

# ESTUDIO SOBRE ESTADÍSTICAS DE ROBÓTICA 2014

The logo for ABB, consisting of the letters 'ABB' in a bold, red, sans-serif font. The letters are slightly shadowed to give a 3D effect.The logo for FANUC, consisting of the letters 'FANUC' in a bold, red, sans-serif font.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 trident-like symbol to the left of the text 'tricept' in a grey, italicized font, and 'PKM' in a bold, black, sans-serif font below it.The logo for STÄUBLI, consisting of the letters 'STÄUBLI' in a grey, italicized, sans-serif font.The logo for YASKAWA MOTOMAN, featuring a blue stylized 'Y' symbol to the left of the text 'YASKAWA' in a bold, blue, sans-serif font, and 'MOTOMAN' in a smaller, blue, sans-serif font below it.

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## 1. ELABORACIÓN DE ESTADÍSTICAS 2014

### INCORPORACIÓN DE ROBOTS DURANTE 2013

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 2013.

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 robot que puede programarse por más de tres ejes, reprogramable, multi-aplicación, móvil o no, destinado a utilizarse 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, entendiéndose 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 **2.850 unidades**, lo que significa un aumento del 21% en relación al número de unidades instaladas en el ejercicio anterior.

Éste aumento refleja que la actividad industrial del país se está consolidando y que se enmarca dentro de las previsiones que dicta la *International Federation of Robotics* (IFR).

### APLICACIONES

En referencia a las aplicaciones de los robots (ver Tabla III, figura III) constatar que la aplicación de manipulación supera en algo más de 5 puntos a la aplicación de soldadura, aplicación líder históricamente en nuestro país. Lamentar la cifra de casi un 20% sin especificar pero no ha sido posible profundizar más en estos aspectos del estudio.

### SECTORES

Por lo que respecta a sectores (ver Tabla IV, figura IV) señalar el liderazgo del sector de automoción con cerca del 56% de los robots incorporados, como no puede ser de otra manera dada la tipología de la industria nacional. Resaltar que el sector de alimentación y bebidas con el 12% alcanza la segunda posición en número de robots incorporados si no contamos algo más del 12% de no especificados.

### 3. EVOLUCIÓN DEL PARQUE DE ROBOTS EN ESPAÑA

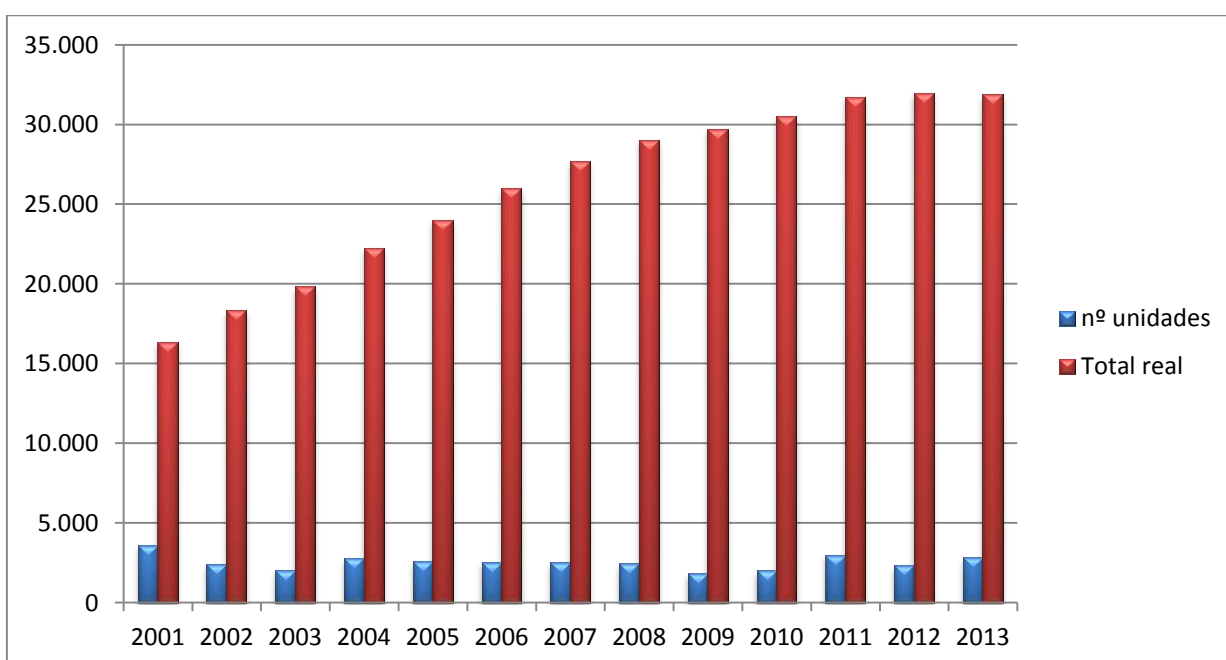
Tabla I. Evolución del parque de robots en España

