

2.1 UNIT INSTALLATIONS

Robot installations 2018: Now more than 422,000 units per year

In 2018, global robot installations increased by 6% to 422,271 units, a new peak for the sixth year in a row. This result came as a surprise because the main customer industries, automotive and electrical/electronics, had a difficult year and two of the main destinations, China and North America, have been starring in a trade conflict, spreading uncertainty to the global economy. Nevertheless, the automotive industry remains the largest customer industry with 30% of total installations, ahead of electrical/electronics (25%), metal and machinery (10%), plastics and chemical products (5%) and food and beverages (3%). Note that for 19% of the robots there is no information on the customer industry. This figure is five percentage points higher than the year before.

Since 2010, demand for industrial robots has risen considerably due to the ongoing trend toward automation and continued technical innovations in industrial robots. From 2013 to 2018, annual installations increased by 19% on average per year (CAGR). Between 2005 and 2008, the average annual number of robots sold was about 115,000 units, before the global economic and financial crisis caused robot installations to fall to just 60,000 units in 2009 with lots of investments being postponed. In 2010, investments made leeway and drove robot installations to 120,000 units. Until 2015, annual installations had more than doubled to almost 254,000 units. In 2016, the mark of 300,000 installations per year was crossed and in 2017, installations surged to almost 400,000 units.

Europe and America growing strongly as Asia stagnates

Asia⁴ is the world's largest industrial robot market, although growth slowed down substantially in 2018. A total of 283,080 units were installed in 2018 just 1% more than the year before but still a new peak for the sixth year in a row. Two out of three robots (67%) newly deployed in 2018 were installed in Asia. From 2013 to 2018, annual robot installations rose by 23% on average per year. 2018 reveals a differentiated picture for the three largest Asian markets: Installations in China (154,032 units; -1%) and the Republic of Korea (37,807 units; -5%) declined, while installations in Japan (55,240 units; +21%) increased considerably. Robot installations in the second-largest market, **Europe**, increased by 14% to 75,560 units – a new peak for the sixth year in a row. The annual average growth rate from 2013 to 2018 is 12%. The growth rate was even higher in **the Americas**: About 55,212 robots were installed in 2018. This is 20% more than the year before and – like in Asia and Europe – represents a new peak for the sixth year in a row. The average annual growth rate since 2013 is 13%.

74% of global robot installations in five countries

There are five major markets for industrial robots: **China, Japan, the United States, the Republic of Korea, and Germany**. These countries account for 74% of global robot installations.

⁴ including Australia and New Zealand

China has been the world's largest industrial robot market since 2013 and accounted for 36% of total installations in 2017 and 2018. In 2018, 154,032 units were installed. This is 1% less than in 2017 (156,176 units) but still more than the number of robots installed in Europe and the Americas combined (130,772 units). For more details, see chapter 3.3.1.

In 2018, robot installations in **Japan** increased by 21% to 55,240 units (a new peak). The average annual growth rate of 17% since 2013 is remarkable for a country which already has a high level of automation in industrial production. For more details, see chapter 3.3.4.

For the eighth year in a row, robot installations in the **United States** reached a new peak level (40,373 units; +22%). Since 2010, the automation of production processes in all the country's manufacturing industries has been the ongoing trend. Regarding annual installations, the United States took third position from the Republic of Korea in 2018. For more details, see chapter 3.2.2.

In the **Republic of Korea**, annual robot installations have been declining since they reached a peak level of 41,373 units in 2016. In 2018, 37,807 units (-5%) were installed. Installation figures for this country strongly depend on the electronics industry, which had a tough year in 2018. Nevertheless, installations have increased by 12% on average per year since 2013. For more details, see chapter 3.3.5.

Germany is the fifth-largest robot market in the world. In 2018, the number of robots installed surged by 26% to a new peak of 26,723 units. Installation figures in this country are mainly driven by the automotive industry. For more details, see chapter 3.4.11.

Other important Asian markets

Since 2013, **Chinese Taipei** has ranked sixth in terms of annual robot installations, with 12,145 units (+11%) were installed in 2018 – a new peak. Installations in India enjoyed strong growth of 39% from 2017 to 2018 but remain at a rather moderate level of 4,771 units. As is the case in the Republic of Korea, robot installations in **Singapore** depend on the electronics industry to a large extent. Installations decreased here by 6% to 4,290 units in 2018. Robot installations in **Thailand** continued to stagnate at 3,323 units (-2%). Since 2013, installations increased by just 1% on average per year. In 2017, **Vietnam** became the seventh-largest robot market in the world. But this seems to be a one-off as 1,636 robot installations (-80%) in 2018 drop the country back to ninth in Asia (22nd in the world) after **Malaysia** with 1,860 units (-35%). For more details, see chapter 3.3.

