

Collaborative Robot Market by Payload (Up to 5 Kg, 5-10 kg, 10-20 kg, more than 20 kg), Component, Robotic Arm, End Effectors, Drives, Controllers, Sensors, Power Supply, Motors, Software), Application, Industry and Region - Global Forecast to 2029

Market Report | 2023-07-18 | 330 pages | MarketsandMarkets

AVAILABLE LICENSES:

- Single User \$4950.00
- Multi User \$6650.00
- Corporate License \$8150.00
- Enterprise Site License \$10000.00

Report description:

The collaborative robot market is projected to grow from USD 1.2 billion in 2023 and is projected to reach USD 6.8 billion by 2029; it is expected to grow at a CAGR of 34.3% from 2023 to 2029.

The high return on investment (ROI) for collaborative robots over traditional industrial robotics systems has paved the way for their growth in recent years. In addition, the benefits derived from adopting cobots for businesses of all sizes are the key factors driving the collaborative robot market. However, a higher preference for low payload capacity traditional industrial robots over cobots in heavy-duty industries is limiting the growth of the collaborative robot market.

"Electronics industry segment of the collaborative robot market to hold second largest market share during the forecast period." The electronics industry is increasingly adopting low-payload collaborative robots (up to 5 kg), which are cheaper and easily integrated into the production floor due to their smaller size. Speed, accuracy, and precision are the most important factors in the electronics industry compared with other factors, such as high payload capacity. Collaborative robots are built and programmed to manage display screens, connectors, subassemblies, and printed circuit boards (PCBs). Parts such as wafers are small and delicate and need to be managed carefully. The robots need to be very precise in locating, placing, and assembling components because the error tolerances are minimal compared to other macro applications. Although many tasks require tight tolerances, advances in robotic hardware and vision systems enable manufacturers to realize collaborative robots' advantages. Collaborative robots perform soldering, gluing, and dispensing operations in manufacturing. Cobots can be used in simple pick-and-place tasks such as loading wafers into a solar cell panel or to perform precise operations such as screwdriving and finishing using deburring tools. Since collaborative robots can be reprogrammed, they can keep up with the fast-changing consumer demands and short

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

product life cycles.

"5-10 kg payloads segment to witness significant growth for collaborative robot market during the forecast period." The 5-10 kg payload cobots are expected to witness significant growth for the collaborative robot market during the forecast period. The payload category exhibiting the highest growth during the forecast period is the 5-10 kg category. Cobots in the 5-10 kg payload capacity category can handle heavier parts and have a longer reach for machine tending and palletizing tasks. According to the ISO 10218 safety standard, grippers that are rated for handling payloads up to 10 kg or lower are collaborative, which also means that robots with a payload capacity of 5-10 kg do not require specialized grippers for collaborative operations. Collaborative robots that operate on a 5-10 kg payload capacity are used in most factory automation tasks for applications such as material handling, palletizing, and machine tending. The automotive industry particularly engages cobots belonging to 5-10 kg payload category for picking and placing small engine and transmission components during assembly alongside a human worker. These robots can perform all the collaborative operations that the low payload cobots can do, but with support for a higher payload. These robots differ from low-payload cobots in terms of payload capacity, reach, and other operational parameters. Cobots belonging to this category are also equipped with position and torque sensors that can cease robot operation if an obstacle or collision is detected. Many of these robots also support peripherals such as vision systems and end effectors from third-party manufacturers. The collaborative robots in this payload category typically have an operating speed of 1.2 m/s and a reach of 1,000mm. Thus, due to their wide adaptability, versatility in terms of applications, intrinsic safety, repeatability, and reach being almost at par with traditional industrial robotic systems, the cobots with 5-10 kg payload capacity are anticipated to have the fastest growth. "Robotic arm is expected to hold the largest share of collaborative robot market for hardware component during the forecast period."

The component-wise growth rate for the collaborative robot market is estimated to be specifically highest for the robot arm. The robot arm is one of a collaborative robot's most expensive hardware components, which can often be time-consuming and complex. The robotic arm consists of different joints, which enable linear and circular motion in collaborative robots. The arm has to be built as per the ISO/TS 15066 standard and certified for the same. Compared to traditional industrial robots, collaborative robots often have curved arm to make them safe for human contact. This feature is crucial as collaborative robots work closely with human workers. Inside its complex design, the arm also has to house the drives, motors, and sensors while providing maximum dust and water resistance, which can often be challenging. Thus, due to its higher overall cost, compared to other hardware components, the robotic arm is expected to dominate the collaborative robot market in terms of value, during the forecast period.

