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Train Makers Rail Against China's High-Speed Designs

By NORIHIKO SHIROUZU

QINGDAO, China—When the Japanese and European companies that pioneered high-speed rail agreed to build trains for China, they thought they'd be getting access to a booming new market, billions of dollars worth of contracts and the cachet of creating the most ambitious rapid rail system in history.

China's Route for High-Speed Rail



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Workers at the Beijing South Railway Station

What they didn't count on was having to compete with Chinese firms who adapted their technology and turned it against them just a few years later.

Today, Chinese rail companies that were once junior partners with the likes of Kawasaki Heavy Industries Ltd., Siemens AG, Alstom SA and Bombardier Inc. are vying against them in the burgeoning global market for super-fast train systems. From the U.S. to Saudi Arabia to Brazil and in China itself, Chinese companies are selling trains that in most cases are faster than those offered by their foreign rivals. On a recent visit to China,

California Gov. Arnold Schwarzenegger said he is interested in Chinese help to build a planned high-speed line in his state.

High-Speed, Low-Cost China Rail Link

2:01

China inaugurates another link in its high-speed rail network, a service between Shanghai and Hangzhou, which has shown the capability of sustaining speeds of more than 245 miles per hour. Video courtesy of Reuters.



The progression of China's rail business reflects a national economic strategy of boosting state-owned firms and obtaining advanced technology, even at the expense of foreign partners. It's an approach that is challenging the U.S. and other powers, and fueling a broader angst among multinational firms doing business here.

Industries such as autos and aerospace have long sought to tap China's vast market, entering into joint ventures that have

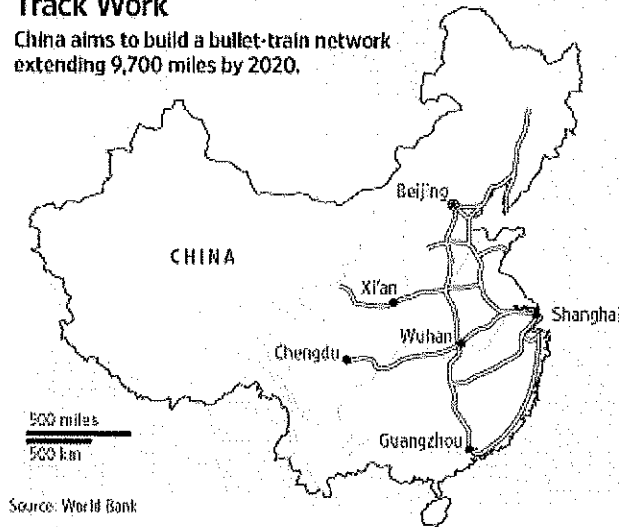
brought them enormous reward. But by handing over their technology, some companies have opened the door for homegrown competitors to compete in the global marketplace. China's market share of manufacturing of advanced machinery could climb to 30% of global exports within the decade, from 8% today, said Min Zhu, special adviser for the International Monetary Fund and former deputy governor of the People's Bank of China, at Monday's Wall Street Journal CEO Council.

China acknowledges that the trains its own companies are now selling were developed using foreign technology. But officials say domestic companies like China South Locomotive & Rolling Stock Industry (Group) Corp., or CSR, added their own innovations that make the final product Chinese. "China's railway industry produced this new generation of high-speed train sets by learning and systematically compiling and re-innovating foreign high-

speed train technology," the Railways Ministry said in a faxed response to questions. Some foreign executives say that such "re-innovating," if it involves selling the trains overseas, is a violation of China's agreements with them.

Track Work

China aims to build a bullet-train network extending 9,700 miles by 2020.



The future of China's rail industry is being assembled amid a flurry of welding sparks in a sprawling CSR manufacturing complex in the port city of Qingdao. Called the CRH380A, the newest train is equipped with first-class seats that fold completely flat, and it can go up to 236 miles per hour. When it goes into service in 2012 linking Beijing and Shanghai, the train will cut travel time to four hours from 10, and will be part of a network that is expected to extend 9,700 miles by 2020.

CSR obtained Japanese high-speed technology starting in 2004 as part of a deal with Kawasaki. CSR engineers and executives say they have adapted and improved that technology to make trains that are faster and better. The fastest trains now operating in

Japan and Europe run about 199 mph.

Smiling proudly on the factory floor before half-assembled sections of the needle-nosed, blue-and-silver CRH380A trains, Liang Jianying, a senior CSR engineer, explains how the company reduced wheel-to-track friction and made the train more aerodynamic. "We improved, optimized, and self-innovated...and came up with a brand new design," she says.

"See, this is nothing like Kawasaki's bullet train," chimes in Wu Qunliang, chief spokesman for the CSR factory. "Real original innovation is rare," adds Wang Xinhong, another senior engineer. "We attained our achievements in high-speed train technology by standing on the shoulders of past pioneers."

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Foreign companies are generally reluctant to criticize the powerful Railways Ministry publicly. Bernd Eitel, a spokesman for Siemens, says the German company has "a trusting relationship" with its Chinese partners and expects that to continue. Bombardier China President Zhang Jiawei said in a statement that "we have contracts and agreements, and both sides respect" them. A spokeswoman for the French company Alstom declined to comment, citing the "sensitive nature" of the subject.

