

China gains on global competition with borrowed technology

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An ARJ21 airplane under construction at COMAC's Shanghai plant.

SHANGHAI -- Chinese companies are rapidly strengthening their presence in global markets for large industrial products such as trains, nuclear plants and aircraft.

They are selling to overseas buyers products made using advanced technologies from the U.S., Europe, Japan and other developed economies. Some of those Chinese products are said to be over 30% cheaper than those made by their international rivals.

Chinese companies' major overseas deals

	Company	Country	Deal
Nuclear power	China General Nuclear Power Corporation	U.K.	Acquisition of equity stake in power plant at Hinkley Point
		Romania	Participation in construction of No. 3, No. 4 units at Cernavoda nuclear plant
Aircraft	Comac	Republic of Congo	Order for three ARJ21 airplanes
Railways	China CNR	Brazil	Order for 10 trains for Rio de Janeiro's railway
	CSR	Macedonia	Order for six high-speed trains for Skopje's railway system

Past transfers of technologies to China from developed countries have resulted in the emergence of powerful Chinese rivals. Concerns are likely growing among companies in developed countries over the boomerang effect of such technology transfers.

Rail

Major state-owned train maker CSR signed a contract on June 24 to supply six high-speed trains with a maximum speed of 140kph to Macedonia. The deal is reportedly worth 25 million euros (\$33.5 million).

It will be China's first shipment of high-speed trains to Europe. The country's train exports have so far been mostly limited to locomotives and passenger cars.

CSR received overseas orders worth a total of \$2.23 billion in 2013. The company is now establishing new subsidiaries and production bases in Southeast Asia and Africa in an attempt to win more contracts. China is aiming to export a train with a maximum speed of over 250kph. The country has already acquired the necessary technology from Japan and other countries.

In 2004, Japan's Kawasaki Heavy Industries won a contract from the Chinese government for an express train project in China. Under the deal, Kawasaki Heavy supplied CSR with technology used for Japan's *Hayate* bullet train service. The contract called for the delivery of 60 trains comprising a total of 480 cars. But the Japanese company exported only three finished trains from Japan. Based on the manufacturing technology provided by Kawasaki Heavy, CSR produced 51 on its own.

The World Bank said in a report in July that the cost of building a high-speed rail network in China is two-thirds that in other countries. The World Bank noted that labor costs in China are lower and that its railway technology has been enhanced through many domestic projects.

Nuclear power

Starting with labor-intensive industries such as apparel and shoes, China has followed a pattern of absorbing foreign technologies, making domestic products based on these technologies and then exporting the products.

This pattern is spreading to other industries, such as nuclear power and aerospace.

Companies in developed countries are trying to stay ahead of their Chinese competitors by making the most of their technological capabilities. But they see the price competitiveness of Chinese rivals as a threat. China's first third-generation nuclear plant is now under construction in Sanmen, Zhejiang Province, on the country's eastern coast. The plant is scheduled to go online at the end of 2015.

China will introduce four 1,100-megawatt AP1000 pressurized-water reactors at the Sanmen nuclear plant and elsewhere. The AP1000 was developed by Westinghouse Electric of the U.S. But China wants to do more.

The four AP1000 reactors will be installed by State Nuclear Power Technology Corp., a Chinese government-backed company established in 2007. Among its shareholders is China National Nuclear Corp. SNPTC has absorbed the AP1000

technology and already developed the CAP1400 reactor, which has a higher output capacity of 1,400MW, on its own. An industry source said, "China's ultimate goal is to export the CAP1400."

Aerospace

Commercial Aircraft Corp. of China (Comac) signed a memorandum of understanding with the Republic of Congo on July 14 to supply three ARJ21 airplanes. The Shanghai-based Comac has been developing the aircraft, a small passenger plane with around 90 seats.

The deal between Comac and the African country was signed at the Farnborough International Airshow. It has pushed up to 258 the total number of ARJ21 planes on order. Although most of those are for Chinese airlines, the customers reportedly include offshore companies, including a leasing subsidiary of General Electric of the U.S. and a Laotian carrier.