



OVERTAKING ON A CURVE

Gregor McClenaghan looks at China's efforts to lead the world in electric vehicles

China is ahead of the rest of the world when it comes to electric vehicles, with more than 800,000 sold last year alone

In the past few years the electric car has gone from science fiction dream to practical reality. Most international auto manufacturers now sell hybrid vehicles, and either already offer, or are working towards, fully electric models.

In China, the growth of New Energy Vehicles (NEVs), which include pure battery electric vehicles (BEVs) and plug-in hybrids (PHEVs), is streets ahead of the rest of the world. Last year 804,000 were sold in China, accounting for 2.4 per cent of vehicle sales, far in excess of any other region. In the second-biggest NEV market, the EU, sales reached 307,000 last year, comprising 1.7 per cent of the market, according to figures from EVvolumes.com, which compiles sales statistics for electric vehicles worldwide; it predicts that 2018 will see 1.1 million NEV cars sold in China, making up 3.6 per cent of the country's car market. Current government targets call for two million NEVs to be sold in China every year by 2020, and five million by 2025.

The Chinese government has helped kickstart the industry, both with generous subsidies to manufacturers and by making it easier for consumers to acquire a licence plate for an NEV than for a traditional car.

The environmental advantages of the new technology are not driving this state-sponsored effort, however. China produces more than 70 per cent of its electricity from coal-fired power stations; according to figures from global management consultancy McKinsey & Company, the CO2 reduction from building and running an electric car compared to an internal combustion model is just 29 per cent in China, compared to CO2 reductions of 44 per cent in Germany and 89 per cent in France, both of which use cleaner methods to generate power.

Industry analysts say the Chinese government's support for the technology is less about trying to improve China's notoriously poor air pollution, and more about raw geopolitical competition.

“There is a saying in China: ‘You should overtake on a curve.’ The Chinese auto industry is behind the rest of the world with internal combustion vehicles, but not so much with NEVs, so they see an opportunity to overtake the rest of the world in that area; in the longer term, when you combine NEVs with autonomous driving technology, there is even more opportunity to lead,” says Lei Xing, chief editor of the *China Automotive Review*.

Established domestic manufacturers like BYD Auto, Lifan Group, SAIC Motor and Great Wall Motors are being joined by more than 100 new start-ups, many of which currently operate in a legal grey area without the licences the government requires auto manufacturers to hold.

Foreign manufacturers, who can only build cars in China as the minority shareholder in a joint venture (JV) with a local firm, are trailing behind, although most have now either already entered or announced plans to enter the NEV market; foreign car makers were previously limited to involvement in just two JV companies each, but the government is now allowing them to form a third JV company, as long as it only builds NEVs.

Tesla, perhaps the best-known EV manufacturer in the West, has long had plans to open production facilities in China, but talks have reportedly stalled, and imported cars are subject to punishing 25 per cent tariffs.

“Chinese companies are already leading the world in many ways when it comes to NEVs; there's a huge overseas market for electric buses, which BYD already sells to Europe and parts of the US, especially California,” says Xing. ➤➤➤

