

Gateway to China

**OPENING DOORS FOR MANUFACTURERS
IN THE WORLD'S FASTEST-GROWING ECONOMY**

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Executive summary

Burgeoning industrial and manufacturing development throughout China will be one of the most influential driving forces which will determine global growth in the decades ahead.

For ambitious, expansion-seeking companies in Europe, access to this vast marketplace is an essential step to enable them to capitalise on new and emerging opportunities for business growth.

Building on its strong presence in Asia, the CC-Link Partner Association (CLPA) has a pivotal role both to create and to support greater European involvement in expanding Chinese market sectors through a groundbreaking initiative, Gateway to China (G2C).

Supported by key European CC-Link partners - the programme is aimed at helping manufacturing companies to establish a foothold in China and to develop their business interests in the world's fastest-growing economy.

The programme is designed to make it easier for companies to penetrate the Chinese market and to strengthen their prospects for growth by taking advantage of CC-Link's reputation as an established, respected provider of enabling technology for the Chinese manufacturing sector.

Many European companies understand the growing importance of CC-Link open networks as a route to expansion and continuing business development in manufacturing industries.

This pioneering open network is recognised as a de-facto standard by the automotive and flat panel display industries, by manufacturers considering business opportunities in the region and by a Chinese government which is favourable to the use of this technology.

G2C is a compelling programme available from the CLPA and is supported by leading industrial companies throughout Europe to make it easier for manufacturing automation suppliers to penetrate and access the market's full potential.

Their prospects of success will arguably be considerably greater if they develop and promote verified CC-Link enabled products which are accepted in targeted industries, rather than attempting to introduce a less familiar and unsupported protocol.

A comprehensive package of product development and marketing benefits is available as the CLPA uses its influence in the region to promote and assist greater European commercial involvement in key Chinese industrial locations.

This paper looks at the G2C programme in more detail, identifies some of the opportunities available to companies which register their participation and explains how the CLPA and CC-Link will support them on their journey into the world's fastest-growing market.



CC-Link is a de-facto standard in the flat-panel display and automotive industries.



CC-Link: a worldwide benchmark standard

CC-Link industrial open networks are based on technology originally developed by Mitsubishi Electric Corporation and subsequently administered by the CC-Link Partner Association (CLPA) as an open network. Mitsubishi Electric is the world's largest supplier of programmable logic controllers (PLCs) by unit volume.

CC-Link networks handle control and information data to provide efficient, integrated factory and process automation. This high-speed, deterministic communication seamlessly links a wide range of automation devices from multiple vendors.

CC-Link is the only high-performance open device level network that delivers equal bandwidth up to 1Gbp/s to all devices and is recognised as a benchmark standard in worldwide open network technology.

It is the leading standard in Asia and is increasingly sought-after in Europe and the Americas. CLPA has offices throughout the world with a European headquarters and conformance test centre near Düsseldorf, Germany.

Open network success is determined by the availability of automation products that support the standard technology. In April 2012 there were approximately 1,200 certified CC-Link compatible products, available from more than 250 automation equipment manufacturers worldwide, all communicating freely over a single cable. This represents a global installed base of approximately 9,000,000 devices.

Network interoperability ensures that all devices and components on a system 'connect' and operate together.

