



CHEAP AND CHEERFUL: Chinese car makers such as Chery Automobile are finding great success in emerging markets with their no-frills vehicles. REUTERS/REUTERS PICTURE

By skimping on frills, cutting corners and outsourcing design and engineering, Chinese automakers are shaking up developing markets around the world

# China's new threat: the good-enough car

BY NORIHIKO SHIROUZU

BEIJING, SEPTEMBER 18, 2012

China keeps getting better at making cars. One reason: It's getting better at cutting corners.

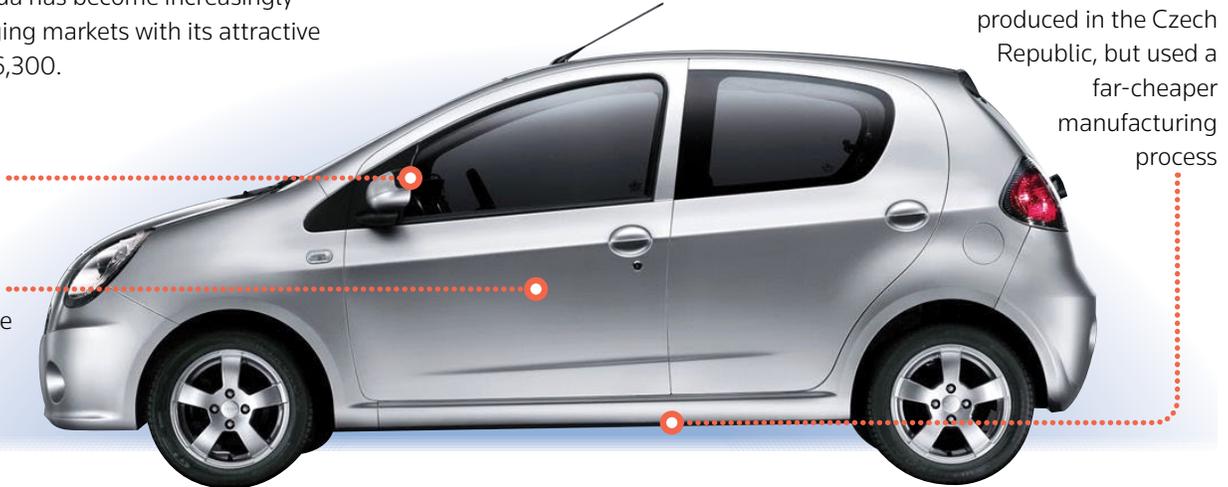
Zhejiang Geely Holding Group Co, one of China's biggest car makers, conducted 20 to 25 crash tests when it developed its popular Panda model, engineers involved in developing the car told Reuters. Global car makers typically conduct 125 to 150 crash tests for each new model. By relying more on computer simulations, Geely saved at least

## The Panda bared

Geely auto's Panda has become increasingly popular in emerging markets with its attractive sticker price of \$6,300.

**Cheap plastic dashboard**

**Lighter weight doors:** don't close with a satisfying "thump!"



**Chassis:** based on Toyota's Aygo model produced in the Czech Republic, but used a far-cheaper manufacturing process



**Panda-eyed grill and tail lamps in the shape of paws:** considered cute when launched in 2008 to coincide with the Beijing Olympic mascots



**Fewer crash test dummies:** Geely auto saved \$31.6 million and two years development time

Source and photos: Reuters, Geely

200 million yuan (\$31.57 million) and two years in development time on the Panda, the engineers said.

Paring back on crash tests, skimping on frills, simplifying designs, using cheaper materials and, in a departure for the industry, outsourcing most of their design and engineering are having a profound effect on the cost bases of China's dozens of car makers. Some are now able to sell cheap and cheerful small cars for about 40,000 yuan (\$6,350) - less than half the price of a plain vanilla Toyota.

Ten years ago, no discerning Chinese consumer would have bought China-designed cars. Not only were such vehicles accused of being illegal counterfeits of foreign models, but their quality and safety were also mistrusted.

Now, despite their homely looks, some indigenous models are striking a balance between no-frills affordability and acceptable quality. In China, it is the age of the good-enough car - and that has potentially significant implications for the world auto industry.

Models such as the Panda and the Great Wall Haval H3 are becoming popular not only in China but increasingly so in emerging markets, from Indonesia to Egypt and Ukraine. They are driving China's auto exports to record levels, even as growth in China's auto market slows down.

### GETTING TRACTION ABROAD

Exports of Chinese-produced vehicles are forecast by China's auto association to hit one million vehicles this year from 849,500

vehicles last year. Some automotive analysts are predicting a 50 percent increase to 1.25 million vehicles.

Some executives at big foreign manufacturers say China's new model of creating good-enough cars poses a serious challenge to the way the international industry operates.

"This is a warning shot to the established engineers who have told their management time and time and again that this is the minimum cost they can achieve with their existing design and production methodology," says Shiro Nakamura, a top Nissan Motor Co. executive and the company's chief designer. "Now the Chinese are saying they can cut another 30, 40 percent of the cost."