AÑOS	Nº de unidades	Total acumulado histórico	% >	TOTAL REAL (*)
2001	3.584	11.650	24,6	16.378
2002	2.420	14.070	14,8	18.352
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	<b>2.850</b>	<b>47.571</b>	<b>8,9</b>	<b>31.893</b>

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

(\*\*) Se eliminan 2.941 robots del ejercicio de 2000

Figura I. Evolución del parque de robots en España



## 4. ROBOTS AUTO - NO AUTO

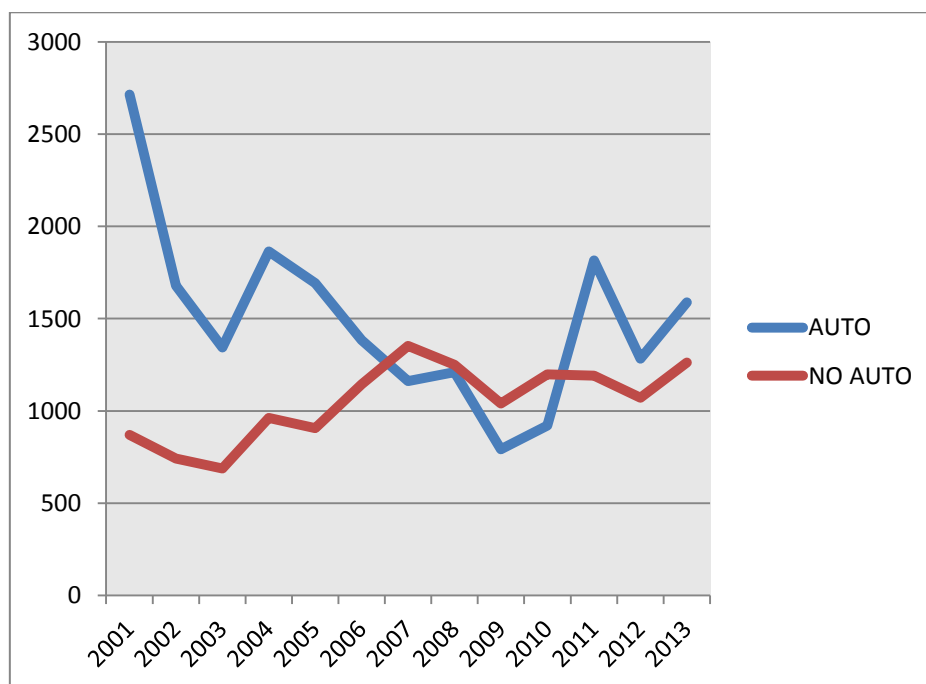
Tabla II. Evolución comparada de las ventas de robots en los últimos 12 últimos años

EVOLUCIÓN DEL PARQUE DE ROBOTS EN ESPAÑA (AUTO-NO AUTO)			
AÑOS	AUTO	NO AUTO	TOTAL
2001	11.213	5.165	16.378
2002	12.631	5.721	18.352
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

\***Auto:** sector fabricación vehículos + fabricación componentes vehículos.

\*\***No auto:** resto de sectores.

Figura II. Gráfico de la evolución comparada de las ventas de robots en España en los últimos 12 años.



## 5. ROBOTS SEGÚN APLICACIONES

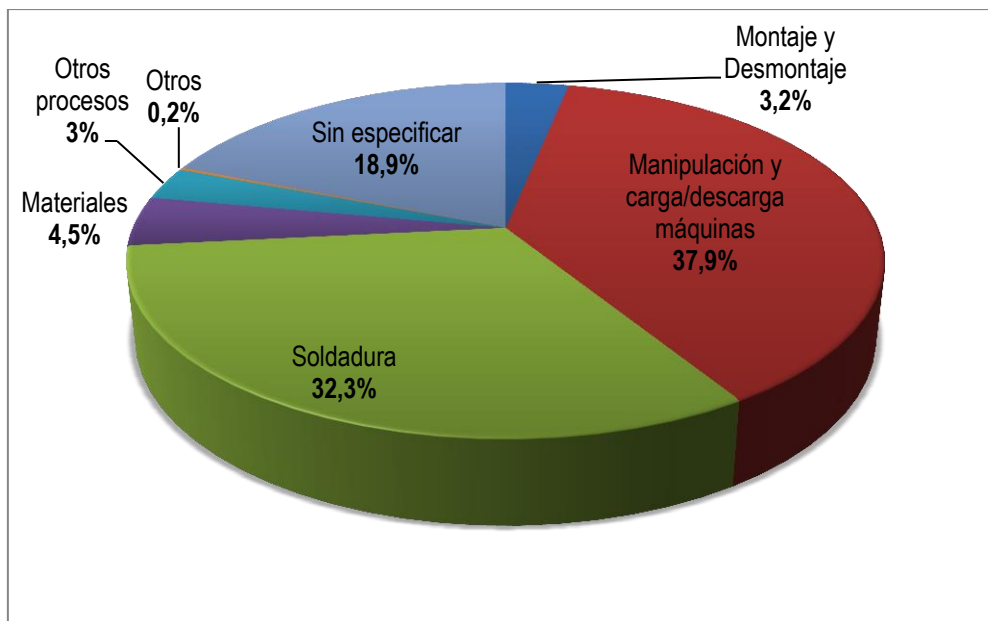
Tabla III. Distribución de los robots por aplicaciones. Año 2013

