

CC-Link Partner Association

Global Activity Report

Vol.5

Special Interview

New member of the CLPA board of directors
**Molex joins the CLPA board of directors
to help shape the future of CC-Link/CC-Link IE**

CC-Link Partner Association × Maruti Suzuki (India)

**CC-Link that Supports "1 vehicle Every 26 Seconds" Vehicle Manufacturing
Expand the Application as a Base of the Largest Automobile Maker in India**

Maruti Suzuki's Manesar Factory in India Leading in Production Efficiency by adopting Fastest Industrial Network-CC-Link IE.

Molex joins the CLPA board of directors to help shape the future of CC-Link/CC-Link IE

Molex, a US owned company with global manufacturing and sales operations, has been appointed a board member of the CLPA. Here we learn a little more about the organization and the reasons why the company sees great value in helping to shape the future of communications within automation systems. The spokesperson for Molex is Mr. Damien Leterrier, Director, Industrial Communication.

— I would like you to tell us a little more about Molex

A higher level overview of the business tells us that Molex employs close to 36,000 people worldwide and had an annual turnover of approximately \$3bn, prior to September 2013 when it was acquired by a private US Company, Koch Industries. Molex is known as a manufacturer of electronic interconnectors, and sells over 100,000 different products, including everything from electrical and fibre optic interconnect solutions, to switches and PC cards.

— What is your involvement with CC-Link/CC-Link IE?

The company is divided into three product divisions, plus a Global Sales and Marketing division. The product divisions are defined as the 'Commercial Products', 'Micro Products' and 'Integrated Products' Divisions. Within this third division is the 'Industrial Products' group, which is where CC-Link/CC-Link IE enabled products are positioned.

The specific products that already include CC-Link/CC-Link IE compatibility are the company's range of I/O blocks and network interface cards for integration into larger automation system products and devices. It also includes products designed to support CC-Link/CC-Link/IE

connectivity. The remote I/O products include higher ingress protection IP67 versions for use on machine applications.

The best selling products with CC-Link on board are aimed at the Asian market – we are selling product with embedded CC-Link to a wide range of customers where the end user is in the automotive industry or another high volume manufacturing platform. Typically we are supplying to device manufacturers, assembly line builders and system integrators providing robotics and higher level automation solutions.

Collaboration is a key to success

— What do you expect to gain from being a CLPA director?

Molex's company description states that 'Collaboration is key to our success'. The company firmly believes that partnership with the CLPA and its members is a good representation of that policy. Collaboration is seen as essential for us as a high technology company that develops products based on customer demand.

We live in a fast moving world and reacting quickly to customer demand is an important part of our success. This is harder to do when working in isolation, so, if we are to stay ahead of the curve in terms of technology, we have to pre-empt the questions and challenges our customers will ask in the immediate future. To do this, we have to be involved in the development of important technologies such as communication protocols, especially market leading ones such as CC-Link.

Collaboration is valuable not just from a technology perspective, but also from a market perspective. We have a lot of

market knowledge. True collaboration is a two way process, so we expect to learn from our business partners, as well as to pass knowledge and experiences back. Many large organisations rely on buying up smaller innovation-led companies in order to keep their technology advancing. However, because CC-Link/CC-Link IE is open source, this is something we can play a part in and contribute towards the general good, as well as helping us to achieve our own commercial objectives.

A decentralised company meets a decentralised network

— How do you contribute to CLPA from a technology perspective?

Molex is rightfully proud of its many innovations and the technologies they've enabled. The company invests roughly 5 percent of its net revenue into research and development. Staying ahead of the game is seen as essential and this includes working with industrial communication technologies that are growing worldwide, such as CC-Link/CC-Link IE.

The company operates several of its functions via a decentralised structure; this includes research and development where R&D centres are spread around the globe, focussing on different product groups and applications. To be as efficient as possible and quickly react to customer demands, common processes and tools have to be shared between R&D centres. Using an integrated IT structure for R&D means that high speed communications can be achieved over large distances.

This displays a remarkable parallel to the control networks themselves, mirroring the development direction of automation systems towards more localised processing and intelligence with higher speed, higher data rate communications. As control moves closer and closer to the sensor or the machine it uses a common infrastructure to make communication more efficient.

— What is the significance of joining the



Above : Molex CC-Link IE Field PCI card
Left : Molex IP67 Harsh Environment I/O with CC-Link

CLPA board?