"North America to witness significant growth for the collaborative robot market during the forecast period." North America is expected to exhibit significant growth in the collaborative robot market during the forecast period. Prominent players in this region operating in the collaborative robot market are emphasizing expanding their production capacities to cater to the market demand. For example, in March 2023, ABB (Switzerland) announced its plans to expand into one of its largest customer markets - the US - with construction starting to expand its existing North American robotics headquarters and manufacturing facility in Auburn Hills, Michigan. The project is expected to be completed in November 2023 and represents an investment of USD 20 million. Collaborative robots are also increasingly being used in industries, such as plastics, metals & machinery, and food & beverages in the region.

In determining and verifying the market size for several segments and subsegments gathered through secondary research, extensive primary interviews have been conducted with key industry experts in the collaborative robot market space. The break-up of direct participants for the report has been shown below: By Company Type: Tier 1 - 40%, Tier 2 - 40%, and Tier 3 - 20% By Designation: C-level Executives - 40%, Directors -40%, and Others - 20% By Region: Asia Pacific- 40%, North America -30%, Europe - 20%, and RoW - 10%

The report profiles key players in the collaborative robot market with their respective market ranking analysis. Prominent players profiled in this report include Universal Robots A/S (Denmark), FANUC Corporation (Japan), ABB (Switzerland), Techman Robot Inc (Taiwan), KUKA AG (Germany), Doosan Robotics Inc. (South Korea), Denso Corporation (Japan), Yaskawa Electric Corporation (Japan), AUBO (Beijing) Robotics Technology Co., Ltd (China), and Rethink Robotics GmbH (US). Other players include Omron Adept Technologies, Inc. (US), Franka Emika GmbH (Germany), Comau S.p.A. (Italy), F&P Robotics AG (Switzerland), Staubli International AG (Switzerland), Bosch Rexroth AG (Germany), Productive Robotics, LLC (US), Wyzo (Switzerland), Neura Robotics

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

GmbH (Germany), Elephant Robotics (China), Elite Robot (China), Kassow Robots (Denmark), Siasun Robot & Automation Co. Ltd. (China), MIP Robotics (France), Hanwha Corporation (South Korea), Kawasaki Robotics (US), Dobot Robotics (China), Jaka Robotics (China), Huijing-Tech Robotic Co, Ltd (HITBOT) (China) is among a few emerging companies in the collaborative robot market. Research Coverage: This research report categorizes the collaborative robot market based on payload, component, application, industry, and region. The report describes the major drivers, restraints, challenges, and opportunities pertaining to the collaborative robot market and forecasts the same till 2029. The report also consists of leadership mapping and analysis of all the companies in the collaborative robot market ecosystem.

Key Benefits of Buying the Report The report will help the market leaders/new entrants in this market with information on the closest approximations of the revenue numbers for the overall collaborative robot market and the subsegments. This report will help stakeholders understand the competitive landscape and gain more insights to position their businesses better and plan suitable go-to-market strategies. The report also helps stakeholders understand the market pulse and provides information on key market drivers, restraints, challenges, and opportunities.

The report provides insights on the following pointers:

□□ **Analysis of key drivers** (High return on investment compared to traditional industrial robotic systems, Increased demand in e-commerce and logistics industries, Providing benefits to businesses of all sizes, Increased ease of programming collaborative robots), restraints (Higher preference to low payload capacity traditional industrial robots over cobots in heavy-duty industries), opportunities (Collaborative robots paired with AMRs and AGVs to provide a significant market opportunity, Robots-as-a-Service model to accelerate adoption of collaborative robots, Growing demand for automation in healthcare industry) and challenges (Payload and speed limitations of collaborative robots owing to their inherent design, Adaption to the new collaborative robot standards and rise in cybersecurity challenges in connected robots) influencing the growth of the collaborative robot market.

□□ **Product Development/Innovation:** Detailed insights on upcoming technologies, research & development activities, and new product & service launches in the collaborative robot market.

□□ **Market Development:** Comprehensive information about lucrative markets - the report analyses the collaborative robot market across varied regions.