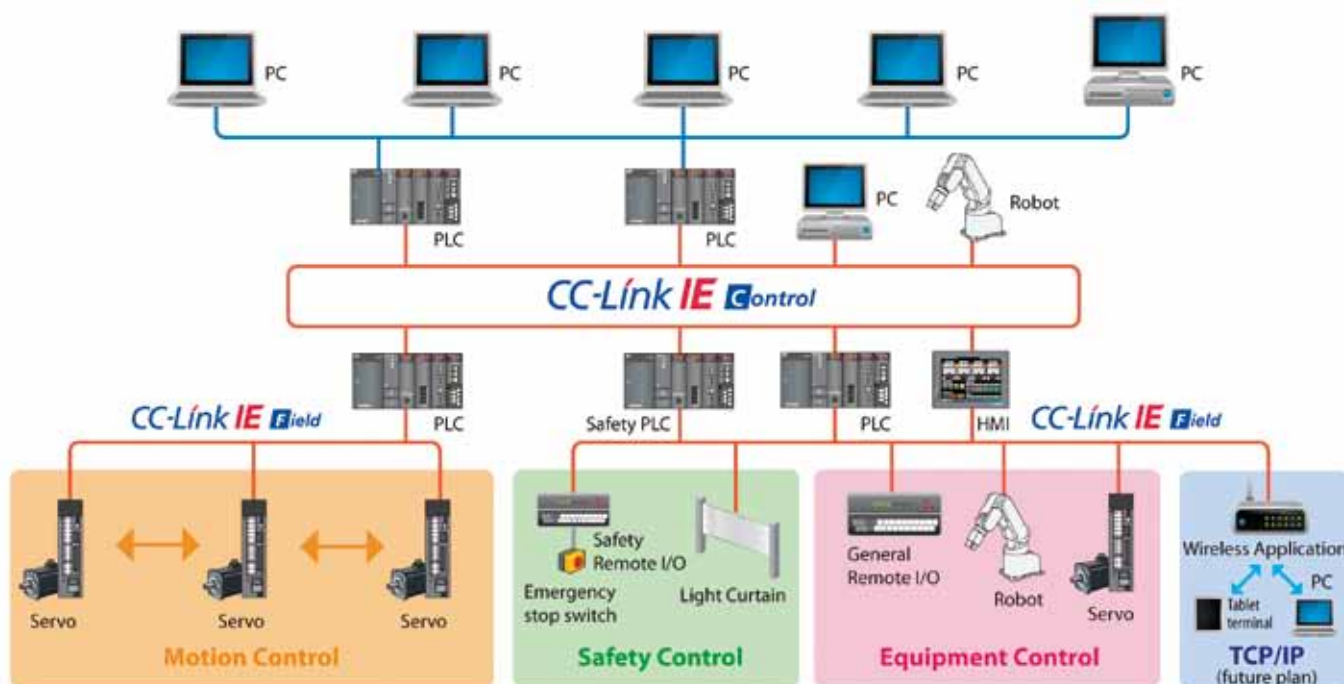
CC-Link technology is based on using open fieldbus or Ethernet technology to provide reliable and deterministic communications, assuring interoperability between devices.

By connecting sensors and actuators to controllers, the network shares information, reduces wiring, prevents breakdowns and interruptions in factory operations, saves manufacturers money and ensures they achieve maximum productivity.

Conformance testing through the CLPA ensures that devices meet the standard performance specifications to become CC-Link verified and certified. Rigorous device testing includes electrical noise immunity testing to ensure trouble-free network communication.

CC-Link is an enabling technology for success for manufacturers across the world. Its potential to create business opportunities is emphasised by the fact that it has taken less than ten years to be recognised as the de-facto standard for open networking across Asia.

For many companies, CC-Link has become the network of choice for automation in various industry sectors.



CC-Link offers a comprehensive network architecture for all applications.

China: the opportunities and the potential

China is the world's fastest-growing economy. It is the world's second-largest economy (after the United States) both in GDP and purchasing power parity, which gauges a country's wealth based on the relative purchasing abilities of its people.

China's rapid economic growth since 1978 has resulted in the country's GDP doubling every seven to eight years. A significant expansion in China's export trade has accompanied and contributed to this rapid growth.¹

World export shares for China increased in 2010 to 11 per cent. The US is the world's largest exporter ahead of China, followed by Germany and Japan.²

Between 2001 and 2010 China's average annual GDP growth rate was 10.5 per cent.³ However, the figure is expected to dip slightly with the government, in March 2012, revising its economic annual growth target from 8 per cent to 7.5 percent.⁴

In 2010 there were approximately 10 million small businesses alone in China which account for 60 per cent of the economy and 80 per cent of people's jobs. The country now has over 60 organisations in the global Fortune 500.⁵ There are compelling reasons for companies to invest in China:

- It has experienced a 90-fold economic increase since 1978
- The country's economy is growing faster than anywhere else in the world
- It has the world's third-largest foreign direct investment (FDI).

China's economy has grown steadily over the past 40 years and it is now the world's leading marketplace for many global consumer products.

