

ESTUDIO SOBRE ESTADÍSTICAS DE ROBÓTICA 2016

The logo for ABB, consisting of the letters 'ABB' in a bold, red, sans-serif font.The logo for COMAU, featuring a stylized blue 'C' shape composed of several parallel lines, with the word 'COMAU' in a blue, sans-serif font below it.The logo for KUKA, consisting of the letters 'KUKA' in a bold, orange, sans-serif font.The logo for tricept PKM, featuring a stylized red and black 'V' shape with three red dots above it, followed by the word 'tricept' in a grey, italicized font and 'PKM' in a bold, black, sans-serif font.The logo for STÄUBLI, consisting of the word 'STÄUBLI' in a grey, italicized, sans-serif font.

UNIVERSAL ROBOTS



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1. ELABORACIÓN DE ESTADÍSTICAS 2016

INCORPORACIÓN DE ROBOTS DURANTE 2015

A continuación se presentan los resultados obtenidos por parte de la **Asociación Española de Robótica y Automatización de Tecnologías de la Producción (AER-ATP)** sobre la incorporación de robots industriales en España durante el ejercicio de 2015.

Conviene recordar que a todos los efectos, por lo tanto, también para estas estadísticas, la **AER-ATP** se ajusta a la clasificación y a las normas establecidas por la International Federation of Robotics (**IFR**). Así, según la UNE-EN ISO 8373, un Robot Industrial es un *manipulador multifuncional, controlado automáticamente, reprogramable en tres o más ejes, que puede estar fijo o móvil para uso en aplicaciones de automatización industrial.*

También es importante recordar que la **IFR** contabiliza el número de robots acumulados en los últimos 12 años. En este sentido, **AER-ATP** referencia todas sus estadísticas basándose en la normativa internacional, y única y exclusivamente en la Tabla I, puede observarse el total de robots vendidos en España como referencia histórica.

Una vez más, desde **AER-ATP** se han remitido los correspondientes cuestionarios a los diferentes fabricantes y suministradores que operan en el mercado español. Una vez recogida esta información, se han analizado y contrastado con los cuestionarios facilitados por un amplio número de ingenierías integradoras y de empresas usuarias con el fin de garantizar la necesaria coherencia y fiabilidad del estudio.

En cualquier caso, desde **AER-ATP** se puede afirmar la veracidad de los datos que se reflejan, si bien es posible que algunas unidades de robots instalados pueden haber escapado al control de dicha estadística por la dificultad que conlleva a veces la interpretación o seguimiento de las políticas comerciales de las empresas.

Se manifiesta a su vez, un cordial agradecimiento a las empresas que han participado facilitando su información, entendiendo que la labor que realizan es en beneficio para todos.

2. VISIÓN GLOBAL, APLICACIONES, SECTORES Y MARCAS

VISIÓN GLOBAL

A la vista de los primeros datos que muestra la estadística realizada se puede señalar que el número de unidades totales instaladas asciende a **3.710 unidades**, lo que significa en valor absoluto un récord histórico de robots vendidos en España. Ésta cifra representa casi un 16% más que el ejercicio anterior y cerca del 12% de incremento de unidades en el mercado.

Sin duda alguna, este crecimiento está por encima de las previsiones que la *International Federation of Robotics* (IFR) estimaba en relación a Europa, entre el 5 y el 7% aproximadamente, lo cual nos lleva a afirmar que es un buen índice sobre el nivel de industrialización de nuestro país.

APLICACIONES

En referencia a las aplicaciones de los robots (ver Tabla III, figura III) constatar que la aplicación de soldadura y manipulación han quedado casi emparejadas, si bien, en ésta edición le ha tocado a la soldadura el privilegio de ser la aplicación más demandada.

SECTORES

Por lo que respecta a sectores (ver Tabla IV, figura IV) señalar que sigue el liderazgo del sector de automoción con cerca del 48,5% de los robots incorporados, seguramente unas cifras previsibles dadas las inversiones que se han realizado en dicho sector. Señalar que continúa el aumento en el sector de alimentación y bebidas y también el importante aumento en relación con el año anterior del sector del metal. Lamentar la falta de información que una vez más no se ha podido obtener, y que eleva cerca del 10% la cifra de sectores no especificados.