□□ **Market Diversification:** Exhaustive information about new products & services, untapped geographies, recent developments, and investments in the collaborative robot market market

□□ **Competitive Assessment:** In-depth assessment of market shares, growth strategies, and service offerings of leading players like Universal Robots A/S (Denmark), FANUC Corporation (Japan), ABB (Switzerland), Techman Robot Inc (Taiwan), KUKA AG (Germany), AUBO (Beijing) Robotics Technology Co., Ltd (China), among others in the collaborative robot market.

Table of Contents:

1	INTRODUCTION	36
1.1	STUDY OBJECTIVES	36
1.2	MARKET DEFINITION	36
1.3	SCOPE OF STUDY	37
1.3.1	MARKETS COVERED	37
FIGURE 1	COLLABORATIVE ROBOT (COBOT) MARKET: MARKET SEGMENTATION	37
1.3.2	REGIONAL SCOPE	37
1.3.3	YEARS CONSIDERED	38
1.3.4	INCLUSIONS AND EXCLUSIONS	38
1.4	CURRENCY CONSIDERED	39
1.5	STAKEHOLDERS	40
1.6	SUMMARY OF CHANGES	40
1.7	RECESSION ANALYSIS	41
FIGURE 2	GDP GROWTH PROJECTION TILL 2023 FOR MAJOR ECONOMIES	41
2	RESEARCH METHODOLOGY	42
2.1	RESEARCH DATA	42

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

FIGURE 3	COLLABORATIVE ROBOT (COBOT) MARKET: RESEARCH DESIGN	42
2.1.1	SECONDARY DATA	43
2.1.1.1	List of key secondary sources	43
2.1.1.2	Key data from secondary sources	44
2.1.2	PRIMARY DATA	44
2.1.2.1	Interviews with experts	44
2.1.2.2	Breakdown of primaries	45
2.1.3	SECONDARY AND PRIMARY RESEARCH	45
2.1.3.1	Key industry insights	46
2.2	MARKET SIZE ESTIMATION	46
FIGURE 4	MARKET SIZE ESTIMATION METHODOLOGY: REVENUE OF MARKET PLAYERS	46
2.2.1	BOTTOM-UP APPROACH	47
2.2.1.1	Approach to capture market size by bottom-up analysis (demand side)	47
FIGURE 5	MARKET SIZE ESTIMATION METHODOLOGY: BOTTOM-UP APPROACH	48
2.2.2	TOP-DOWN APPROACH	48
2.2.2.1	Approach to capture market size using top-down analysis (supply side)	48
FIGURE 6	MARKET SIZE ESTIMATION METHODOLOGY: TOP-DOWN APPROACH	48
2.3	MARKET BREAKDOWN AND DATA TRIANGULATION	49
FIGURE 7	DATA TRIANGULATION	49
2.4	RESEARCH ASSUMPTIONS	50
2.5	RISK ASSESSMENT	50
2.5.1	IMPACT OF RECESSION	51
2.6	RESEARCH LIMITATIONS	51
3	EXECUTIVE SUMMARY	52
3.1	GROWTH RATE ASSUMPTIONS/GROWTH FORECAST	52
FIGURE 8	COBOTS WITH PAYLOAD CAPACITY OF UP TO 5 KG TO DOMINATE COLLABORATIVE ROBOT (COBOT) MARKET IN 2029	54
FIGURE 9	SOFTWARE COMPONENTS TO REGISTER HIGHER CAGR DURING FORECAST PERIOD	55
FIGURE 10	HANDLING SEGMENT TO LEAD COLLABORATIVE ROBOT (COBOT) MARKET IN 2029	56
FIGURE 11	ELECTRONICS INDUSTRY TO WITNESS FASTEST GROWTH DURING FORECAST PERIOD	57
FIGURE 12	ASIA PACIFIC ACCOUNTED FOR LARGEST SHARE OF GLOBAL COLLABORATIVE ROBOT (COBOT) MARKET IN 2022	58
4	PREMIUM INSIGHTS	59
4.1	MAJOR OPPORTUNITIES FOR PLAYERS IN COLLABORATIVE ROBOT (COBOT) MARKET	59
FIGURE 13	INCREASED DEMAND FOR COBOTS IN AUTOMOTIVE AND ELECTRONICS INDUSTRIES TO FUEL MARKET GROWTH	59
4.2	COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD	59
FIGURE 14	MARKET FOR COLLABORATIVE ROBOTS WITH PAYLOAD CAPACITY OF MORE THAN 20 KG TO RECORD HIGHEST CAGR DURING FORECAST PERIOD	59
4.3	COLLABORATIVE ROBOT (COBOT) MARKET, BY APPLICATION	60
FIGURE 15	HANDLING APPLICATIONS TO BE LARGEST MARKET SEGMENT IN 2023	60
4.4	COLLABORATIVE ROBOT (COBOT) MARKET, BY INDUSTRY	60
FIGURE 16	AUTOMOTIVE INDUSTRY TO HOLD LARGEST SHARE OF COLLABORATIVE ROBOT (COBOT) MARKET IN 2023	60
4.5	COLLABORATIVE ROBOT (COBOT) MARKET IN ASIA PACIFIC, BY INDUSTRY AND COUNTRY	61
FIGURE 17	AUTOMOTIVE SEGMENT AND CHINA ACCOUNTED FOR LARGEST SHARES OF COLLABORATIVE ROBOT (COBOT) MARKET IN 2022	61
4.6	COLLABORATIVE ROBOT (COBOT) MARKET, BY COUNTRY	61
FIGURE 18	COLLABORATIVE ROBOT (COBOT) MARKET IN INDIA TO GROW AT HIGHEST CAGR DURING FORECAST PERIOD	61
5	MARKET OVERVIEW	62
5.1	INTRODUCTION	62

