

U.S. MANUFACTURING COMPANIES ARE GLOBAL LEADERS IN INDUSTRIAL ROBOT CONSUMPTION

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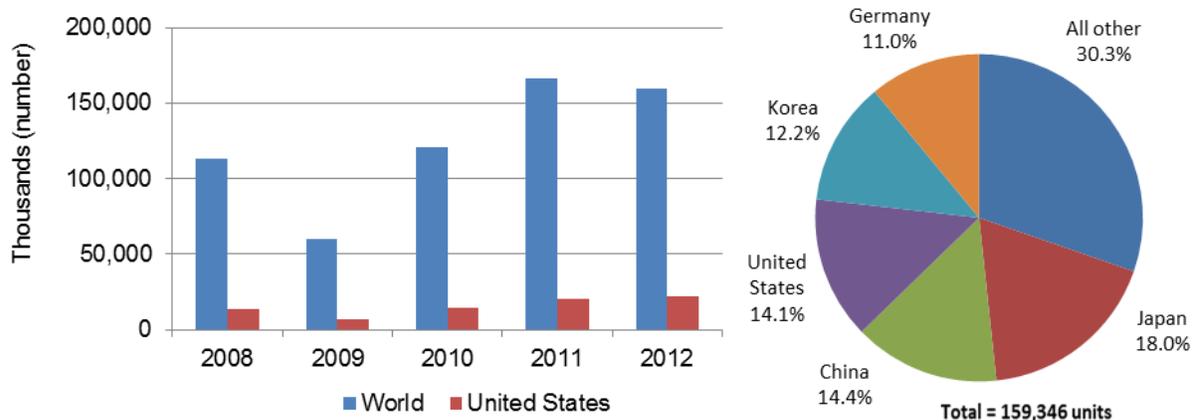
U.S. companies are using industrial robots¹ to increase productivity and maintain competitiveness. U.S. domestic consumption of industrial robots is on the rise and the United States ranks among global leaders in the consumption of industrial robots. The majority of U.S. domestic sales are sourced from foreign producers operating in the U.S. and from imports. About half of U.S. industrial robots exports are parts, rather than complete robots.

Industrial robots are robots used in factories and warehouses for material handling and manufacturing operations—such as welding, cutting, and assembly. They often perform tasks that are dangerous and laborious.

U.S. and Global Markets are Expanding

- U.S. sales of industrial robots grew by 66 percent to 22,414 units in 2012 from 13,500 units in 2008, according to the International Federation of Robots (IFR) (figure 1). During this period, U.S. sales increased at a compound annual growth rate (CAGR) of almost 14 percent, despite a decline during the 2007–09 recession. In 2013, the Robotic Industries Association (RIA) reported that industrial robot producers and integrators shipped 22,591 units (\$1.39 billion) to companies in North America (the United States, Canada, and Mexico), up from 20,328 units (\$1.29 billion) in 2012.
- World sales of robots rose at a slower rate to 159,346 units in 2012 from 112,972 units in 2008 (a CAGR of 9 percent). The IFR estimated the value of the world industrial robot market at \$8.5 billion in 2012. The value of the software, peripherals, and systems that are necessary to install and utilize industrial robots is estimated at an additional \$17.5 billion.
- The world market for industrial robots is driven by applications in the motor vehicle industry, followed by the electronics industries. The U.S. market is driven primarily by the motor vehicle industry, as electronics production in the United States is limited. Increasingly, a broader range of industries is adopting robots in manufacturing operations, lowering labor costs and increasing competitiveness.
- China is likely the world's largest user of industrial robots. IFR statistics in Figure 1 do not include sales by Chinese domestic producers because China did not have a robotics association until mid-2013. One report estimates that China installed an additional 9,800 units in 2012.

FIGURE 1 U.S. and global market (sales) of industrial robots, 2008–12 (left), and largest markets by country in 2012 (right)



Source: Compiled by USITC from *International Federation of Robotics*.