3. EVOLUCIÓN DEL PARQUE DE ROBOTS EN ESPAÑA

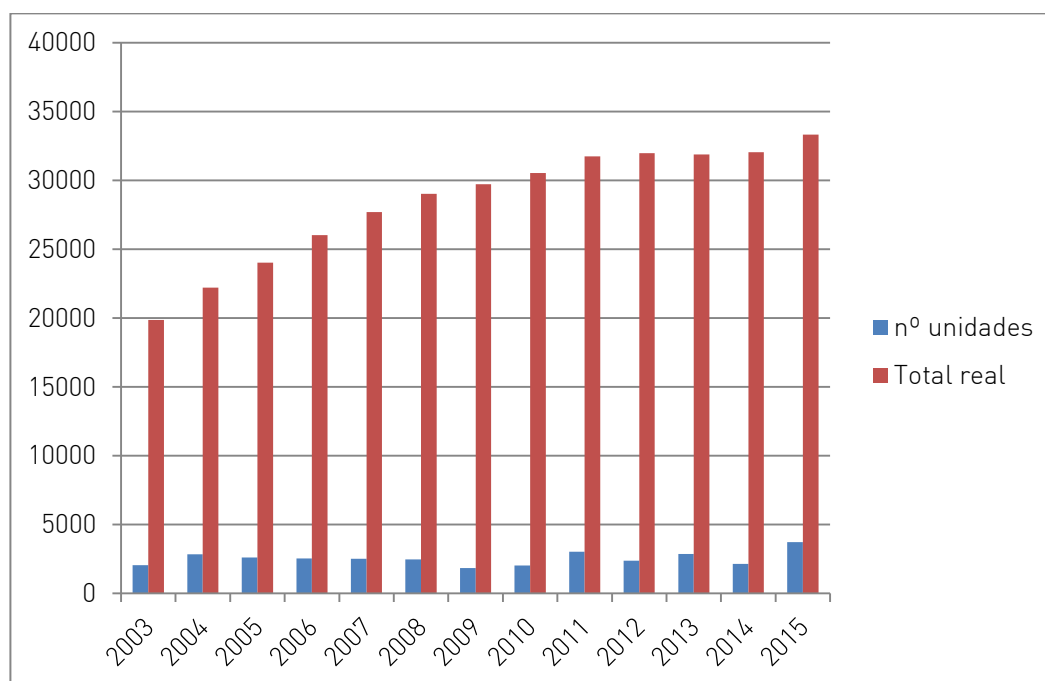
Tabla I. Evolución del parque de robots en España

AÑOS	Nº de unidades	Total acumulado histórico	% >	TOTAL REAL (*)
2003	2.031	16.101	11,1	19.847
2004	2.826	18.927	14,2	22.212
2005	2.599	21.526	11,7	24.031
2006	2.527	24.053	10,5	26.016
2007	2.515	33.047	9,7	27.701
2008	2.461	35.508	8,9	29.029
2009	1.833	37.341	6,3	29.729
2010	2.019	39.360	6,8	30.545
2011	3.006	42.366	9,9	31.741
2012	2.355	44.721	7,8	31.984
2013	2.850	47.571	8,9	31.893
2014	2.129	49.700	6,6	32.048
2015	3.710	53.410	11,1	33.338

(*) Acumulado ejercicio anterior + incremento del ejercicio - incremento año número 12 anterior