Being elected to the board of the CLPA is regarded by the company as a great opportunity for Molex not only in the way CC-Link/CC-Link IE is applied to products, but also in how the future technical direction of this important automation communication and control protocol is developed.

We see this as a key enabling technology for our product sales worldwide and particularly in Asia where CC-Link is often a default automation networking option.

Molex is also involved in the development of ODVA and PI. We do not join to have our name on the box - we want to bring improvements to the standard we are managing, and there is no better way into the market than to be part of the evolution of the standard. The new technology we are developing today will reach the market faster than ever before, so being involved in the development of enabling technologies is becoming more important.

— What are the immediate customer benefits and what are your future aims?

Compatibility is a key requisite for access into any automation market. Hence the more options we can supply, the easier our products are for customers to buy and integrate.

It was a natural decision for us to continue pushing for growth in automation networking solutions, and we couldn't expect to do that without being part of CC-Link and CC-Link IE technology.

When we develop products, the increase in technology we put into a simple device is growing exponentially. This means we have to bring simplicity back to a device to make it just as easy for customers to use. Whether they are OEMs, end users or systems developers and integrators, if we can make a complex device plug-and-play and make sure that it can be fast to install and commission, then we have achieved an important goal.

Improved machine and device level communication means production operations are far less likely to break down. Big data is made possible and our vision of managing automation - to react quickly to demands, to enable more on-device memory and processing power, and to increase the speed and robustness of communication for example, is helped by the speed CC-Link IE brings.

Customer demands from a network protocol do vary. In order to develop the best network solution, it depends on their goal, be it speed, reaction time, redundancy or system resilience. Being part of the standard helps us deliver.



Mr. Damien Leterrier
Molex
Director, Industrial Communication

CC-Link that Supports "1 vehicle Every 26 Seconds" Vehicle Manufacturing Expand the Application as a Base of the Largest Automobile Maker in India

The industries all over the world are watching the emerging markets. Especially, India is of great interest to the countries all over the world for its economic growth and continuous increase in population, in addition to its large population. Among the manufacturing industries in India that Indian government is supporting for expansion, the automobile industry is especially showing a strong presence. Maruti Suzuki, which has the largest share in automobile industry in India, has incorporated CC-Link Family for the base network in their plant to meet the lively automobile demand in India and realize a flexible production system. We had an interview with Mr. Rajeev Gandhi, the executive director of Maruti Suzuki, and other executives about the current state of the automobile industry in India and how CC-Link Family contributes to automobile production.

(Interviewer: CC-Link Partner Association Executive Director, Naomi Nakamura, CLPA India, Chairman, : Sunil Mehta)

Nakamura The Indian government is putting effort into strengthening the manufacturing industry proactively such as setting forth "National Manufacturing Policy" in November 2011. Among all industries in India, could you tell us where does manufacturing stand?

Mr. Gandhi Manufacturing is surely showing a strong presence in India. In India, manufacturing accounts for 16% of the GDP. The Indian government came out with a policy to improve this figure to 25% by 2022, through National Manufacturing Policy. In conjunction with this activity, the National Skill Development Council is strengthening human resource development to

support manufacturing industry. The aim is to create 100 million jobs by expanding manufacturing industry. For India to grow continuously, the development of manufacturing industry plays an important role.

Sunil Among the manufacturing industries that the Indian government is focusing on, the expectations toward automobile industry are especially high.

Mr. Gandhi The automobile industry in India contributes 7% of India's GDP. In other words, it comprises about half the manufacturing industry. This has a significant impact on employment, and the automobile industry employs about 19 million in the



workforce, including the people who are indirectly involved in the automobile industry. It is natural for the Indian government to place an emphasis on the growth of automobile industry to further develop manufacturing industry.

On the other hand, dissemination of automobiles is not making much progress in India. The dissemination of automobiles in other emerging nations is about 500 to 600 vehicles per 1000 of the population, but in India it is merely about 15 vehicles per 1000 of the population. However, to put it the other way, Indian market has a potential to grow that much. One of the obstacles of disseminating automobiles is the road infrastructure. The government is working on domestic road improvement, aiming for 20km per day.

To deliver 14 models with 150 variants across the nation line downtime is unacceptable.

Nakamura India's automobile industry has a tail wind, and the competition must be very severe with the entry of other automobile makers from all over the world. Under the circumstances, what do you think is the reason that Maruti Suzuki continues to maintain the largest share in India?