Application Areas 2013	Definitions	Cartesian / Gantry/ Linear	SCARA	Articu- lated	Cylin- drica, Spherical	Parallel	Others	Not classified	Total	operation al stock end of 2013
		120	3	2.668	0	59	0	0	2.850	34.834
<b>100 Handling operations/ Machine tending</b>	<b>Assistant processes for the primary operation</b> (the robot doesn't process the main operation directly)	120	2	904	0	55	0	0	1.081	0
111. Handling operations for metal casting	including die-casting			117					117	
112. Handling operations for plastic moulding	also inserting operations for injection moulding	120	2	45					167	
113. Handling operations for stamping/forging/ bending				77					77	
114. Handling operations at machine tools				68					68	
115 Machine tending for other processes	e.g. handling during assembly, handling operations during glass or ceramics production or food production <b>Robots that handle workpieces at an external welding TCP</b> (i.e. MIG/MAG torch or spot gun) <b>need to be reported in the appropriate welding classification</b> (i.e. 161 for arc welding or 162 for spot welding) and shall not be counted to the classification of handling operations.			71					71	
116. Handling operations for measurement, inspection, testing	triage, quality inspection, calibrating			35					35	
117. Handling operations for palletizing	all sectors, all kinds and sizes of pallets			220		22			242	
118. Handling operations for packaging, picking and placing	e.g. operations during primary and secondary packaging			63		33			96	
119. Material Handling n.e.c.	e.g. transposing, handling during sandcasting			208					208	
<b>160 Welding and soldering (all materials)</b>		0	0	917	0	0	0	0	917	0
161. Arc welding				218					218	
162. Spot welding				694					694	
163. Laser welding									0	
164. other welding	e.g. ultrasonic welding, gas welding, plasma welding			4					4	
165. Soldering				1					1	
<b>170 Dispensing</b>		0	0	125	0	0	0	0	125	0
171. Painting and enamelling	area-measured application of lacquer (surface coat)			12					12	
172. Application of adhesive, sealing material or similar material	spot-wise and line-wise			104					104	
179. Dispensing others/ Spraying others	e.g. powder coating, application of mould release agent, area-measured application of adhesive, spraying of			9					9	

<b>190 Processing</b>	<b>enduring changing, the robot leads the workpiece or the tool, material removal</b>	<b>0</b>	<b>0</b>	<b>89</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>89</b>	<b>0</b>
191.Laser cutting								0	
192.Water jet cutting				6				6	
193.Mechanical cutting/ grinding/deburring/ milling/polishing				73				73	
199.Other processing	e.g. gas/plasma cutting, drilling, bending, punching, shearing			10				10	
<b>200 Assembling and disassembling</b>	<b>enduring positioning of elements</b>	<b>0</b>	<b>0</b>	<b>92</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>92</b>	<b>0</b>
201. Fixing, press-fitting	screw/nut-driving, clinching, reveting, bonding			14				14	
202. Assembling/ mounting/ inserting	also temporarily positioning to facilitate the assembling process			68				68	
203. Disassembling	recycling, removal of cover after processing			8				8	
209. Other assembling	not mentioned before			2				2	
<b>900 Others</b>	not mentioned before	<b>0</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>0</b>
901 Cleanroom for FPD								0	
902 Cleanroom for semiconductors								0	
903 Cleanroom for others								0	
905 Others	not mentioned before			7				7	
<b>999 Unspecified</b>	the application is unknown		1	534		4		539	
<b>GRAND TOTAL</b>		<b>120</b>	<b>3</b>	<b>2.668</b>	<b>0</b>	<b>59</b>	<b>0</b>	<b>2.850</b>	<b>0</b>