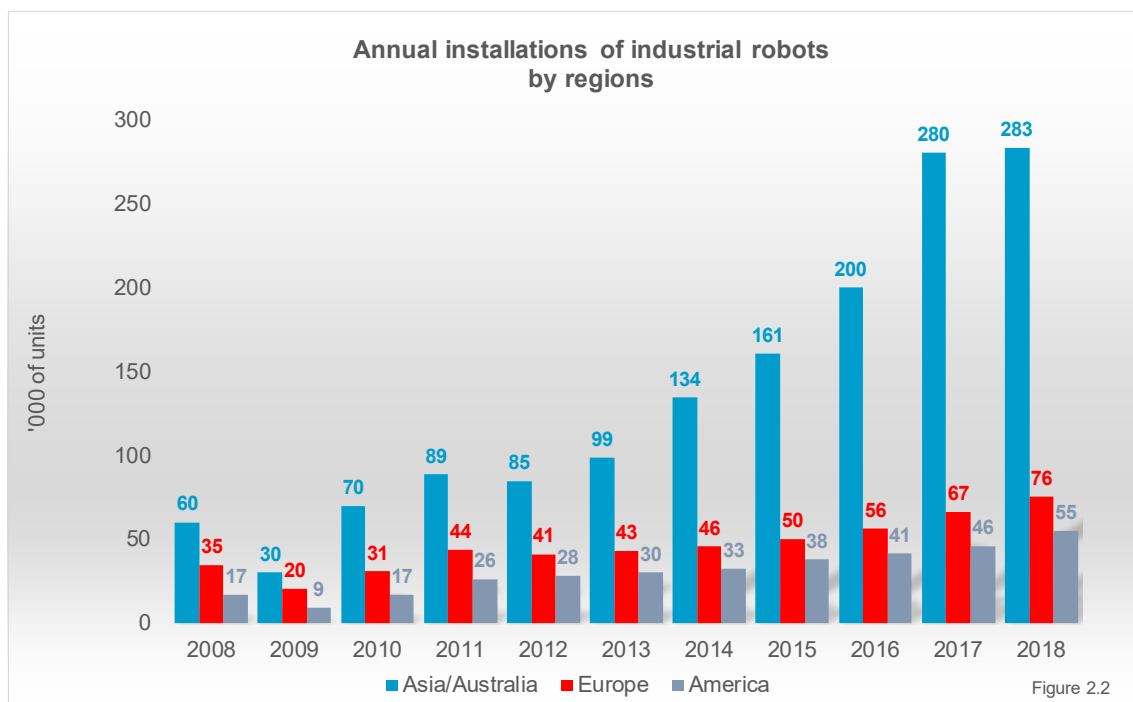
Other important European markets

Italy is the seventh-largest robot market globally and second in Europe with a new record figure of 9,847 units (+27%) installed in 2018. The **French** robot market, eighth-largest in the world, was up by 16% to a new peak level of about 5,829 units. **Spain** is the tenth-largest robot market in the world and also achieved a new record, with industrial robot installations up 24% to 5,266 units. Installations in the **Nordic countries** saw a 12%

decrease to 2,618 units, while those in **Central and Eastern Europe** declined by 8% to 9,732 units. For more details, see chapter 3.4.

Other important markets in the Americas

Mexico has become an important emerging market for industrial robots, ranking ninth in the world in terms of annual installations. Robot installations there dropped by 11% to 5,681 units in 2018 following a peak of 6,356 units in 2017. Since 2013, annual installations have increased by 16% on average per year. Like Mexico, robot installations in **Canada** declined by 12% to 3,582 units in 2018, following a peak level of 4,057 units the year before. For more details, see chapter 3.2.