Mr. Gandhi Maruti Suzuki has played a leadership role for about 30 years in automobile industry in India. In 2013, compared to the previous year, the sales volume decreased by 6.1% in the overall Indian domestic market, but the sales volume of Maruti Suzuki increased by 0.5% and achieved 42% of market share. In the first quarter of 2014 (April ~ June 2014), the domestic market increased its sales volume by 1.5%, but Maruti Suzuki went beyond significantly, with a 10% increase and share up to 45%.

One of the reasons why Maruti Suzuki is able to maintain a large amount of share is that Maruti Suzuki has the vehicle lineup that covers all segments, from small vans to large luxury vehicles, and an extensive sales network that covers the entire Indian nation. Maruti Suzuki has sales network in 1034 large and small cities and service network spanning over 1449 cities and towns domestically, and the structure has been developed to facilitate the delivery of new vehicles to our customers even if they live in a very small town. As a matter of fact, about 20 to 25% of Maruti Suzuki sales



Mr. Rajeev Gandhi
Maruti Suzuki
Executive Director



Naomi Nakamura
CC-Link
Partner Association
Executive Director

result came from the sales in such small towns.

Mr. Chaturvedi Maruti Suzuki offers 14 models, total of 150 variants. In order to deliver a wide variety of vehicles to our customers in every city, our production line must be trouble free for continuous operation. Should the production line be stopped for some reason even for a short period of time, the loss would be significant. This is because Maruti Suzuki continues to



Maruti Suzuki plant located in Gurgaon, a suburb of Delhi

roll out a completed vehicle every 26 seconds.

To pursue continuous production, FA plays a vital role. FA enables the expansion of production volume while enhancing production efficiency, and in addition, human error can also be avoided. FA reduces operation



Sunil Mehta
CLPA India
Chairman

time while preventing human errors, and its effects also enable collection and management of critical parameters that occur during assembly process. In this way, Maruti Suzuki has been able to produce a wide variety of vehicles in large volume continuously.

Nakamura Maruti Suzuki incorporated CC-Link Family at an early stage in its main Gurgaon plant. Was that because Maruti Suzuki determined it would be effective in pursuing the policy to continue building a wide variety of vehicles?

Mr. Sarkar When building a wide variety of vehicles in the same production line, it must be capable of handling large amounts of data, in control layer and information communication layer, respectively. Especially today, to ensure production traceability, the data that the production line is handling keeps increasing.

CC-Link IE has 1Gbps broadband performance with Ethernet base and is capable of processing control system and information system in one network. The CC-Link IE is the network that meets our requirement. By integrating the network, equipment downtime potential due to cable interference or loosening was also reduced.

The Gurgaon plant incorporated CC-Link at an initial stage, but to make full use of 1 Gbps broadband and

other benefits, CC-Link IE was introduced starting from the new diesel engine production line. In addition, starting from last year, the Manesar plant's assembly process has also incorporated CC-Link IE. These plants established the network using CC-Link IE to connect processes or process and server. CC-Link IE offers various topology options such as star and ring type that facilitate building flexible networks.

CC-Link that contributes to energy saving Utilize support to train technicians

Sunil On the other hand, not only automobile industry but all manufacturing industries are requested to practice energy conservation activities. Especially in India, where electric infrastructure is not necessarily sufficient, energy conservation is one of the biggest challenges. Could you please tell us what kind of energy conservation initiatives that Maruti Suzuki has implemented?

Mr. Verma Maruti Suzuki is implementing energy conservation activities in every way in our plant, not only achieving fuel-efficient vehicles. We have been working on reducing energy consumption in our plant. For example, we have changed lighting equipment from conventional fluorescent bulbs to LED, and the pumps used in water treatment facility and turbine cooling water system are replaced with energy saving pumps. We also incorporated a gravity system to transfer parts and vehicles and an air washer in place of high pressure water washing process.

Introducing CC-Link Family also contributes to energy conservation. We have established the system to optimize power distribution by connecting SCADA and power meter to CC-Link to collect energy consumption data of each process. This not only clarifies if any waste of energy exists in the process but also shuts off power supply automatically during non-production time. To pursue energy conservation, CC-Link plays a vital role.

Sunil Training of personnel who actually utilize the CC-Link Family will be critical, when the CC-Link Family is utilized in various purpose.