It normally takes four to five years for established players like General Motors Co

and Toyota Motor Corp to come up with a new car from the ground up. Chinese manufacturers can now do so in just two and half years by deploying an abbreviated design process.

“Perhaps the Chinese achieve their low cost by sacrificing quality standards,” says Nakamura. “But in many ways their way also points to ‘over quality’ or ‘waste’ we have built into our conventional design process over the years.”

### THE COPY CATS

The Chinese approach is a product of the extraordinarily fast rise of its auto industry. As the country opened up to the West, car makers were faced with relatively poor customers at home and sophisticated products made abroad. Global auto makers could sell their pricey cars to rich Chinese, but local Chinese auto makers had to come up with cheap cars for the masses.

Rapid growth in the economy spurred the creation of more than 100 registered automakers across China by the early 2000s – but they lacked expertise. Their solution in coming up with affordable cars was simple: copy the designs of foreign makers.

“Around 2000, China began embracing an approach it described as ‘reverse-engineering.’ It was essentially a fancy word for copying,” says Dai Ming, a senior engineer at CH-Auto Technology Corp, an independent design and engineering company based in Beijing. “The problem with those copied cars was that the Chinese were able to emulate the shape of a foreign car, but not its soul.”

Chinese car makers tended to sift through a foreign vehicle to identify expensive, non-critical features and functions to skip on or eliminate, such as a door that closes with a proper “thump,” as well as power windows and passenger-airbags. The result was often dubious quality and durability. After a few years of use, bumpers and door handles would start falling off.

Dai says of the typical cheap knock-off

\$6,400

The showroom price for a new Panda

Geely Automobile



OUTSOURCING: Chinese car makers save money by outsourcing design and engineering work to outside firms such as CH-Auto in Beijing.

REUTERS PICTURE

model: “It didn’t drive well like the foreign car, either, and in some cases it was a safety hazard on the road.”

### OUTSOURCING DESIGN

A clutch of design firms is driving the advances in affordability and quality in the industry, including CH-Auto, where Dai works; IAT Automobile Technology Co. of Beijing; and TJ Innova Engineering & Technology Co. of Shanghai.

China’s indigenous auto makers are so new many have not had time to groom their own engineers, and their best engineers are usually occupied more with manufacturing than design. Companies thus often outsource product design and development to outside engineering houses filled with Chinese engineers trained overseas.

Automotive analysts say these houses are responsible for helping engineer seven to eight out of every 10 cars China’s indigenous car makers sell here. By using the same few

design and engineering firms, Chinese car makers have effectively created a shared pool of home-grown automotive technology.

CH-Auto, for instance, has helped design an array of cars over the past decade, each time gaining fresh expertise, which it deploys for its next project – in most cases for a different company. CH-Auto was established in 2003 by a small group of jobless Chinese engineers who had trained with Beijing Jeep, a now-defunct joint venture set up initially by Beijing Automotive Industry Holding Co. and American Motors Corp.

CH-Auto and its rivals say they have moved beyond aping foreign designs. Instead of copying the shape of a component or an entire foreign car, they try to match its performance as well – often successfully – even as they improvise and simplify the original design to cut costs. The aim is to make cars affordable to China’s emerging middle class, people who are earning 50,000 to 60,000 yuan a year (\$7,900-\$9,500).

“It’s not copying. It’s not that simple any more,” said Wang Kejian, president of CH-Auto, a former Beijing Jeep engineer who was trained for a time in Detroit by Chrysler. “Since Chinese car makers have no accumulated vehicle design technology or know-how, we have to develop our own by studying foreign cars and use local parts suppliers to approximate the components and the cars.”

### HALF THE COST

Geely Automobile, which owns Swedish carmaker Volvo, turned to CH-Auto around 2005 for help on a project that led to the Panda, now one of China’s most popular small cars. CH-Auto was responsible for the exterior styling and engineering the underpinnings. The rest was handled by Geely, according to the two companies.

CH-Auto and Geely made a clear departure from copying with the Panda. To be sure, they still selected a car to emulate or bench-mark – in this case, the Aygo, a

“city car” that Toyota produces in Czech Republic and has been selling in Europe since 2005.

But instead of simply producing a fake Aygo, engineers at CH-Auto first studied and tested the Aygo and its components – often with the help of three-dimensional digital scanners – to collect data on their design and performance. Then they tried to manufacture components by adapting parts made in China to match desired functions and performance. If suitable local parts weren't available, they worked with suppliers to create new ones by simplifying the scanned Aygo designs.

The purpose was “not to copy but approximate the Aygo,” Dai said.

### PANDA'S UNDERPINNINGS

One example is the Panda's chassis. The under-body carriage, which the suspension and wheels are attached to, is key to how a vehicle handles corners on the road.

The Aygo, which starts at 6,462 pounds (about \$10,000) in Britain, has a relatively sophisticated under-body structure formed in a single piece by using a process called “hydroforming,” in which pressurised water is used to shape metal. For the Chinese this was a problem.

CH-Auto and its chassis suppliers have no proven know-how in hydroforming. And the light-weight steel that Toyota uses for the Aygo's under-body carriage was too pricey for Geely to use in a car to be sold in China.