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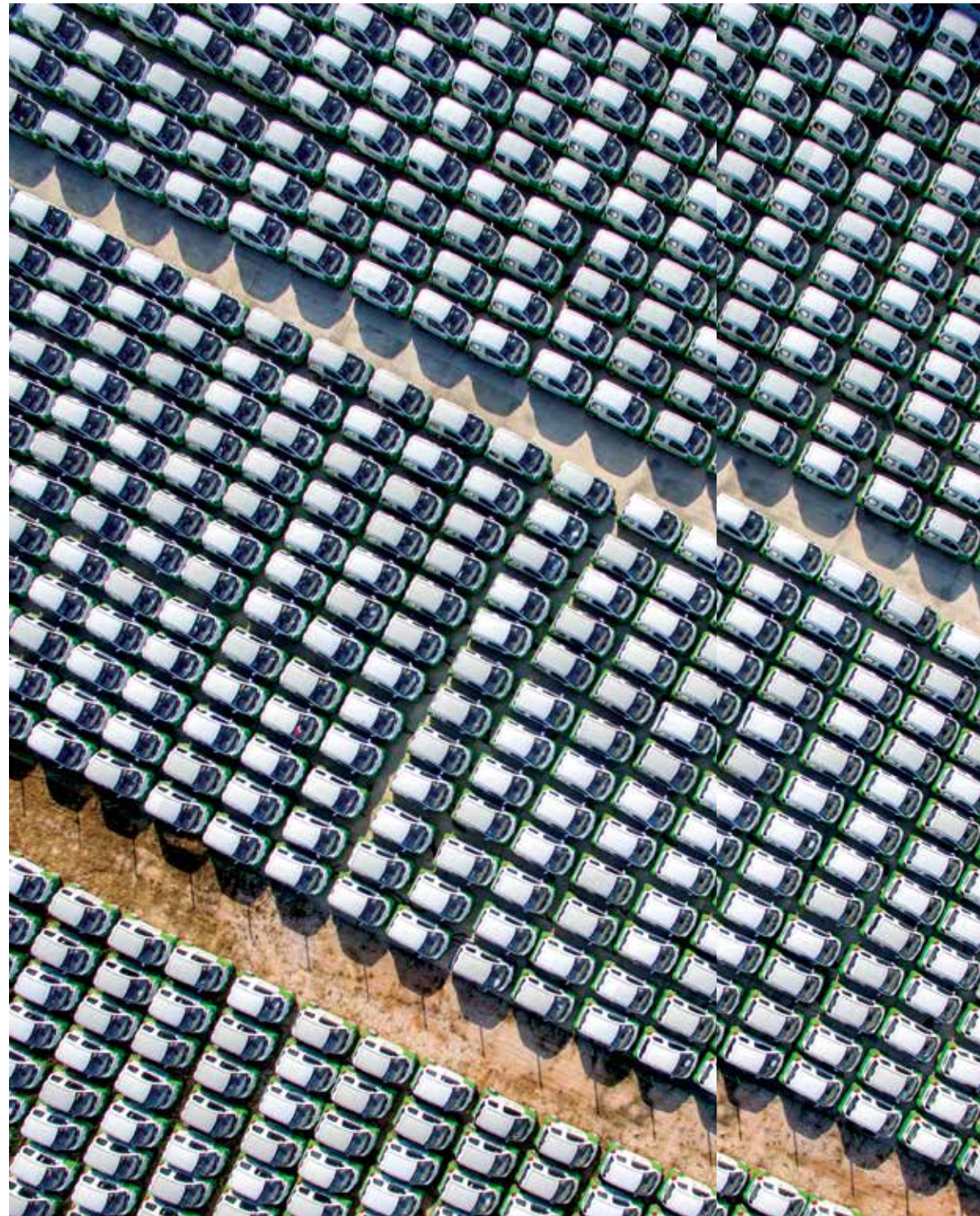
“Europe has relied on diesel for a long time and the European manufacturers are some way behind the Chinese companies when it comes to NEVs; the opportunity is that as cities and companies try to electrify their fleets, the Chinese manufacturers already have vehicles ready to meet that demand.”

Energy security also factors in to the government’s support for NEVs.

“Twenty years ago China exported oil and gas, but China is now the world’s largest oil importer and will soon be the world’s largest importer of gas, so from a strategic point of view it doesn’t want to be doing this, as it is vulnerable to fluctuations in supply and foreign exchange rates. However, it does have a lot of coal itself, so it makes sense if it can power cars by just producing electricity in-country,” says Mark Andrews, a Shanghai-based auto industry expert and journalist who has test driven many of China’s NEVs.

“Air pollution is perhaps a factor; the government certainly claims it is, but really with NEVs what you’re doing is changing from localised pollution to centralised pollution. There is some reduction in CO2 emissions, but burning more coal increases emissions of sulphur dioxide and other pollutants.”

Plug-in hybrids are becoming more popular with private consumers in cities, largely because the government has made it easier to get licence plates for them; private license plates for internal combustion cars are expensive, and in some cities are only issued through a lottery system. Various cities have introduced additional measures to cut traffic and pollution, for example by only allowing cars with specific licence numbers on the road on certain days; these measures mostly do not apply to NEVs.



Electric cars lined up at Kandi Electric Vehicles in Changxing County



Sales of pure battery electric vehicles, however, are largely driven by the growth in the last few years of ride-sharing platforms, where users find a car using a smartphone app, pay by the minute while they drive, and then leave it for the next person. These services are widely used in cities, including by people who have their own car but appreciate the convenience of being able to use one on an ad hoc basis. Many of the pure electric BEVs rolling off the production lines go to these ride-sharing platforms, several of which are owned by the car manufacturers themselves, like state-owned SAIC Motor’s EVCARD, which operates in 32 cities and has more than 3,000 pick-up points in Shanghai alone; and Chongqing-based Pand Auto, owned by the private-sector manufacturer Lifan Group.

“It’s very difficult to find out where the true purchasing power comes from; I’ve always contended that plug-in hybrids are mostly being bought by private consumers and the battery electric vehicles are being bought by fleet users like the car sharing schemes, and people in the industry tell me that’s probably

right, but nobody is able to produce figures for who is really buying these cars,” says Andrews.

“What’s interesting is that a lot of car sharing schemes are funded by the car makers; they’re essentially selling cars to themselves, and getting the government subsidies. Most private consumers don’t go down the route of buying a pure electric vehicle because they are worried about the range issue.”