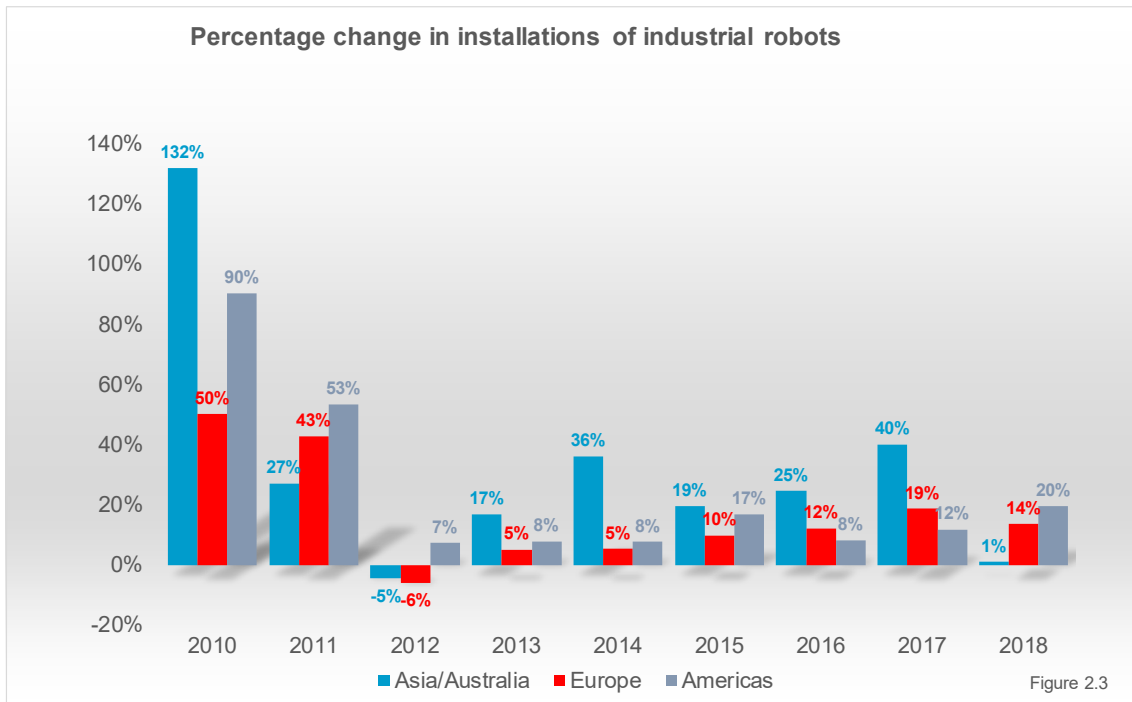


Table 2.1
Annual installations of multipurpose industrial robots in selected countries.
Number of units

Country	2013	2014	2015	2016	2017	2018	2018/ 2017	CAGR 2013 - 2018
Africa	733	428	348	879	451	794	76%	2%
South Africa	653	358	260	805	327	365	12%	-11%
Rest of Africa	80	70	88	74	124	429	246%	40%
- Egypt*	26	22						
- Morocco*	10	7						
- Tunisia*	28	38						
- other Africa*	16	3						
America	30,317	32,616	38,134	41,295	46,188	55,212	20%	13%
North America	28,668	31,029	36,444	39,671	43,559	49,636	14%	12%
- United States	23,679	26,202	27,504	31,404	33,146	40,373	22%	11%
- Canada**	2,250	2,333	3,474	2,334	4,057	3,582	-12%	10%
- Mexico**	2,739	2,494	5,466	5,933	6,356	5,681	-11%	16%
South America	1,649	1,583	1,677	1,601	1,301	2,582	98%	9%
Brazil	1,398	1,266	1,407	1,207	1,001	2,196	119%	9%
Rest of South America	251	317	270	394	300	386	29%	9%
- Argentina*	181	242						
- Colombia*	14	24						
- Chile*	16	34						
- Peru*	8	6						
- Puerto Rico*		11						
- Venezuela*								
- other America*	32	4	13	23	1,328	2,994	125%	148%
Asia/Australia	98,807	134,444	160,558	200,042	280,402	283,080	1%	23%
South East Asia	97,645	128,720	159,178	196,589	276,399	276,199	0%	23%
China	36,560	57,096	68,556	96,500	156,176	154,032	-1%	33%
Hong Kong, China	407	1,198	819	55	141	17	-88%	-47%
India	1,917	2,126	2,065	2,627	3,424	4,771	39%	20%
Indonesia	1,168	1,152	1,108	964	951	839	-12%	-6%
Japan	25,110	29,297	35,023	38,586	45,647	55,240	21%	17%
Malaysia	791	852	998	1,881	2,863	1,860	-35%	19%
Singapore	1,197	1,228	1,895	2,609	4,559	4,290	-6%	29%
Republic of Korea	21,307	24,721	38,285	41,373	39,777	37,807	-5%	12%
Chinese Taipei	5,457	6,912	7,200	7,569	10,907	12,145	11%	17%
Thailand	3,221	3,657	2,556	2,646	3,386	3,323	-2%	1%
Vietnam	389	348	510	1,618	8,274	1,636	-80%	33%
other South/East Asia	121	133	163	161	294	239	-19%	15%
- Macau*								
- Pakistan*		2						
- North Korea*		13						
- Philippines*	121	118						
Rest of Asia	28	58	55	82	91	69	-24%	20%
- Iran*	3	28						
- Kuwait*								
- Oman*		1						
- Qatar*								
- Saudia Arabia*	23	22						
- United Arab Emirates*	2	7						
- Uzbekistan*								
Other Asia	661	5,240	815	2,810	3,342	6,191	85%	56%
Australia/New Zealand	473	426	510	561	570	621	9%	6%
- Australia*	323	332						
- New Zealand*	150	94						