Geely and CH-Auto's solution was to use cheap “everyday” steel commonly available in China, Dai said. Geely and CH-Auto divided the Panda's chassis frame into two pieces – upper and lower units – to simplify their structure so they could be easily stamped rather than using the more expensive hydroforming method. Then Geely welded those two pieces to create a chassis frame for the car.

“The problem was our solution compromised the Panda's NVH,” Dai says, using



EXPORT MACHINE: China is expected to sell one million cars overseas this year. REUTERS/CARLOS BARRIA

the acronym for noise, vibration and harshness, the key attributes of drive feel.

Dai's engineers tweaked the Panda's suspension, adjusting the so-called rubber bushes, or isolators, to make them softer to better absorb shocks and vibrations.

Despite using cheaper materials and processes, Geely and CH-Auto were able to largely match the performance of the Aygo's platform in terms of the vehicle handling and NVH, which Dai says was confirmed by a third-party testing company. More important, by tweaking the design and using cheaper materials and manufacturing processes, Geely and CH-Auto were able to produce a platform for the Panda

“It's not copying. It's not that simple anymore.

**Wang Kejian**

president of CH-Auto

with “roughly half” the Aygo's cost, according to Dai.

### ELIMINATING “MAJOR RISKS”

Despite the advances in design, safety standards in Chinese-made cars still lag those of U.S. and European manufacturers, in part because its government doesn't impose as stringent a body of safety requirements.

What's more, Chinese car makers ignore what they consider minor, non-critical risks, such as using far fewer crash tests with dummies.

“If the client only gives me two-and-a-half years to design a car, then I can only eliminate major risks. And the smaller risks, well, there's nothing we can do,” says CH-Auto's president Wang.

China does have vehicle safety standards, and any automaker launching a new car needs to meet them. But there is no required number of crash tests.

## CUTTING CORNERS CHINA'S NEW THREAT: THE GOOD-ENOUGH CAR

Geely and CH-Auto do not want to do as much crash-testing as global automakers because creating prototype cars costs up to 2 million yuan a car (\$316,000), CH-Auto's Wang said.

A Geely spokesman, Victor Yang, would not say how many crash tests Geely conducted on the Panda. But Yang noted that the Hangzhou-based auto maker conducted "more than what's typically performed in China." For cars being developed today, it routinely conducts more than 70 crash tests, Yang says.

By contrast, an established global player such as Toyota routinely tests a new car by crashing it a "minimum 120 to 150 times," according to a Toyota chief engineer who spoke on condition of anonymity. If the car is sold in many different markets around the world, Toyota crashes even more cars, he said.

### THE ROAD AHEAD

Nevertheless, the Panda is a watershed product for both Geely and CH-Auto. The car's stylized exterior - featuring a Panda-eyed grill and tail lamps in the shape of paws - was considered cute and timely when launched in 2008 to coincide with the Beijing Olympics.

The exterior contrasted with the car's highly utilitarian interior, including exposed screws and a plasticky dashboard. The 1.3-liter, 86-horsepower motor pulls the Panda from a standstill to 100 kilometres an hour in an unthrilling 13.1 seconds. Nor is the Panda, like other no-frills Chinese cars, ready to meet the stringent safety regulations of Europe and America.

But there is one very eye-catching thing about the car: its price. A new Panda starts around 40,000 yuan (\$6,400) in China and about 5,000 euros (\$7,400) abroad.

After the Panda, CH-Auto's business began booming. It developed or helped develop a slew of cars and sport-utility



# \$316,000

The cost of creating one prototype car in China.

vehicles for Changfeng, an auto maker affiliated with Japan's Mitsubishi Motors. The Changfeng projects then led to deals with Jiangling Motors Co. and Chongqing Changan Automobile Co., as well as Beijing Auto.

One of CH-Auto's upcoming models is a Beijing Auto vehicle based on technology the company purchased from the now defunct Saab of Sweden.

CH-Auto also has a major contract from Dongfeng Motor Co. - the 50-50 joint venture between Nissan and Dongfeng Motor Group Co. The team will develop a subcompact car based on the Nissan March (known as the Micra in Europe) to buttress a new "indigenous" brand called Venucia launched in China earlier this year.

The advent of the good-enough car is emboldening Chinese auto makers to build up their own product development capabilities to rely less on CH-Auto and other independent engineering houses.

Geely, one of China's top indigenous car makers, is expected to sell about 370,000 cars in China and 90,000 abroad this year. By 2016 the company forecasts its export volume will hit as high as 300,000 or possibly 400,000.

"My vision," said Geely Chairman Li Shufu, "is to sell outside China the same number of cars we sell within China."

*Additional reporting by Hui Lee*

### FOR MORE INFORMATION

#### Norihiko Shirouzu

[norihiko.shirouzu@thomsonreuters.com](mailto:norihiko.shirouzu@thomsonreuters.com)

#### Bill Tarrant, Enterprise Editor

[william.tarrant@thomsonreuters.com](mailto:william.tarrant@thomsonreuters.com)

#### Michael Williams, Global Enterprise Editor

[michael.j.williams@thomsonreuters.com](mailto:michael.j.williams@thomsonreuters.com)