Its industrial markets are strong. China is the largest consumer of iron, steel, coal and cement in the world. Crucially for many CLPA member organisations, China also has the world's largest automotive market with 18.5 million vehicles sold in 2011 including almost 14.5 million cars.⁶

Total vehicle sales have increased by about 30 per cent since 2009 and global management consultants McKinsey & Company estimates that China's car market will grow tenfold between 2005 and 2030.⁷

As an established de-facto standard in several major and rapidly-expanding industries, notably the automotive and flat panel display markets, CC-Link offers manufacturers expanding into China an important competitive advantage.

Companies are investing heavily in the Chinese automotive industry and leading Asian automotives are set to take their tried-and-tested CC-Link technology with them as they expand into this huge market.

Car market analysts expect Chinese motor sales will rise by between 10 - 15 per cent in 2012 despite the government phasing out tax incentives and imposing restrictions on new car sales in the capital, Beijing.

Phenomenal growth is forecast in China as the popularisation of vehicles gathers momentum. Less than six per cent of the population currently owns a vehicle. In comparison, 80 per cent of people in the UK own a car and the figure is over 90 per cent in the US.⁸

Increasing demand from domestic consumers has catapulted China as the world's largest auto market. Production in China already represents more than 23 per cent of the global car industry, exceeding that in the US, Japan, the European Union, Brazil and India.

By 2025 car ownership in China is expected to reach the 200 million mark, higher than anywhere else in the world. This will rise to 300 million by 2030 and exceed 400 million soon after 2040 - by which time car ownership in China will be almost double that in the US. Analysts already refer to an 'exploding car culture' in China as the population's disposable income and consumer expectations continue to rise.

In 2010, EU car exports worldwide were 4.3 million units. Chinese exports already account for one fifth of this figure with the majority of cars exported to the US and the European Union.⁹

CC-Link has an even stronger foothold in Asia's burgeoning flat panel display industry where the network is already dominant.

Asian businesses are the majority stakeholders in this industry and CC-Link's position will continue to strengthen as more leading companies move into and expand their market presence in China.

Factories and manufacturers in Asia are steadily ramping up production of flat screen liquid crystal displays (LCD) to meet ever-increasing consumer expectations.

The demand for electronic products such as flat panel LCD televisions and monitors has grown exponentially in recent years. China Daily reports that China produced about 120 million TVs in 2011 and well over 80 per cent were LCD models. About 42 million LCD TVs were sold in China during 2011 alone.¹⁰

In addition, about six million 3-D TV sets were sold in the Chinese market and this figure is expected to rise to 20 million in 2012, according to the China Electronic Chamber of Commerce.¹¹

China is predicted to become the world leader in the manufacture, research and development of display screens by 2017.¹²

As demand continues to increase, so too does the number of product variations. Investment from overseas will accelerate the technological innovation in this industry which will mean more high-end applications and greater product choice.

With manufacturing now highly-automated, data communications are more crucial than ever. Consumer price pressures require constant efficiency improvements, which makes it essential for highly effective communication and data sharing between manufacturing components.¹³

LCD production is something of a blueprint for the Asian market, demonstrating many of the control technology solutions and their impact on the future for manufacturing processes and output.¹⁴

In China, the production plants and factories of the future are likely to be largely unmanned. Remote diagnosis and monitoring technologies will steadily replace site and task-specific personnel. Networks will play an increasingly significant role in these developments - and CC-Link is already driving these technological and efficiency-led advancements.

CC-Link supports a wide range of applications across many industries using devices from established European vendors.

Manufacturers of flat screens, panel display units, cars and automotive parts - and in many other expanding markets - are eager to be in pole position to ensure they secure business in Asia's fastest-growing markets.

China recognises the need for world-class automation. There is tremendous potential for European device manufacturers and system integrators to rise to this globally-significant challenge.¹⁵



CC-Link is supported by a wide variety of leading European automation companies.



A strategy for growth: China's Five-Year Plans

Development of China's manufacturing capacity will increasingly become one of the most influential forces to impact on worldwide growth. In terms of distribution and connectivity, manufacturing will be world-focused with key European business involvement seen as integral to China's continued economic resurgence.

In the 1970s and 1980s, the emergence of China's manufacturing capacities and potential was based heavily on an abundant supply of manpower and largely low-cost, labour-intensive processes.