Mr. Verma We are making effective use of the seminars that CC-Link Partner Association is offering and the new solution demo for service technician training. It is important to train personnel to become

Maruti Suzuki Executives.



Mr. H.Sarkar
General Manager-
Vehicle Eng.
Dept.
Mr. Virkam Verma
Vice President
Mr. Anoop Chaturvedi
Vice President

CC-Link experts to enable prompt analysis of troubles and reduction of equipment downtime. CC-Link Partner Association's support is indispensable to develop such human resources. We are also utilizing the training facility that Mitsubishi Electric offers in Gurgaon. Based on the information there, we select appropriate CC-Link compatible repeaters etc. to help develop new systems.

Mr. Gandhi Including support, CC Link Partner Association that promotes CC-Link and Maruti Suzuki have established good communication. Currently, there is no policy in India to execute recall, but we expect that Indian government will establish a legal standard soon. Once it is legally mandated, automobile makers must retain the tremendous amount of traceability data involved in manufacturing. CC-Link IE Field, with unprecedented 1Gbps broadband characteristics, is suitable for modern society that manages large amounts of data with networks. We are considering expanding the application even further.

Nakamura It is an honor to realize that CC-Link Family and the activity of CC-Link Partner Association are supporting the business of Maruti Suzuki. Thank you very much for sharing it with us today.



CLPA Office Locations

CLPA - Japan (Head Office)

6F Ozone-front Building,
3-15-58, Ozone, Kita-ku,
Nagoya 462-0825, Japan
Phone : +81-52-919-1588 Fax : +81-52-916-8655
E-mail : info@cc-link.org
URL : <http://www.cc-link.org>

CLPA - Americas

500 Corporate Woods Parkway,
Vernon Hills, IL, 60061, U.S.A.
Phone : +1-847-478-2341 Fax : +1-847-876-6611
E-mail : info@cclinkamerica.org
URL : <http://www.cclinkamerica.org>

CLPA - Europe (Germany)

Postfach 10 12 17
40832 Ratingen Germany
Phone : +49-2102-486-1750 Fax : +49-2102-532-9740
E-mail : partners@clpa-europe.com
URL : <http://www.clpa-europe.com>

CLPA - Europe (U.K. Office)

Travellers Lane, Hatfield, Hertfordshire, AL10 8XB U.K.
(P.O. Box 50, Hatfield, AL10 8XB U.K.)
Phone : +44-1707-278953 Fax : +49-2102-532-9740
E-mail : partners@clpa-europe.com
URL : <http://www.clpa-europe.com>

CLPA-Turkey

Serifali Mahallesi Nutuk Sokak.No:5 34775
Umraniye-istanbul /Turkey
Phone : +90-216-526-39-90 Fax : +90-216-526-39-95
E-mail : partners@clpa-europe.com
URL : <http://www.clpa-europe.com>

CLPA - Korea

2F, 1480-6, Gayang-Dong,
Gangseo-Gu, Seoul, 157-202, Korea
Phone : +82-2-3663-6178 Fax : +82-2-3663-0475
E-mail : clpakor@meak.co.kr
URL : <http://www.cc-link.or.kr/>

CLPA - China

Office in Tongji University : School of Electronics and Information
Engineering, Jiading Campus, Tongji University,
4800 Cao'an Highway, Shanghai, P.R. China
Office in Downtown : 19F No.1386, Hongqiao Road, Shanghai, China
Phone : +86-21-64940523
Fax : +86-21-64940525
E-mail : mail1@cc-link.org.cn
URL : <http://www.cc-link.org.cn/>

CLPA - Taiwan

6th Fl, No.105, Wu Kung 3rd. Rd., Wu-Ku Hsiang, Taipei, Taiwan
Phone : +886-2-8990-1573 Fax : +886-2-8990-1572
E-mail : cclink01@ms63.hinet.net
URL : <http://www.cc-link.org.tw/>

CLPC - ASEAN (Singapore)

307 Alexandra Road #05-01/02,
Mitsubishi Electric Bldg., Singapore 159943
Phone : +656-470-2480 Fax : +656-476-7439
E-mail : cclink@asia.meap.com

CLPA - India

2nd Floor, Tower A & B, Cyber Greens, DLF Cyber City,
DLF Phase-III, Gurgaon-122002 Haryana, India
Phone : +91-124-4630300
E-mail : clpa@mei-india.com