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

5.2 MARKET DYNAMICS 62

FIGURE 19 COLLABORATIVE ROBOT (COBOT) MARKET: DRIVERS, RESTRAINTS, OPPORTUNITIES, AND CHALLENGES 62

5.2.1 DRIVERS 63

5.2.1.1 Higher return on investment than traditional industrial robotic systems 63

5.2.1.2 Increased demand in e-commerce and logistics sectors 64

FIGURE 20 GLOBAL E-COMMERCE SALES, BY COUNTRY, IN 2022 65

5.2.1.3 Significant benefits in businesses of all sizes 65

5.2.1.4 Easy programming of cobots 66

FIGURE 21 COLLABORATIVE ROBOT (COBOT) MARKET: DRIVERS AND THEIR IMPACT 66

5.2.2 RESTRAINTS 67

5.2.2.1 Higher preference for low-payload-capacity robots in heavy-duty industrial applications 67

FIGURE 22 COLLABORATIVE ROBOT (COBOT) MARKET: RESTRAINTS AND THEIR IMPACT 67

5.2.3 OPPORTUNITIES 68

5.2.3.1 Increasing focus of automation experts on pairing robotic arms with mobile platforms such as AMRs or AGVs 68

5.2.3.2 Growing number of subscriptions for Raas model 69

5.2.3.3 Eising demand for automation in healthcare industry 69

FIGURE 23 COLLABORATIVE ROBOT (COBOT) MARKET: OPPORTUNITIES AND THEIR IMPACT 70

5.2.4 CHALLENGES 70

5.2.4.1 Payload and speed limitations of collaborative robots owing to their inherent design 70

5.2.4.2 Difficulties in adapting to new standards and cybersecurity challenges related to connected robots 71

FIGURE 24 COLLABORATIVE ROBOT (COBOT) MARKET: CHALLENGES AND THEIR IMPACT 71

5.3 TRENDS/DISRUPTIONS IMPACTING CUSTOMER BUSINESS 72

FIGURE 25 REVENUE SHIFT AND NEW REVENUE POCKETS FOR COLLABORATIVE ROBOT PROVIDERS 72

5.4 VALUE CHAIN ANALYSIS 72

FIGURE 26 VALUE CHAIN ANALYSIS: MAJOR VALUE ADDED DURING MANUFACTURING AND RESEARCH AND DEVELOPMENT STAGES 73

5.5 ECOSYSTEM MAPPING 76

FIGURE 27 ECOSYSTEM OF COLLABORATIVE ROBOTS 76

TABLE 1 COLLABORATIVE ROBOT (COBOT) MARKET: ECOSYSTEM 77

5.6 TECHNOLOGY ANALYSIS 78

5.6.1 KEY TECHNOLOGY 78

5.6.1.1 Integration of embedded vision with collaborative robots 78

5.6.1.2 Pairing of collaborative robots with mobile platforms 78

5.6.2 COMPLEMENTARY TECHNOLOGY 79