However, in recent years, factory wages have been rising, triggering domestic consumption and higher consumer expectations on an unprecedented scale. Urban residents' disposable income has increased over the past decade by more than 150 per cent. Because of this, approximately 95 million people have moved from rural to urban living in that time.¹⁶

Manufacturing workers are among those with more leverage on wage bargaining as the emphasis shifts to value-added manufacturing and domestic, demand-led growth.

In factories, the emphasis is increasingly shifting from predominantly labour-intensive activity towards automation as manufacturers in China - both domestic and foreign-owned - seek to increase productivity and reduce costs.

The trend towards automation, although still in its early stages, will gather momentum and take on greater significance as other emerging markets experience their own demographic and social transitions.

Every five years, China's central government draws up a new Five-Year Plan, a detailed strategy for the country's economic targets and business activities for the following five-year period. Essentially these plans are roadmaps for regulators and provincial officials who are responsible for their implementation.

The current plan emphasises that the income growth of residents will be synchronised in line with China's economic progress, so further wage rises will be linked to and dependent on increases in productivity. This is intended to help companies who face cost increases because of mandatory wage rises.

The current Five-Year Plan (2011-2015) is the government's 12th plan and focuses on encouraging domestic consumption, service sector development, energy-saving programmes, environmental improvements and significantly, from a G2C perspective, shifting to higher value-add manufacturing.

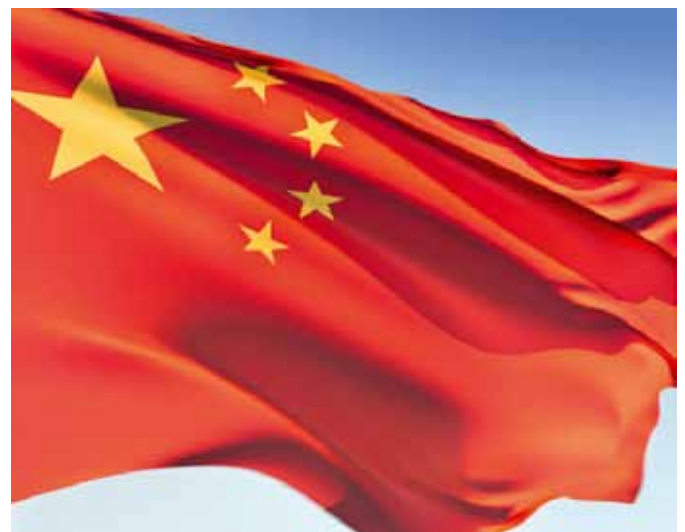
Key objectives in the current plan which impact on manufacturing operations include:

- Improving and promoting manufacturing
- Restructuring in key industries
- Developing equipment for new strategic fields
- Improving basic machinery components and manufacturing technologies
- Strengthening technologies and technical improvements.

The intention is to improve and promote high-end equipment manufacturing. The government is encouraging companies to replace and upgrade production equipment to achieve maximum, fault-free output.

Clearly there are significant opportunities for organisations that offer automation-led solutions. As the demand for new, more 'intelligent', sophisticated machinery and devices increases, the greater is the need - and the opportunity - for equipment, devices and systems that comply fully with open network standards.

CC-Link and CLPA member organisations are well-placed to capitalise on these opportunities.



China offers a way to address euro-zone economic problems.

The spread of CC-Link in China

The priorities outlined in the Chinese Government's current Five-Year Plan are relevant to any organisation looking to begin or develop business opportunities in China's automation market.

'High-end equipment manufacturing' is identified as one of the priorities alongside calls for a comprehensive upgrading of industrial machinery and the development of key industries, including automotive.

This is a statement of China's intent to upgrade and modernise its manufacturing sector and to restructure its key industries.

Organisations increasingly understand that industrial automation equipment sold in Asia must be compatible with the predominant industrial networks on the Asian market - and European companies identify CC-Link as one of the key networks in this expansive marketplace.

Many industrial automation companies want to develop a share of the vast Asian markets including Japan and Korea, but in particular to extend their business potential in China. CC-Link is a key factor for all companies with such aspirations.

The industrial colonisation of China by other Asian companies will have an important bearing on the standards used by local Chinese machine builders and other OEMs that supply parts and equipment to companies with operations in China.