(**) Se eliminan 2.420 robots del ejercicio de 2002

Figura I. Evolución del parque de robots en España



4. ROBOTS AUTO - NO AUTO

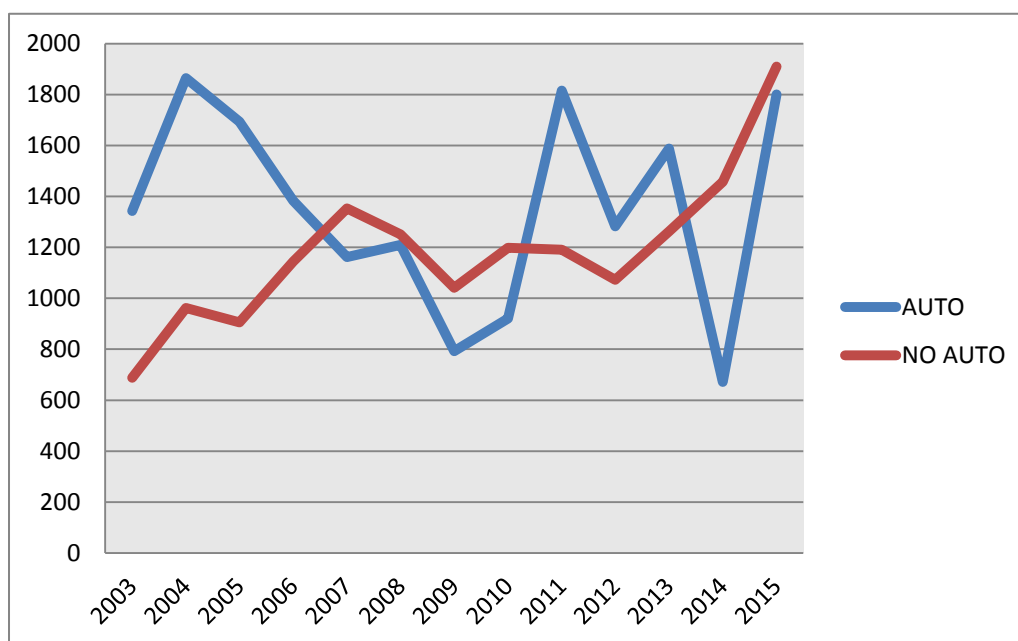
Tabla II. Evolución comparada del parque de robots en los últimos 12 últimos años

EVOLUCIÓN DEL PARQUE DE ROBOTS EN ESPAÑA (AUTO-NO AUTO)			
AÑOS	AUTO	NO AUTO	TOTAL
2003	13.727	6.120	19.847
2004	15.340	6.872	22.212
2005	16.471	7.560	24.031
2006	17.453	8.563	26.016
2007	18.132	9.569	27.701
2008	18.790	10.239	29.029
2009	18.731	10.998	29.729
2010	18.866	11.679	30.545
2011	19.514	12.227	31.741
2012	19.421	12.563	31.984
2013	18.790	13.103	31.893
2014	18.044	14.004	32.048
2015	18.814	14.524	33.338

*Auto: sector fabricación vehículos + fabricación componentes vehículos.

**No auto: resto de sectores.

Figura II. Gráfico de la evolución comparada del parque de robots en España en los últimos 12 años.



5. ROBOTS SEGÚN APLICACIONES

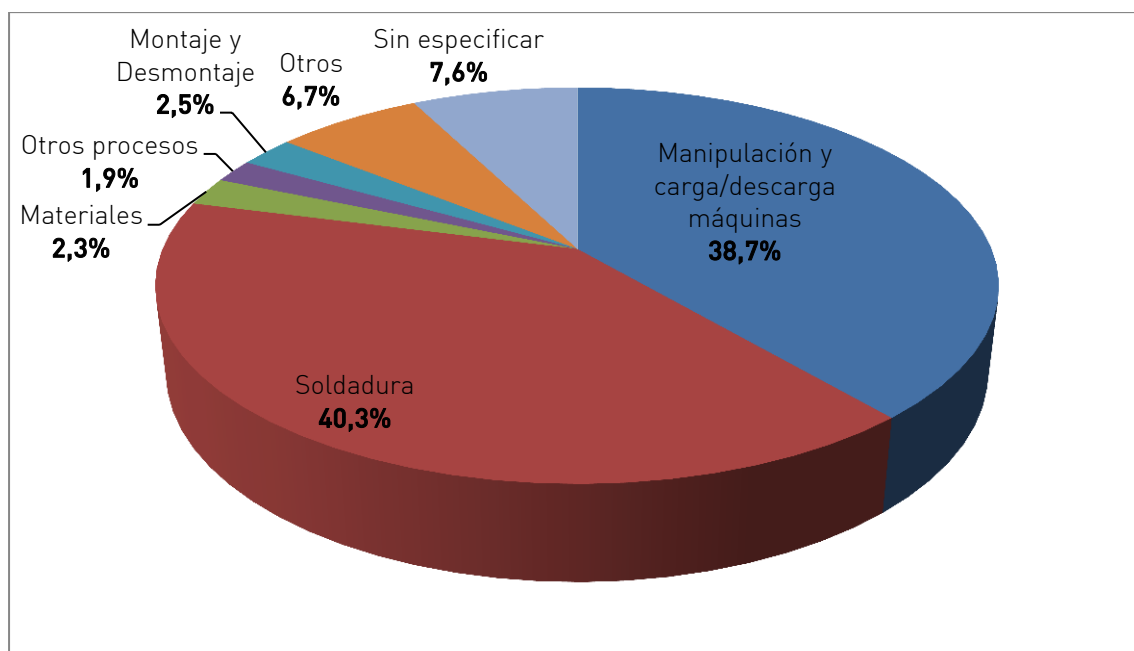
Tabla III. Distribución de los robots por aplicaciones. Año 2015

