

# Developments in China increase

*The leading German automotive suppliers prepare to move developments to China. This opens up opportunities for CAN interface and tool vendors in the Far East.*



*German Tier 1 supply produce and develop ECUs in China (Photo: Continental)*

Since 2009, China has been the largest producer of passenger cars. Most of the vehicles are assembled by joint ventures and foreign carmakers (e.g. Volkswagen, General Motors, Hyundai, Nissan, Honda, and Toyota). But China has also local brands: Beijing Automotive Group, Brilliance Automotive, BYD, Dongfeng Motor, FAW Group, SAIC Motor, Chana, Geely, Chery, Jianghuai, Great Wall, and Guangzhou Automobile. Most of them are unknown in Europe and North America. In 2014, about 20 million passenger cars were produced in China plus about 4 million commercial vehicles.

Of course, most of the cars produced in China use CAN-based in-vehicle networks connecting ECUs that were mainly developed abroad. But this will change. Market-leading suppliers have already started to develop ECUs with CAN connectivity in China. In particular, Bosch, Continental, and ZF Friedrichshafen have announced additional investments for the next years in production facilities, but also in development projects at the Auto Shanghai 2015 exhibition.

This opens the doors for suppliers of the automotive Tier 1s. Especially CAN interface boards including development environments are needed. Of course, CAN chip-makers will also benefit from this trend as well as CAN toolmakers. The increasing demand for CAN products and tools also fosters local sub-suppliers. CiA member ZLG has developed its own CANscope bus analyzing tool and provides its own oscilloscope with CAN message interpretation software. During CiA's seminar tour in China, the company headquartered in Guangzhou presented the first CAN FD interpreter for its oscilloscope. In addition, the company offers a broad range of USB dongles and other CAN interface modules.

## Increasing sales in China

Bosch reported a consolidated sales of €6,4 billion in China in 2014. Peter Tyroller, responsible for Bosch's Asia Pacific business, said: "We want to actively shape the development of the Chinese market, and take advantage

of the wealth of opportunities arising all from connectivity, automation, and electrification, as well as energy efficiency.” To further expand local manufacturing operations and build up research and development in China, the German company has invested 920 million euros over the past three years. In 2014 alone, the investment amounted to almost €330 million.

Bosch Software Innovations launched a pilot project for promoting electric vehicle application in Shanghai in 2013. Automated driving is an example of the potential and advantages of connectivity technologies. With connectivity-capable devices such as sensors, cameras, and electronic control units, Bosch can offer driving assistance functions that will lead to automated driving in the future. Of course, CAN and CAN FD connectivity plays an important role in this application.

Continental, another German automotive supplier, opened a research and development center for tires in He-fei at the end of March. The center is equipped with state-of-the-art test systems. At the Auto Shanghai event, the company presented various customized solutions and products for the Chinese automobile market. Dr. Ralf Cramer, CEO of Continental China, said: “Our drive in China is to invent, develop, produce, and market indispensable, customized technological solutions that shape the five mega trends of mobility in China.” This includes buses and metros, but also commuter and high-speed trains. The company develops dedicated CAN-based products for the Chinese market, especially for e-mobility.

Market researchers expect a big future for e-mobility in China. The success of battery-powered two-wheelers with annual sales figures of about 20 million units is one of the background reasons for this optimism. However, the e-car business is still very small, not just because of the poor infrastructure of charging stations. Foreign cars with combustion engines are still the most popular. If affordable, Chinese people like to buy medium vehicles or even luxury cars, which have the highest growth rate.

Nevertheless, Continental China develops and produces a broader and more efficient range of diversified solutions. Passive Start and Entry Systems (PASE) for a comfortable and convenient hands-free access have been in high demand for many years. Continental has also developed electronic brake systems for scooters and motorcycles of all classes based on its tried-and-tested passenger car ABS technology. The daughter company ContiTech has developed a drive system, which uses belt technology instead of conventional chains on pedelecs and e-bikes. According to the company, this offers a lighter, cleaner, and more powerful pedaling experience.

The third German Tier 1, ZF Friedrichshafen, active in China, has recently acquired TRW Automotive, which doubles the sales in China. ZF China reported a 15-% sales increase for 2014, not considering the acquisition. The company has operated in China for more than 30 years. About 700 engineers are focused on development in its Chinese headquarters. The company invests more than 5 % of its sales in research and development each year. For this year, additional investments in the R&D laboratories and test benches in Shanghai are planned. “We will then be able to test products of car driveline and chassis

## Chinese car brands

The Chinese automotive industry is more than half a century old: the first plants were founded as early as the 1950s, assisted by the USSR. They had small manufacturing capabilities, geared to produce not more than 100 000 to 200 000 cars per year. However, since the 1990s, China has invested a lot of money into the development of the national automotive industry, which paid off quickly: by 1992 the number of cars produced in China exceeded one million units.

While in 2003 China was the fourth largest world automobile producer behind Japan, USA, and Germany, by 2008 it had become the world’s leading country in terms of vehicles production and sales. In 2014, China manufactured 19,91 million cars, with a significant percentage being local brands. The better part of the cars produced by the Chinese car companies remains in the country. Chinese business class automobiles appear to be the most popular items of automotive exports: most of them are sold to emerging economies.

technology as well as commercial vehicle or constructions machinery transmissions,” said Stefan Sommer, CEO of ZF, according to China Daily.

ZF China supplies foreign carmakers as well as local brands such as BAIC, FAW, Great Wall, and SAIC. The business with Chinese automakers already makes up about 30 % of the company’s turnover. As the Chinese government requests lower energy consumption and reduction of pollution, ZF China is developing electric-powered cars in close cooperation with its local partners. In the past 20 years, the company has established 20 production locations in China.

Many of the supplied products provide CAN connectivity. This includes the AS Tronic automatic transmission for commercial vehicles. One million of those units have been produced since 1997. In 2010, the product received a Chinese innovation award. And the next generation of automatic transmissions has already been developed: The Traxon modular system will gradually replace the AS Tronic over the next few years. It is suitable for torque requirements of up to 3500 Nm and can be linked to five modules such as the GPS Prevision. This gives truck makers the opportunity to link the transmission with GPS data and digital map material. In this way, unnecessary gearshifts can be avoided – for example when a conventional transmission control unit would shift up a gear at an uphill gradient or a narrow bend, just to shift down to a lower gear shortly after.

The increasing development and production of automotive electronics by German suppliers requires dedicated CAN interface boards for evaluation and test purposes. Those products and the related software tools today use the Classical CAN data link layer and will use CAN FD tomorrow. Etas, a Bosch daughter, already promoted CAN FD connectivity during the last CiA seminar tour in several Chinese cities. Kvaser, which is headquartered in Sweden, has done the same.

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