellent interoperability of the MECHATROLINK system.
In addition to the product display and demonstration, NTT Communications and Yaskawa Information Systems presented keynote speeches entitled, "Current and Future Prospects for M2M Business and IoT to Achieve Innovation in Manufacturing." There was a large audience in both Kyoto and Hamamatsu, which indicated the keen interest in the theme of the fair.
More than 300 people visited the two fairs. Thank you to all who visited.
The MMA will continue to actively promote the use of MECHATROLINK.

Fair in Kyoto

Fair in Hamamatsu

New MECHATROLINK Products

M-System Co., Ltd.
Compact Remote I/O Module for MECHATROLINK-Ⅱ

Features

- Compact-size, all-in-one construction
- e-CON (mini-clamp) connector for I/O
- Can handle a mix of up to 16 discrete inputs and 16 discrete outputs.
- 2-piece construction with a tension clamp terminal block for power supply, which saves space for relay terminal blocks.

R7K4DML (32 points)

Specifications

Model	Specifications
R7K4DML-B-DAC32A-R	16 negative common-type PNP discrete inputs, 16 negative common-type NPN transistor outputs
R7K4DML-B-DAC32B-R	16 positive common-type NPN discrete inputs, 16 positive common-type PNP transistor outputs
R7K4DML-B-DAC32C-R	16 positive common-type NPN discrete inputs, 16 negative common-type NPN transistor outputs
R7K4DML-B-DAC32D-R	16 negative common-type PNP discrete inputs, 16 positive common-type PNP transistor outputs

Inquiries

M-Systems Co., Ltd.
5-2-55, Minamitsumori, Nishinari-ku, Osaka, 557-0063, Japan
Tel: +81-6-6659-8201, Fax: +81-6-6659-8510   E-mail: info@m-system.co.jp, URL: http://www.m-system.co.jp

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Column

Introduction of MECHATROLINK-Ⅲ Demonstration Units:
Demo Unit for Control of Roll-to-Roll System

The MMA prepared units to demonstrate the features of MECHATROLINK. In this edition, we introduce the demo unit, Roll-to-Roll system, to demonstrate the high-speed synchronized control of MECHATROLINK-Ⅲ.

■Control for Roll-to-Roll System

This system offers control for various manipulations of film-like material while the material is transported from the feeding-out roll to the rewinding roll. Since the diameters of the two rolls vary during transport, highly accurate control is needed to securely conduct the following operations.

⇒ Constant control of the material movement speed
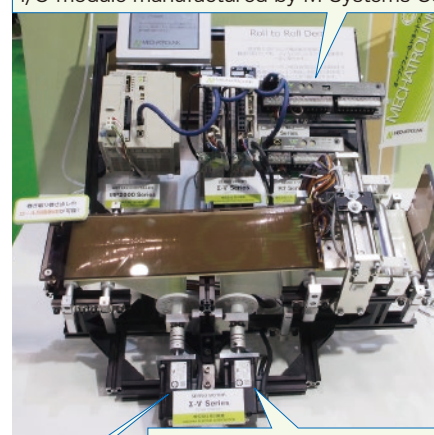⇒ Constant control the material tension

■Motions of Demo Unit

Taking full advantage of the high-speed synchronized control features of MECHATROLINK-III, two servomotors are used to accurately control the feeding-out roll and the rewinding roll to keep the material movement speed and tension constant.

Additionally, the LED is operated through the I/O device connected to the same MECHATROLINK-III network as the roll-to-roll system. The LED is operated in synchronization with the movement of the film-like material so that hidden characters will stand out on the film-like material in the same way as when an exposure unit is used.

Demo Unit Image
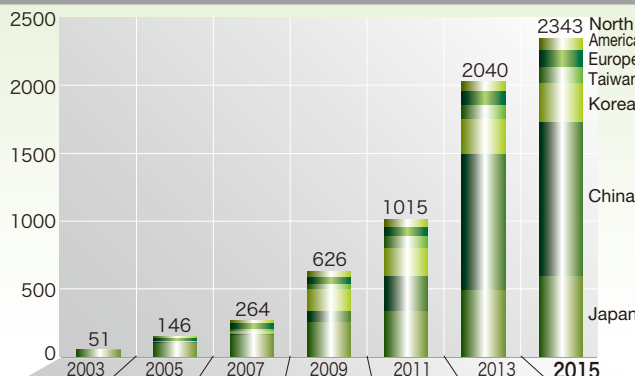
I/O module manufactured by M-Systems Co., Ltd.

Servomotor for the material rewinding roll manufactured by YASKAWA ELECTRIC CORPORATION

Servomotor for the material feeding-out roll manufactured by YASKAWA ELECTRIC CORPORATION

MMA Membership as of Feb. 28, 2015

Japan (ASEAN) : 589
China : 1135
Korea : 293
Taiwan : 116
Europe : 123
North America : 87

Editor's Comment

We are nearing the end of the cold winter in Japan. The plum and ripe blossoms make us aware of the coming spring season. Forecasts of the dates for the cherry blossom season have been issued, and the time is coming for us to enjoy the cherry blossom colored landscape all over Japan. In March, the "Hina-Matsuri" festival, the Doll's Festival for girls, is held. When I was a child, I looked forward to the day my parents displayed the set of graceful dolls in ancient costumes. The Hina-Matsuri festival is associated with a happy childhood and helps us usher in the spring season. Do you have a story about spring? (Written by Hiranuma.)

Inquiries

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