Application Areas 2015	Definitions	Cartesian / Gantry/ Linear	SCARA	Articulated	Cylindrical, Spherical	Parallel	Others	Not classified	Total
		0	0	3.572	0	138	0	0	3.710
100	Handling operations/ Machine tending	Assistant processes for the primary operation (the robot doesn't process the main operation directly)	0	0	1.300	0	137	0	1.437
	111. Handling operations for metal casting	including die-casting		61					61
	112. Handling operations for plastic moulding	also inserting operations for injection moulding		273					273
	113. Handling operations for stamping/forging/ bending			16					16
	114. Handling operations at machine tools			132					132
	115 Machine tending for other processes	e.g. handling during assembly, handling operations during glas or ceramics production or food production Robots that handle workpieces at an external welding TCP (i.e. MIG/MAG torch or spot gun) need to be reported in the appropriate welding classification (i.e. 161 for arc welding or 162 for spot welding) and shall not be counted to the classification of handling operations.		63					63
	116. Handling operations for measurement, inspection, testing	trriage, quality inspection, calibrating		57					57
	117. Handling operations for palletizing	all sectors, all kinds and sizes of pallets		298		78			376
	118. Handling operations for packaging, picking and placing	e.g. operations during primary and secondary packaging		223		58			281
	119. Material Handling n.e.c.	e.g. transposing, handling during sandcasting		177		1			178
160	Welding and soldering (all materials)		0	0	1.494	0	0	0	1.494
	161. Arc welding			452					452
	162. Spot welding			993					993
	163. Laser welding			1					1
	164. other welding	e.g. ultrasonic welding, gas welding, plasma welding		41					41
	165. Soldering			7					7

170	Dispensing		0	0	85	0	0	0	0	85
	171. Painting and enamelling	area-measured application of lacquer (surface coat)			46					46
	172. Application of adhesive, sealing material or similar material	spot-wise and line-wise			33					33
	179. Dispensing others/ Spraying others	e.g. powder coating, application of mould release agent, area-measured application of adhesive, spraying of wax to conserve)			6					6
190	Processing	enduring changing, the robot leads the workpiece or the tool, material removal	0	0	69	0	0	0	0	69
	191. Laser cutting									0
	192. Water jet cutting				11					11
	193. Mechanical cutting/ grinding/deburring/ milling/polishing				45					45
	199. Other processing	e.g. gas/plasma cutting, drilling, bending, punching, shearing			13					13
200	Assembling and disassembling	enduring positioning of elements	0	0	91	0	1	0	0	92
	201. Fixing, press-fitting	screw/nut-driving, clinching, reventing, bonding								0
	202. Assembling/ mounting/ inserting	also temporarily positioning to facilitate the assembling process			83		1			84
	203. Disassembling	recycling, removal of cover after processing								0
	209. Other assembling	not mentioned before			8					8
900	Others	not mentioned before	0	0	249	0	0	0	0	249
	901 Cleanroom for FPD									0
	902 Cleanroom for semiconductors									0
	903 Cleanroom for others									0
	905 Others	not mentioned before			249					249
999	Unspecified	the application is unknown			284					284
	GRAND TOTAL		0	0	3.572	0	138	0	0	3.710