Sources: IFR, national associations

* data since 2015 summarized in regions for compliance reasons

Table 2.1 (continued)
Annual installations of multipurpose industrial robots in selected countries.
Number of units

Country	2013	2014	2015	2016	2017	2018	2018/ 2017	CAGR 2013 - 2018
Europe	43,278	45,559	50,073	56,078	66,505	75,560	14%	12%
Central and Eastern Europe	5,061	4,643	6,136	7,758	10,538	9,732	-8%	14%
Czech Republic	1,337	1,533	2,193	1,974	2,893	2,725	-6%	15%
Hungary	555	534	517	717	2,470	912	-63%	10%
Poland	692	1,267	1,795	1,632	1,891	2,651	40%	31%
Romania	171	251	350	784	634	495	-22%	24%
Russian Federation	615	339	347	358	711	1,007	42%	10%
Slovakia	1,313	343	488	1,732	1,203	749	-38%	-11%
Balkan Countries	296	283	332	452	492	812	65%	22%
- Bosnia-Herzegovina*		3						
- Croatia*	14	25						
- Moldova*								
- Serbia*	15	17						
- Slovenia*	267	238						
other Eastern Europe	82	93	114	109	244	381	56%	36%
- Belarus*	20	14						
- Bulgaria*	27	35						
- Estonia*	15	17						
- Latvia*	4	4						
- Lithuania*	5	22						
- Ukraine*	11	1						
Western Europe	34,397	37,224	39,182	42,610	47,269	56,447	19%	10%
Austria	720	898	987	1,686	1,641	1,504	-8%	16%
Belgium	1,518	484	491	871	1,154	1,035	-10%	-7%
Switzerland	593	650	734	805	1,165	1,474	27%	20%
Germany	18,297	20,051	19,945	20,074	21,267	26,723	26%	8%
Spain	2,764	2,312	3,766	3,919	4,250	5,266	24%	14%
France	2,161	2,944	3,045	4,232	5,014	5,829	16%	22%
Italy	4,701	6,215	6,657	6,465	7,760	9,847	27%	16%
Netherlands	895	1,234	1,487	1,778	1,814	1,658	-9%	13%
Portugal	262	342	425	993	824	696	-16%	22%
United Kingdom	2,486	2,094	1,645	1,787	2,380	2,415	1%	-1%
Nordic Countries	2,125	2,050	2,570	3,264	2,985	2,618	-12%	4%
Denmark	477	608	628	752	800	673	-16%	7%
Sweden	1,199	1,073	1,501	1,647	1,517	1,263	-17%	1%
Finland	365	286	333	699	476	532	12%	8%
Norway	84	83	108	166	192	150	-22%	12%
Rest of Europe	1,695	1,642	2,037	2,309	2,665	2,862	7%	11%
Turkey	1,136	1,246	1,705	1,840	2,050	2,267	11%	15%
All other European countries	222	236	332	469	615	595	-3%	22%
- Greece*	43	64						
- Iceland*	7	2						
- Ireland*	83	66						
- Israel*	88	103						
- Malta*	1	1						
Other Europe	337	160	148	137	3,048	3,901	28%	63%
Others not specified	4,991	7,524	4,635	5,553	6,094	7,625	25%	9%
TOTAL	178,126	220,571	253,748	303,847	399,640	422,271	6%	19%

Sources: IFR, national associations

* data since 2015 summarized in regions for compliance reasons