As well as being the de-facto standard in many leading Asian manufacturing industries, the network also complies with international quality standards - including two GB/T stipulations which confirm that the technology meets the required standards for industry performance.

As mentioned earlier in this paper, two industries with stand-out importance to the world economy and the automation industry are the flat panel display (FPD) and automotive industries. Both industries have huge significance because of their predicted growth.

World-leading Asian manufacturing companies in both industries have opened plants in China or plan to do so. They are likely to install the open network they use already in their domestic operations. This will further strengthen CC-Link's status across the region.

Leading Asian automotive makers are investing heavily in new plants in China and taking their CC-Link technology with them. They include: Toyota (with plants in Chang Chun and Tian Jin), Nissan (Zheng Zhou and Cheng Do), Honda (Wu Han, Fu Shan and Guang Zhou), Mazda (Xiang Yang and Nanjing), Mitsubishi Motors (Fuzhou and Chang Sha), Bridgestone (WuXi and Hui Zhou) and Suzuki (Chong Qing).

Asian companies also dominate the flat panel display industry where CC-Link has an even stronger presence than in the automotive industry. Leading companies are opening plants in China and further strengthening the network's position in this sector.

The flat panel display (FPD) industry in China is booming. Driven by the two key factors of production and local demand, China has quickly become the location of choice for manufacturers with high-volume sales ambitions.

A combination of sustained growth in domestic demand - China is the leading consumer and manufacturer of display products - and growing export requirements for LCD products in downstream applications means that involvement in this crucial Chinese market is essential for global display panel manufacturers.

The importance of the de-facto standard is demonstrated clearly within the automotive industry because it also applies to the manufacturing of vehicle parts - tyres, glass and electrical devices among others. Here, too, there is ample opportunity for manufacturers to benefit from their products being CC-Link-enabled.

A further advantage is that, compared with other networks, CC-Link uses technology which is relatively easy to implement. Based on familiar fieldbus and Ethernet technologies, development is relatively simple, making it easier for a company to get a product developed and out to market.



Planned and actual flat panel display facilities.



Planned and actual automotive facilities.



Gateway to China: the programme

By 2030, global manufacturing will be unrecognisable from today. Technology will advance exponentially, particularly control engineering.

An increasing focus on automation in new, developing and upgraded manufacturing plants in China has inspired the CLPA to launch its Gateway to China (G2C) programme to make it easier for companies in Europe to capitalise on the opportunities to develop their business interests throughout the region.

G2C is initially targeted at European device manufacturers, many of whom lead the world with automation device technology. The programme will make it easier for them to penetrate Chinese markets by helping them to develop, promote and publicise their CC-Link enabled products.

The programme has two stages for each participating company. The first stage is concerned with developing a CC-Link-enabled product for market. The CLPA provides assistance with development, kits of sample components and cables from partner organisations. All support is provided without any additional cost to the manufacturer upon joining the CLPA.

As soon as the product, device or system is ready, the second stage involves multi-media promotion throughout China. The CLPA organises free advertising in leading automation publications and websites, roadshows, webinars and other promotional activity. Another partner, Mitsubishi Electric, offers touring opportunities to some of its Asian facilities as a promotional endorsement of the network's strength.



CLPA offers comprehensive marketing support in China for participants of the G2C programme.

These activities are designed to make it considerably easier for manufacturers to establish their products quickly in thriving Chinese industries. The programme benefits companies which are already trading in these markets by raising awareness of their business and adding the credibility of a vital third-party endorsement.

The CLPA anticipates that, if the programme is successful, the increased uptake of the network in the European automation community will inspire more industries to use the CC-Link open network technology.

Crucially, from a CLPA perspective, CC-Link has significant advantages over competitors. Independent market research confirms that CC-Link is the leading network in Asia, based on the suppliers of different automation networks. It is expected to grow faster than competitors over the next few years.

Launched initially for European companies in October 2011, G2C is expected to roll out globally in due course. Further details about the existing programme are at: cc-link-g2c.com



Gateway to China: the benefits

A comprehensive package of benefits with real-world commercial value is available to give companies registered on the G2C programme a head-start in making an impact in their target Chinese market. The CLPA incentive package is designed to provide companies with the support required to develop their products and then to promote, publicise and market them in China.

There are two main elements:

- Development support
- Marketing support.