6. FIGURA ROBOTS SEGÚN APLICACIONES

Figura III. Gráfico de la distribución de robots por aplicaciones. Año 2015



7. ROBOTS SEGÚN SECTOR

Tabla IV. Distribución de los robots por sector. Año 2015

Industrial branches 2015 (ISIC rev. 4)	Definitions	Cartesian / Gantry/ Linear	SCARA	Articulated	Cylindrical, Spherical	Parallel	Others	Not classified	Total
		0	0	3.572	0	138	0	0	3.710
A-B Agriculture	Crop and animal production, hunting and related service activities, forestry and logging, fishing and aquaculture			1					1
C Mining and quarrying	Mining of coal and lignite, extraction of crude petroleum and natural gas, mining of metal ores								0
10-12 Food and beverage	Manufacture of food products and beverages; Manufacture of tobacco products			469		136			605
13-15 Textiles and leather	Manufacture of textiles; Wearing apparel; dressing & dyeing of fur; Luggage, handbags, saddlery, harness and footwear			1					1
16 Wood and furniture	Manufacture of wood, products of wood (incl. furniture) and cork			37					37
17-18 Paper and paper products, publishing & printing	Manufacture of pulp, paper and converted paper production, printing of products, such as newspapers, books, periodicals, business forms, greeting cards, and other materials, and associated support activities, such as bookbinding, plate-making services, and data imaging; reproduction of recorded media, such as compact discs, video recordings, software on discs or tapes, records etc.			5					5
	Plastic and chemical products:	0	0	287	0	0	0	0	287
19 -chemical products, pharmaceuticals, cosmetics	Manufacture of basic pharmaceutical products and pharmaceutical preparations. This includes also the manufacture of medicinal chemical and botanical products			6					6
20-21 or - unspecified chemical or petroleum products	Transformation of crude petroleum and coal into usable products, transformation of organic and inorganic raw materials by a chemical process and the formation of products;			2					2
22 - rubber and plastic products (without automotive parts)	(e.g. rubber tires, plastic plates, foils, pipes, bags, boxes, doors, etc.) rubber and plastic parts for motor vehicles should be reported in 2932			257					257
23 Glass, ceramics, stone, mineral products n.e.c. (without automotive parts)	Manufacture of intermediate and final products from mined or quarried non-metallic minerals, such as sand, gravel, stone or clay, manufacture of glass, flat glass ceramic and glass products, clinkers, plasters, etc.			22					22
	Metal	0	0	503	0	2	0	0	505
24 -Basic metals (e.g. iron, steel, aluminium, copper, chrome etc.)	Manufacture of iron, steel, aluminium, copper, chrome etc.)			219		1			220
25 -Metal products, except machinery and equipment (without automotive parts)	Manufacture of metal furniture, tanks, metal doors, forging, pressing, stamping and roll forming of metal, nails, pins, hand tools, etc.			267		1			268
28 -Industrial machinery	Manufacture of machinery for food processing and packaging, machine tools, industrial equipment, rubber and plastic machinery, industrial cleaning machines, agricultural and forestry machinery, construction machinery etc.			17					17