5.6.2.1 Penetration of IIoT and AI in industrial manufacturing 79

5.6.2.2 Adoption of innovative grippers in robotics manipulation 80

5.6.3 ADJACENT TECHNOLOGY 81

5.6.3.1 Penetration of 5G in industrial manufacturing 81

5.7 CASE STUDY ANALYSIS 82

5.7.1 AUTOMOTIVE MANUFACTURER DOUBLES PRODUCTIVITY WITH COBOTS 82

5.7.2 COBOTS HELP DELIVER UNCOMPROMISED QUALITY AND SAFETY TO GLOBAL LEADER IN CARDIAC SURGERY EQUIPMENT 82

5.7.3 COBOT HELPS DUTCH MANUFACTURER ACHIEVE SMART AUTOMATION 83

5.7.4 AUTOMOTIVE PARTS MANUFACTURER ENHANCES PRODUCTIVITY BY UTILIZING COBOTS 83

5.7.5 COBOTS HELP SHIPBUILDING PARTS MANUFACTURER TO ACHIEVE LOW-COST PRODUCTION THROUGH AUTOMATION 84

5.8 PATENT ANALYSIS 84

TABLE 2 PATENT REGISTRATIONS RELATED TO COLLABORATIVE ROBOT (COBOT) MARKET 84

FIGURE 28 NUMBER OF PATENTS GRANTED PER YEAR FROM 2013 TO 2023 89

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

FIGURE 29 TOP 10 COMPANIES WITH HIGHEST PERCENTAGE OF PATENT APPLICATIONS IN LAST 10 YEARS 89

TABLE 3 TOP 10 PATENT OWNERS IN US IN LAST 10 YEARS 90

5.9 TRADE ANALYSIS 90

5.9.1 IMPORT SCENARIO 91

5.9.1.1 Import scenario for industrial robots 91

TABLE 4 IMPORT DATA, BY COUNTRY, 2018-2022 (USD MILLION) 91

5.9.2 EXPORT SCENARIO 91

5.9.2.1 Export scenario for industrial robots 91

TABLE 5 EXPORT DATA, BY COUNTRY, 2018-2022 (USD MILLION) 92

5.9.3 TARIFF ANALYSIS 92

TABLE 6 MFN TARIFF FOR INDUSTRIAL ROBOTS, N.E.S., BY JAPAN, 2022 92

TABLE 7 MFN TARIFF FOR INDUSTRIAL ROBOTS, N.E.S., BY GERMANY, 2022 93

TABLE 8 MFN TARIFF FOR INDUSTRIAL ROBOTS, N.E.S., BY ITALY, 2022 93

5.10 KEY CONFERENCES AND EVENTS, 2023-2024 93

TABLE 9 COLLABORATIVE ROBOT (COBOT) MARKET: LIST OF CONFERENCES AND EVENTS 93

5.11 REGULATORY LANDSCAPE 94

5.11.1 REGULATORY COMPLIANCE 94

TABLE 10 NORTH AMERICA: LIST OF REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS 95

TABLE 11 EUROPE: LIST OF REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS 96

TABLE 12 ASIA PACIFIC: LIST OF REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS 96

TABLE 13 ROW: LIST OF REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS 97