The presence and reputation of the CLPA in China and throughout Asia help companies to navigate and overcome the complex business culture and language issues experienced by other businesses which are unable to call on such dedicated support.

Geographically, China is immense yet support for G2C businesses is never far away. Including the CLPA and its partner Mitsubishi Electric, there are 23 support locations which cover all major industrial and commercial areas. In total, the support network includes two headquarters (in Shanghai and Hong Kong), nine sales and 12 technical support offices, together with over 140 distributors.

Support is available to businesses throughout a product's development from one or more CLPA partner operations across the world. As well as technical consultancy companies also receive free development samples, essentially a pack or kit comprising key devices needed to develop CC-Link certified products.

Because all the support operations or offices are 'local' to countries or areas where each product is developed, there is considerably less risk of issues or problems arising as a result of language difficulties and time difference inconveniences are largely avoided.

Various development benefits are also available from CLPA partners including Hilscher and HMS, for companies which use the netX or Anybus platforms, and Weidmüller, which offers a starter kit. Development component kits and 3M network cables are also available without charge.

After a device has been developed and tested, the vital second stage of the support programme swings into action. The CLPA provides detailed marketing and communication support to launch, publicise and, ultimately, to help maximise their product sales across China.

Marketing incentives include free advertising in key Chinese print and online media in target markets, road shows and seminars in all major cities and industrial regions, promotional webinars which can also feature G2C participants, factory tours, trade fairs, product exhibitions and many other activities.

Advertising which displays information about the new or upgraded products is placed in publications that cover all the major relevant industries, including automotive, transport, utilities, steel, pharmaceutical, chemical, machinery and construction.

Financially, the complete package of technical development and marketing support is worth thousands of Euros. From the perspective of putting businesses on the map in the hugely competitive Chinese markets, the support provided is priceless.

Ultimately, one of the most significant benefits for companies on the G2C programme is the opportunity to secure a crucial third-party endorsement for their products and business activities.

Independent recognition from CC-Link can only increase a company's reputation which adds to its credibility in China.



Comprehensive support is available throughout China.

Gateway to China: key partners

The CLPA Gateway to China programme is being supported by key partners throughout Europe and Asia. These companies are:



The collective expertise of these partners covers all areas and aspects of automation including sensors, PLCs, drives, human-machine interfaces (HMIs), robotics, software integration and data transmission. In addition, the G2C programme also has key support from leading European automation magazine publishers.

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CC-Link Partner Association

CLPA is an international organisation with more than 1,600 member companies worldwide. The main aims of the CLPA are the technical development and promotion of the family of CC-Link open network technologies.

CLPA is responsible for supporting manufacturers and users of the technology, overseeing, developing and managing the CC-Link specifications and promoting the worldwide adoption of the network.

Established for over ten years, the CLPA and its membership have grown continually while the organisation has overseen the development of the network's key technologies.



Summary

The increased focus on automation in new and upgraded production plants throughout China's industrial heartland creates a plethora of opportunities for automation equipment suppliers in Europe.

CC-Link is the open network technology of choice for many manufacturing industries in China – including the vast automotive and flat panel display industries where huge growth in demand and output is forecast over the next two decades.

Companies which adopt the CC-Link open network technology - the de-facto standard which is openly welcomed and encouraged by the Chinese government - have a head start over competitors.

Many world-leading Asian manufacturing companies already using CC-Link have installed the open network in their new operations. Others will follow and the de-facto standard advantage applies equally to the manufacturers and their suppliers.

The emphasis on automation has inspired the CLPA to provide the Gateway to China incentive programme to make market access easier for companies in Europe.

The programme includes a 'real-world' package of development and marketing opportunities and is designed to help companies make a profitable impact in China by fulfilling their sales potential in the world's fastest-growing economy.



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CC-Link Partner Association - Europe

PO Box 101217,
40832 Ratingen,
Germany

Tel: +49 (0) 2102 4861750

Fax: +49 (0) 2102 5329740

Email: partners@clpa-europe.com



Smye Holland Associates

63 Park Road,
Peterborough,
PE1 2TN
England

Tel: +44 (0)1733 564906

Fax: +44 (0)1733 562051

Email: info@smye-holland.com

www.smye-holland.com