## 6. FIGURA ROBOTS SEGÚN APLICACIONES

Figura III. Gráfico de la distribución de robots por aplicaciones. Año 2013





## 7. ROBOTS SEGÚN SECTOR

Tabla IV. Distribución de los robots por sector. Año 2013

	<b>Industrial branches 2013</b> (ISIC rev. 4)	Definitions	Cartesian / Gantry/ Linear	SCARA	Articulated	Cylindrical, Spherical	Parallel	Others	Not classified	Total
			120	3	2.668	0	59	0	0	2.850
A+B	<b>Agriculture</b>	Crop and animal production, hunting and related service activities, forestry and logging, fishing and aquaculture			16		2			18
C	<b>Mining and quarrying</b>	Mining of coal and lignite, extraction of crude petroleum and natural gas, mining of metal ores								0
10-12	<b>Food and beverage</b>	Manufacture of food products and beverages; Manufacture of tobacco products			288		51			339
13-15	<b>Textiles and leather</b>	Manufacture of textiles; Wearing apparel; dressing & dyeing of fur; Luggage, handbags, saddlery, harness and footwear			12					12
16	<b>Wood and furniture</b>	Manufacture of wood, products of wood (incl. furniture) and cork			16					16
17-18	<b>Paper and paper products, publishing &amp; printing</b>	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.			6					6
	<b>Plastic and chemical products:</b>		0	0	114	0	0	0	0	114
19	-chemical products, pharmaceuticals, cosmetics	Manufacture of basic pharmaceutical products and pharmaceutical preparations. This includes also the manufacture of medicinal chemical and botanical products			38					38
20-21	- 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;								0
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			50					50
23	<b>Glass, ceramics, stone, mineral products n.e.c. (without automotive parts)</b>	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.			26					26
	<b>Metal</b>		0	0	279	0	5	0	0	284
24	-Basic metals (e.g. iron, steel, aluminium, copper, chrome etc.)	Manufacture of iron, steel, aluminium, copper, chrome etc.)			60		2			62
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.			125					125
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.			94		3			97

26-27	Electrical/electronics		0	0	28	0	0	0	28
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.			8				8
####	-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.			10				10
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			2				2
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				0
263	-Info communication equipment domestic and professional (TV, radio, CD, DVD-Players, pagers, mobile phones, VTR etc.) without automotive parts	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 facsimile equipment, incl. telephone answering machines, data communications equipment, such as bridges, routers, and gateways, transmitting and receiving antenna, cable television equipment, radio and television studio and broadcasting equipment, including television cameras, modems, carrier equipment, burglar and fire alarm systems, sending signals to a control station, radio and television transmitters, infrared devices (e.g. remote controls)			0				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			3					3
<b>29</b>	<b>Automotive</b>		0	3	1585					<b>1.588</b>
<b>291</b>	<b>-Motor vehicles, motor vehicles engines and bodies</b>	Manufacture of cars, trucks, buses and their engines, manufacture of bodies (coachwork) for motor vehicles, manufacture of trailers and semitrailers			1162					<b>1.162</b>
<b>293</b>	<b>-Parts and accessories for motor vehicles:</b>			3	423					<b>426</b>
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)			316					<b>316</b>
2932	-- Rubber and plastic	tyres, plastic parts of motor vehicles (e.g. bumpers)		2	68					<b>70</b>
2933	-- 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		1	12					<b>13</b>
2934	-- Glass	auto glass			12					<b>12</b>
2939	-- others	car seats, safety belts, airbags			15					<b>15</b>
<b>30</b>	<b>other transport equipment</b>	E.g. ships, locomotives, aeroplanes, spacecraft vehicles			<b>18</b>	<b>0</b>				<b>18</b>
<b>91</b>	<b>not mentioned before</b>	All other manufacturing branches			12	0				<b>12</b>
<b>E.</b>	<b>Electricity, gas and water supply</b>	Electric power generation, transmission and distribution, manufacture of gas; distribution of gaseous fuels through mains, steam and air conditioning supply			0					<b>0</b>
<b>F.</b>	<b>Construction</b>	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			18					<b>18</b>
<b>P</b>	<b>R&amp;D, Education</b>	Research, development and education			39	0				<b>39</b>
<b>90</b>	<b>not mentioned before</b>	All other non-manufacturing branches			27					<b>27</b>
<b>99</b>	<b>customer unkown</b>	Unspecified	120		210		1			<b>331</b>
	<b>GRAND TOTAL</b>		<b>120</b>	<b>3</b>	<b>2668</b>	<b>0</b>	<b>59</b>	<b>0</b>	<b>0</b>	<b>2.850</b>

## 8. FIGURA ROBOT SEGÚN SECTOR

Figura IV. Gráfico de la distribución de robots por sectores. Año 2013