Traditionally, Chinese motorists have tended to do most of their driving within cities, and although that has started to change in recent years, the country’s high-speed rail network make trains a faster and more efficient option for many people travelling between cities. However, individual freedom is an essential part of what makes private car ownership attractive, and not having the option to make longer journeys is a major factor stopping consumers from buying BEVs, both in China and the rest of the world.

Current BEVs vary in range from around 100 to 400 kilometres (60 to 250 miles), but Chinese models have tended to be at the low end of that scale, often using technology that is a few years behind that

“A lot of China’s car-sharing schemes are funded by the car makers as they get government subsidies”



of the leading international firms. That could be about to change, however; recent changes to government subsidies are shifting the focus away from the sheer number of cars that are built, to focus more on their quality and technology.

“One major change that was recently announced is that any NEV with a range of less than 150km will no longer qualify for subsidies,” says Xing.

“Most of the BEVs being released in China nowadays have about 100km range, but the mainstream players like BYD, BAIC, Chery and so on are all coming out with more and more models with ranges of 400km or more, so the auto makers are already moving in that direction. One reason for that is to meet the new technology thresholds for subsidies, but another is to drive away consumers’ range anxiety.”

As well as technological improvements, Chinese brands are also working on improving the basic quality of their cars and making them more attractive.

“There are quality and branding issues; particularly in Shanghai people want to drive a car with a well-known brand name and you don’t tend to see that many Chinese cars, although there are more in the provinces, especially away from the provincial

“A lot of new electric cars are of pretty bad quality, with no brand value whatsoever”

capitals,” says Andrews, who has test-driven dozens of Chinese NEVs in recent years.

“Over the last few years new manufacturers have been popping up almost by the week, most with no experience of building cars, and a lot of the cars are really of pretty bad quality. The big firms are improving; in a lot of the cars produced by SAIC are of quite good standard. The BYD cars are now quite good as well, but I drove some BYDs around 2010 and they were absolutely terrible at that time. I drove the BYD E6, which was their first purely electric car, and it was terrible quality wise: how panels were put together, the quality of plastics inside, things felt like they were about to fall apart. I had a chance to examine some BYD cars recently though and the build quality was much better. Generally the joint venture cars have been more reliable, but some of the big Chinese producers have been doing a lot better recently.”

Another key area for improvement is to make sure the infrastructure is in place to support more electric cars on the road. PEVs take around 10 to 12 hours to recharge (although many have a “fast charge” option, which takes around six hours, but reduces the



Above left:
Traffic police officers take part in a training exercise in Jinan

Above: An electric taxi charging station in Taiyuan

battery life). Even in China’s major cities, NEV users report that they often need five, and even as many as 10, separate apps on their smartphones to locate charging stations, which are operated by an array of third party suppliers, as well as by the government and the auto makers themselves.

“In China the problem isn’t necessarily whether the infrastructure for charging NEVs is in place, it’s the actual operational status of the charging stations, and their compatibility with different car brands,” says Xing.

“There are a lot of charging stations that are set up for the sake of setting them up, to meet a target, but not necessarily in the right place, or they are not maintained and quickly become zombie charging stations that don’t actually work. It’s still important to build more charging stations, but making sure they are conveniently located and easily operated is the bigger point.”

“It’s important that there are more charging stations built, and they are conveniently located”

Those issues mean some of the western manufacturers operating in China are taking a cautious approach to pure battery electric vehicles, moving ahead with plans to enter the BEV market while keeping their focus on hybrids in the short to medium term. Ford, which recently signed a new JV deal with Zotye to produce BEVs, will start manufacturing the Mondeo Energi PHEV in China this year, and plans to release at least 15 NEVs in the country by 2025.

“By then, 100 per cent of the nameplates manufactured through our Changan Ford JV, and 70 per cent of all Ford nameplates in China, will include electrified options,” says Trevor Worthington, president of product development for Ford Motor Company Asia Pacific, adding that Ford expects more NEVs to be on sale than petrol powered cars within 15 years.

“As the world’s largest NEV market, more batteries will be made in China than anywhere else, providing great opportunities for economies of scale and innovation. As battery technology improves, costs lower and charging times reduce, they will become a more competitive and attractive choice for consumers.”

Many international brands and Chinese firms are also looking at how to combine NEV technology with the imminent arrival of autonomous cars. China banned the testing of autonomous vehicles on public roads in 2016, but recent announcements suggest that could soon be relaxed.

“Ford has announced its intention to have a high-volume, fully autonomous vehicle in commercial operation in 2021 in a ride-hailing or ride-sharing service, and that will be a hybrid,” Worthington says.

“Picking a hybrid over a BEV makes sense, as hybrids are subject to less downtime than cars that need to charge, allowing them to stay on the road longer. We believe the hybrid has a much better cost-of-ownership model for a commercial autonomous vehicle, when the most important thing is uptime and profitability.”