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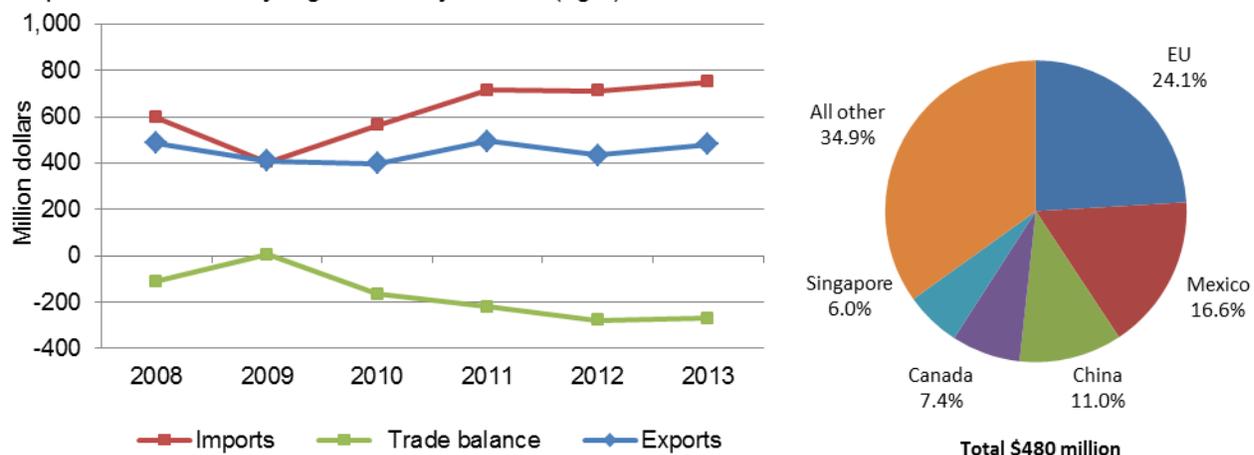
The Leading U.S. Suppliers are Foreign Multinationals

- Most U.S. facilities that produce industrial robots are owned by European and Japanese firms that have invested in the United States to obtain a manufacturing presence close to their automotive customer base. The major foreign-owned industrial robot producers with U.S. facilities are from Japan (Fanuc, Kawasaki, Yaskawa-Motoman), Germany (Kuka), and Switzerland (ABB and Stäubli). These companies initially commercialized robot technologies and continue to be the global market leaders.
- U.S.-owned manufacturers that design and produce industrial robots include Adept Technology, Inc. (Pleasanton, CA); Genmark Automation, Inc. (Milpitas, CA); Rethink Robotics, Inc. (Boston, MA); and SAGE Automation, Inc. (Beaumont, TX). In addition to automotive robots, these companies produce robots for the electronics, medical, and logistics industries.

U.S. Consumption Depends Significantly on Imports; Exports Appear Limited

- The U.S. market consumes most of the industrial robots produced in the United States, and demand above current production capacity is met through imports.²
- U.S. imports of industrial robots reached \$750.6 million in 2013 (figure 2) and were primarily from Japan and the EU.
- U.S. exports of industrial robots reached \$494.1 million in 2013, with the EU, Mexico, China, Canada, and Singapore as the leading destinations (figure 2).
- About half of the value of U.S. industrial robots exports consists of parts, while only 26 percent of imports are parts. This likely indicates that the U.S. is part of the supply chain, and that U.S. parts of industrial robots likely go into robot assembly abroad. Thus the United States is not a significant producer of completed industrial robots for the global market.

FIGURE 2 U.S. imports, exports, and trade balance of industrial robots, 2008–13 (left), and leading export destinations by region/country in 2013 (right)



Source: Compiled by USITC from U.S. Department of Commerce official statistics.

¹ The industrial robots discussed here do not include unmanned vehicles or agricultural, medical, and construction robots.

² U.S. or foreign production data by country are not collected—only sales data are collected by national robotics trade associations. Thus the full extent of U.S. and international production is unknown because data for sales include only a portion of imported units.

Sources: International Federation of Robotics, “World Robotics 2013 Industrial Robots,” undated. <http://www.ifr.org/industrial-robots/statistics/> (accessed April 8, 2014). Robotics Industries Association, “North American Robotics Shipments Grow in 2013 While New Orders Contract,” February 4, 2014. http://www.robotics.org/content-detail.cfm/Industrial-Robotics-News/North-American-Robotics-Shipments-Grow-in-2013-While-New-Orders-Contract/content_id/4648 (accessed April 8, 2014). Tobe, Frank, “China now largest market for robots,” Everything Robotic blog, July 11, 2013. <http://www.everything-robotic.com/2013/07/china-now-largest-market-for-robots.html> (accessed April 8, 2014).

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