

Driving productivity and automation in new industries



Figure 1. Example of industries ABB Robotics products operate.

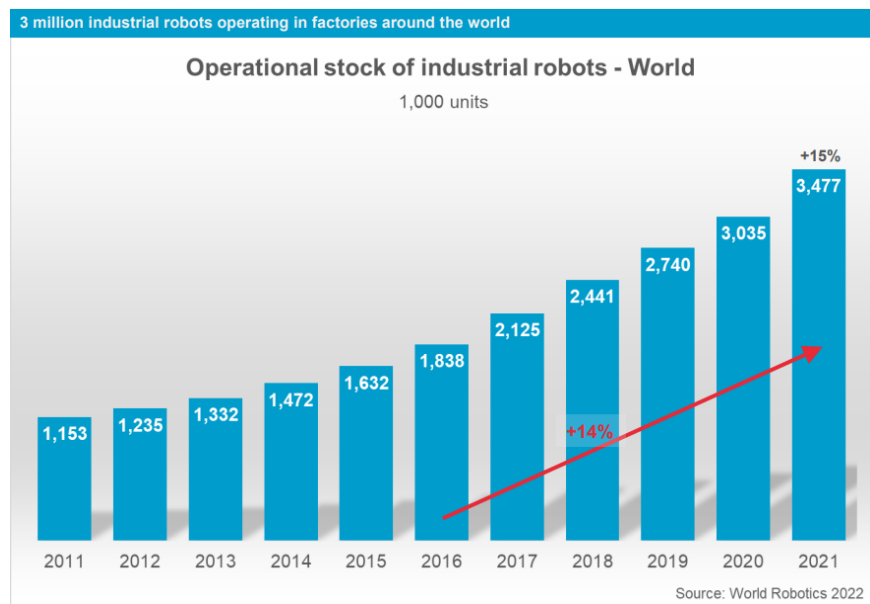


Figure 2. Operational stock of industrial robots-world

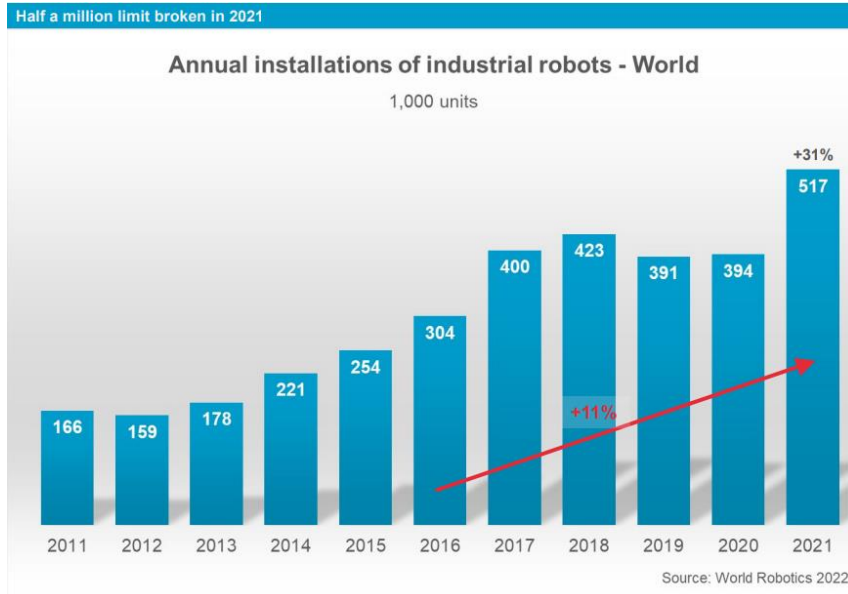


Figure 3: Annual installations of industrial robots – world

Table 1: The availability and technical feasibility of the different alternatives

	Plastic insulation types										Rubber insulation types					Fluoropolymer insulation Types					
	PVC	PE	LDPE	Cellular PE	HDPE	PP	Cellular PUR	PVC	Plenum Nylon	CPE	Rubber	Neoprene	CSPE	EPDM	Silicone	FEP	ETFE	PTFE	PVDF	ECTFE	TPE
Oxidation Resistance	E	E	E	E	E	E	E	E	E	E	F	G	E	E	E	O	E	O	O	O	E
Heat Resistance	G-E	G	G	E	E	E	G	G-E	E	E	F	G	E	E	O	O	E	O	O	O	E
Oil Resistance	F	E	G	G-E	F	F	E	F	E	E	P	G	G	P	F-G	O	E	E-O	E	O	G
Low-Temperature Flexibility	P-G	E	E	E	P	P	G	P-G	G	E	G	F-G	F	G-E	O	O	E	O	F	O	E
Ozone Resistance	E	E	E	E	E	E	E	E	E	E	P	G	E	E	O	E	E	O	E	E	E
Weather (Sun Resistance)	G-E	E	E	E	E	E	G	E	E	E	F	G	E	E	O	O	E	O	E-O	O	E
Abrasion Resistance	F-G	G	F	E	F-G	F-G	D	F-G	E	E-O	E	G-E	G	G	P	E	E	O	E	E	F-G
Electrical Properties	F-G	E	E	E	E	E	P	G	P	E	G	P	G	E	G	E	E	E	G-E	E	E
Flame Resistance	E	P	P	P	P	P	P	E	P	E	P	G	G	P	F-G	O	G	E	E	E-O	F-G
Nuclear Radiation Resistance	F	G	G	G-E	F	F	G	F	F-G	O	F	F-G	E	G	E	P-G	E	P	E	E	G
Water Resistance	F-G	E	E	E	E	E	P-G	F	P-F	O	G	E	E	G-E	E	E	E	E	E	E	G-E
Acid Resistance	G-E	E	G-E	E	E	E	F	G	P-F	E	F-G	G	E	G-E	F-G	E	E	E	G-E	E	G
Alkali Resistance	G-E	E	G-E	E	E	E	F	G	E	E	F-G	G	E	G-E	F-G	E	E	E	E	E	G-E
Alcohol Resistance	P-E	E	E	E	E	E	P-G	G	P	E	G	F	G	P	G	E	E	E	E	E	G
Aliphatic Hydrocarbons Resistance	P	E	G	G-E	P-F	P	P-G	P	G	E	P	G	F	P	P-F	E	E	E	E	E	P
Aromatic Hydrocarbons Resistance	P-F	P	P	P	P-F	P	P-G	P-F	G	G-E	P	P-F	F	F	P	E	E	E	G-E	E	P
Halogenated Hydrocarbon Resistance	P-F	G	G	G	P	P	P-G	P-F	G	E	P	P	P-F	P	P-G	E	E	E	G	E	-
Underground Burial	F-G	G	-	G	-	-	G	P	-	P	-	-	-	-	-	E	E	E	E	E	P

P = Poor
 F = Fair
 G = Good
 E = Excellent
 O = Outstanding

Table 2: Sources for table 1

Allied wire and cable	Types of Insulation Materials for Wire and Cable Allied Wire & Cable (awcwire.com)
Sycor	Insulating Compound Properties Sycor Technology
SAB-cables	Insulation_and_sheath_material_characteristics.pdf
What is ETFE (Fluorocarbon.co.uk)	What is Ethylene tetrafluoroethylene? (ETFE) Fluorocarbon

NASA Wire insulation selection guideline	NASA Parts Selection List (NPSL) - Wire Insulation Selection Guidelines
Galaxy wire & cable	Wire & Cable Insulation Material & Jacket Material Galaxy (galaxywire.com)
LAPP group	T15_Properties_of_cable_insulation_and_sheathing.pdf (lappgroup.com)