5.11.2 STANDARDS AND REGULATIONS RELATED TO COLLABORATIVE ROBOTS 97

TABLE 14 NORTH AMERICA: SAFETY STANDARDS FOR COLLABORATIVE ROBOTS 97

TABLE 15 EUROPE: SAFETY STANDARDS FOR COLLABORATIVE ROBOTS 98

TABLE 16 ASIA PACIFIC: SAFETY STANDARDS FOR COLLABORATIVE ROBOTS 98

TABLE 17 ROW: SAFETY STANDARDS FOR COLLABORATIVE ROBOTS 98

5.12 PORTER'S FIVE FORCES ANALYSIS 99

TABLE 18 COLLABORATIVE ROBOT (COBOT) MARKET: PORTER'S FIVE FORCES ANALYSIS 99

FIGURE 30 COLLABORATIVE ROBOT (COBOT) MARKET: PORTER'S FIVE FORCES ANALYSIS 100

5.12.1 THREAT OF NEW ENTRANTS 100

5.12.2 THREAT OF SUBSTITUTES 100

5.12.3 BARGAINING POWER OF SUPPLIERS 101

5.12.4 BARGAINING POWER OF BUYERS 101

5.12.5 INTENSITY OF COMPETITIVE RIVALRY 101

5.13 KEY STAKEHOLDERS AND BUYING CRITERIA 101

5.13.1 KEY STAKEHOLDERS IN BUYING PROCESS 101

FIGURE 31 INFLUENCE OF STAKEHOLDERS ON BUYING PROCESS FOR TOP THREE INDUSTRIES 101

TABLE 19 INFLUENCE OF STAKEHOLDERS ON BUYING PROCESS FOR TOP THREE INDUSTRIES (%) 102

5.13.2 BUYING CRITERIA 102

FIGURE 32 KEY BUYING CRITERIA FOR TOP THREE INDUSTRIES 102

TABLE 20 KEY BUYING CRITERIA FOR TOP THREE INDUSTRIES 102

5.14 PRICING ANALYSIS 103

TABLE 21 SELLING PRICE OF COLLABORATIVE ROBOTS 103

5.14.1 AVERAGE SELLING PRICE TREND 104

FIGURE 33 COLLABORATIVE ROBOT (COBOT) MARKET: AVERAGE SELLING PRICE OF COBOTS 104

TABLE 22 AVERAGE SELLING PRICE OF VARIOUS COLLABORATIVE ROBOTS BASED ON PAYLOAD CAPACITY 104

5.14.2 AVERAGE SELLING PRICE OF COLLABORATIVE ROBOTS OFFERED BY KEY PLAYERS, BY PAYLOAD 105

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

FIGURE 34 AVERAGE SELLING PRICE OF COLLABORATIVE ROBOTS OFFERED BY KEY PLAYERS, BY PAYLOAD 105

TABLE 23 AVERAGE SELLING PRICE OF COLLABORATIVE ROBOTS OFFERED BY KEY PLAYERS WITH VARIOUS PAYLOAD CAPACITIES (USD) 105

6 COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD 106

6.1 INTRODUCTION 107

FIGURE 35 COLLABORATIVE ROBOT (COBOT) MARKET: BY PAYLOAD 107

FIGURE 36 UP TO 5 KG SEGMENT TO HOLD LARGEST SHARE OF COLLABORATIVE ROBOT (COBOT) MARKET IN 2029 107

TABLE 24 COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (USD MILLION) 108

TABLE 25 COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (USD MILLION) 108

TABLE 26 COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (UNITS) 108

TABLE 27 COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (UNITS) 108

6.2 UP TO 5 KG 109

6.2.1 INHERENT SAFETY OF COBOTS WITH PAYLOAD CAPACITY BELOW 5 KG TO DRIVE MARKET 109

TABLE 28 COMPANIES OFFERING COBOTS WITH PAYLOAD CAPACITY UP TO 5 KG 110

TABLE 29 UP TO 5 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY APPLICATION, 2019-2022 (USD MILLION) 110

TABLE 30 UP TO 5 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY APPLICATION, 2023-2029 (USD MILLION) 111

TABLE 31 UP TO 5 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY APPLICATION, 2019-2022 (UNITS) 111

TABLE 32 UP TO 5 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY APPLICATION, 2023-2029 (UNITS) 111

TABLE 33 UP TO 5 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY INDUSTRY, 2019-2022 (USD MILLION) 112

TABLE 34 UP TO 5 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY INDUSTRY, 2023-2029 (USD MILLION) 112

6.3 5-10 KG 113

6.3.1 UTILIZATION OF COBOTS WITH PAYLOAD CAPACITY OF 5-10 KG IN FACTORY AUTOMATION TASKS TO SUPPORT MARKET GROWTH 113

TABLE 35 COMPANIES OFFERING COBOTS WITH 5-10 KG PAYLOAD CAPACITY 114

TABLE 36 5-10 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY APPLICATION, 2019-2022 (USD MILLION) 115

TABLE 37 5-10 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY APPLICATION, 2023-2029 (USD MILLION) 115

TABLE 38 5-10 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY APPLICATION, 2019-2022 (UNITS) 115

TABLE 39 5-10 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY APPLICATION, 2023-2029 (UNITS) 116

TABLE 40 5-10 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY INDUSTRY, 2019-2022 (USD MILLION) 116

TABLE 41 5-10 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY INDUSTRY, 2023-2029 (USD MILLION) 117