But Kawasaki, in a statement, says it and other high-speed train producers disagree with China's claim that it has created its own technology. Most of its trains in operation today, some executives say, are almost exactly the same as its foreign

partners' trains. They cite a few tweaks to the exterior paint scheme and interior trims and a beefed-up propulsion systems for faster speeds. "China says she owns exclusive rights to that intellectual property, but Kawasaki and other foreign companies feel otherwise," Kawasaki said in a statement, adding that it hopes to resolve the issue through commercial talks. Kawasaki says it is emphasizing in those negotiations that its technology-transfer contracts with the Railways Ministry state that the technology is for use exclusively within China, and that Chinese companies can't use it in products they intend to export.

Privately, some executives are more blunt. "Claiming most of the recently developed bullet trains as China's own may be good for national pride... but it's nothing but deceitful propaganda," says a senior executive at Kawasaki. "How are you supposed to fight rivals when they have your technology, and their cost base is so much lower," the executive adds.

Other countries have also used and adapted foreign technology. Post-war Japan pulled off its transformation in part by reverse-engineering foreign technologies, eventually developing a stable of tech companies, steel producers, shipbuilders and auto makers, including Honda and Toyota. South Korea followed a similar path.

What's unique about China is its vast domestic market, which makes foreign companies willing to hand over their technology know-how for a piece of the action. As China increasingly favors domestic suppliers, it's able to up the ante further, demanding that companies who want to do business transfer ever more advanced technologies. "Any company bringing new technology, innovation or ideas to China has to deal with *shanzhai*, what one could readily refer to as 'bandit' culture," says Andrew Forbes Winkler, an analyst with Commodore Research & Consultancy in New York. "From cellphones to automobiles, Chinese companies have taken pride in using others' intellectual property and either innovating or counterfeiting goods."

China's high-speed rail ambitions are already global. China Railway Group Ltd., a civil-engineering company, is participating in a high-speed rail project in Venezuela. China Railway Construction Corp. is helping build a high-speed line in Turkey linking Ankara and Istanbul. China's Railway ministry has said Chinese companies are bidding for contracts in Brazil, and that Russia, Saudi Arabia and Poland have expressed interest. The Obama administration, which has allotted \$8 billion to build high-speed train networks, has said it is open to bids from Chinese companies. A U.S. Department of Transportation spokeswoman declined to comment on the dispute with Kawasaki.

Gov. Schwarzenegger's office declined to comment about his interest in Chinese trains, but Jeffrey Barker, a deputy executive director of the California High-Speed Rail Authority, said the state is years away from taking bids from manufacturers and that when it does, the "process will certainly ensure that any technology transferred to the United States is done so properly, in accordance with all intellectual-property laws."

High-speed rail was pioneered in post-war Japan in the 1950s and early 1960s with the construction of the Shinkansen. France, Germany and other European countries followed suit in the 1980s. Serious thinking about building faster rail in China began in the 1990s, with the aim of developing the poor hinterland. But efforts fizzled.

The government looked abroad. In 2004, it signed deals to buy trains from Alstom and Kawasaki, which shipped the first batch over fully assembled. Later, the companies helped set up production facilities within China. They trained Chinese engineers while helping the country develop its own supply chain for train components. Siemens and Bombardier later signed similar deals. Executives from Siemens and Kawasaki both say they were eager for contracts, and feared that if they didn't do deals with China, their competitors would. They say they didn't expect Chinese companies to be a competitive threat for many years, maybe decades.

Kawasaki's 2004 deal with the Railways Ministry, worth 80 billion yen, or about \$760 million at the time, included transfer of the whole spectrum of technology and know-how for the iconic bullet train called Hayate, or "fresh breeze," to Qingdao Sifang Locomotive & Rolling Stock Co., a CSR unit. The Chinese company called the train, capable of speeds up to 155 mph, the Hexie Hao, or "Harmony," echoing a political slogan of Chinese President Hu Jintao.

Kawasaki exported nine Hayate train sets to China. It then helped produce 51 additional Hayates in China, partly using components imported from Japan. Kawasaki took dozens of CSR engineers to Japan for training. Some later helped set up the Qingdao factory, which now churns out about 200 train sets a year. Over the ensuing years, China asked Kawasaki and others to provide additional technology to make its trains go even faster. Each time Kawasaki signed a deal, it gained "several million dollars" as a fee, according to the senior Kawasaki executive.

Some executives questioned the wisdom of dealing with China. "We didn't take part in the export project to China," says Yoshiyuki Kasai, chairman of Central Japan Railway Co. "The conditions were not favorable—they wanted all the technology to be transferred for free. That was not good for us."

CSR and the other main Chinese train maker, China North Locomotive & Rolling Stock Industry (Group) Corp., began producing trains that operated at even higher speeds. In late 2007, ahead of the Beijing Olympics, China opened a high-speed rail line linking the capital and the port city of Tianjin. It operated at a top speed of 205 mph. Last year, another line started with trains running up to 217 mph.

Some say China's rise as a new train power brings more good to the industry than bad, helping to push others to build their own networks. Says Murray King, a rail analyst at research firm APCO Worldwide Inc.: "You have to give at least partial credit to China."

—Kersten Zhang, Sue Feng, Gao Sen and Josh Mitchell contributed to this article.

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