26-27	Electrical/electronics		0	0	27	0	0	0	0	27
271	-Electrical machinery and apparatus n.e.c. (without automotive parts)	Manufacture of power, distribution and specialty transformers; electric motors, generators and motor generator sets; switchgear and switchboard apparatus; relays and industrial controls, batteries and accumulators; manufacture of current-carrying wiring devices and non current-carrying wiring devices for wiring electrical circuits regardless of material, fiber optic cables and insulating of wires; manufacture of electric light bulbs and tubes and parts and components thereof (except glass blanks for electric light bulbs), electric lighting fixtures and lighting fixture components (except current-carrying wiring devices)			5					5
275	-Domestic/household appliances	Manufacture of refrigerators, vacuum cleaners, lawn mowers, lamps, ovens, shavers, vacuum cleaners, etc.			11					11
###	-Electronic components/ devices	Manufacture of electronic capacitors and resistors, microprocessors, bare printed circuit boards, electron tubes, electronic connectors, integrated circuits (analog, digital or hybrid), diodes, transistors and related discrete devices, inductors (e.g. chokes, coils, transformers), electronic component type, electronic crystals and crystal assemblies, solenoids, switches and transducers for electronic applications, interface cards (e.g. sound, video, controllers, network, modems), printer cables, monitor cables, USB cables, connectors etc.			9					9
261	- Semiconductors, LCD, LED	Manufacture of dice or wafers, semiconductor, finished or semi-finished and of display components (plasma, polymer, LCD), light emitting diodes (LED), including solar cells and solar thermal collectors								0
262	-Computers and peripheral equipment	Manufacture of desktop, laptop, main frame computers and hand-held computers (e.g. PDA), magnetic disk drives, flash drives and other storage devices, optical (e.g. CD-RW, CD-ROM, DVD-ROM, DVD-RW) disk drives, printers, monitors, keyboards, all types of mice, joysticks, and trackball accessories, dedicated computer terminals, computer servers, scanners, including bar code scanners, smart card readers, virtual reality helmets, computer projectors (video beamers), computer terminals, like automatic teller machines (ATM's), point-of-sale (POS) terminals, not mechanically operated, of multi-function office equipment, such as fax-scanner-copier combinations								0
263	-Info communication equipment domestic and professional (TV, radio, CD, DVD-Players,	Manufacture of video cassette recorders and duplicating equipment, televisions, television monitors and displays, audio recording and duplicating systems, stereo equipment, radio receivers, speaker systems household-type video cameras, jukeboxes, amplifiers for musical instruments and public address systems, microphones, CD and DVD players, karaoke machines, headphones (e.g. radio, stereo, computer), video game consoles; manufacture of pagers, cellular phones, mobile communication equipment, telephone and								0

265	-Medical, precision and optical instruments	Manufacture of measuring, testing, navigating and control equipment for various industrial and non-industrial purposes, including time-based measuring devices such as watches and clocks and related devices; manufacture of irradiation, electromedical and electrotherapeutic equipment, manufacture of optical instruments and photographic equipment			2					2
29	Automotive		0	1800						1.800
291	-Motor vehicles, motor vehicles engines and bodies	Manufacture of cars, trucks, buses and their engines, manufacture of bodies (coachwork) for motor vehicles, manufacture of trailers and semitrailers			941					941
293	-Parts and accessories for motor vehicles:		0		859					859
2931	-- Metal products	metal parts of motor vehicles (e.g. brakes, gearboxes, axles, road wheels, suspension shock absorbers, radiators, silencers, exhaust pipes, catalytic converters, clutches, steering wheels, steering columns and steering boxes)			703					703
###	-- Rubber and plastic	tyres, plastic parts of motor vehicles (e.g. bumpers)			118					118
###	-- Electrical/electronics	electrical/electronic parts of motor vehicles (e.g. generators, alternators, spark plugs, ignition wiring harnesses, power window and door systems, assembly of purchased gauges into instrument panels, voltage regulators, navigation systems, communication equipment, electric motors; switchboard apparatus; relays, batteries and accumulators; airbags			4					4
###	-- Glass	auto glass			21					21
###	-- others	car seats, safety belts, airbags			13					13
30	other transport equipment	E.g. ships, locomotives, aeroplanes, spacecraft vehicles								0
91	not mentioned	All other manufacturing branches								0
E.	Electricity, gas and water supply	Electric power generation, transmission and distribution, manufacture of gas; distribution of gaseous fuels through mains, steam and air conditioning supply								0
F.	Construction	General construction and specialized construction activities for buildings and civil engineering works. It includes new work, repair, additions and alterations, the erection of prefabricated buildings or structures on the site and also construction of a temporary nature			20					20
P	R&D, Education	Research, development and education			29					29
90	not mentioned	All other non-manufacturing branches			31					31
99	customer unknown	Unspecified			340					340
	GRAND TOTAL		0	0	3572	0	138	0	0	3710

8. FIGURA ROBOT SEGÚN SECTOR

Figura IV. Gráfico de la distribución de robots por sectores. Año 2015