6.4 10-20 KG 118

6.4.1 DEPLOYMENT OF COBOTS WITH PAYLOAD CAPACITY OF 10-20 KG IN WIDE RANGE OF APPLICATIONS TO DRIVE MARKET 118

TABLE 42 COMPANIES OFFERING COBOTS WITH PAYLOAD CAPACITY OF 10-20 KG 119

TABLE 43 10-20 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY APPLICATION, 2019-2022 (USD MILLION) 119

TABLE 44 10-20 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY APPLICATION, 2023-2029 (USD MILLION) 120

TABLE 45 10-20 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY APPLICATION, 2019-2022 (UNITS) 120

TABLE 46 10-20 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY APPLICATION, 2023-2029 (UNITS) 120

TABLE 47 10-20 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY INDUSTRY, 2019-2022 (USD MILLION) 121

TABLE 48 10-20 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY INDUSTRY, 2023-2029 (USD MILLION) 121

6.5 MORE THAN 20 KG 122

6.5.1 NEED FOR COBOTS WITH MORE THAN 20 KG PAYLOAD CAPACITY IN PHYSICALLY DEMANDING TASKS TO PROPEL MARKET 122

TABLE 49 COMPANIES OFFERING COBOTS WITH PAYLOAD CAPACITY OF MORE THAN 20 KG 123

TABLE 50 MORE THAN 20 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY APPLICATION, 2019-2022 (USD MILLION) 123

TABLE 51 MORE THAN 20 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY APPLICATION, 2023-2029 (USD MILLION) 123

TABLE 52 MORE THAN 20 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY APPLICATION, 2019-2022 (UNITS) 124

TABLE 53 MORE THAN 20 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY APPLICATION, 2023-2029 (UNITS) 124

TABLE 54 MORE THAN 20 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY INDUSTRY, 2019-2022 (USD MILLION) 125

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

TABLE 55 MORE THAN 20 KG: COLLABORATIVE ROBOT (COBOT) MARKET, BY INDUSTRY, 2023-2029 (USD MILLION) 125

7 COLLABORATIVE ROBOT (COBOT) MARKET, BY COMPONENT 126

7.1 INTRODUCTION 127

FIGURE 37 COLLABORATIVE ROBOT (COBOT) MARKET: BY COMPONENT 127

FIGURE 38 HARDWARE SEGMENT TO HOLD LARGEST SHARE OF COLLABORATIVE ROBOT (COBOT) MARKET DURING FORECAST PERIOD 127

TABLE 56 COLLABORATIVE ROBOT (COBOT) MARKET, BY COMPONENT, 2019-2022 (USD MILLION) 128

TABLE 57 COLLABORATIVE ROBOT (COBOT) MARKET, BY COMPONENT, 2023-2029 (USD MILLION) 128

7.2 HARDWARE 129

TABLE 58 COLLABORATIVE ROBOT (COBOT) MARKET, BY HARDWARE, 2019-2022 (USD MILLION) 129

TABLE 59 COLLABORATIVE ROBOT (COBOT) MARKET, BY HARDWARE, 2023-2029 (USD MILLION) 130

7.2.1 ROBOTIC ARMS 131

7.2.2 END EFFECTORS OR END OF ARM TOOLS (EOATS) 131

7.2.2.1 Welding guns 131

7.2.2.1.1 Ease of welding tasks due to hand guidance feature in collaborative robots 131

TABLE 60 ROBOTIC WELDING GUN MANUFACTURERS 132

7.2.2.2 Grippers 132

7.2.2.2.1 Pneumatic grippers 133

7.2.2.2.1.1 Requirement for external air supply to keep pneumatic grippers operational 133

7.2.2.2.2 Electric grippers 133

7.2.2.2.2.1 Ease of programming and operating to drive demand for electric grippers 133

TABLE 61 ELECTRIC GRIPPER MANUFACTURERS 134

7.2.2.2.3 Dexterous robotic hands 134

7.2.2.2.3.1 4-finger robotic hands suitable for collaborative applications 135

7.2.2.2.3.2 5-finger robotic hands used in combination with industrial and collaborative robotic arms 135

7.2.2.2.4 Vacuum grippers 135

7.2.2.2.4.1 Implementation of vacuum grippers to easily handle uneven and large area workpieces 135

7.2.2.2.5 Magnetic grippers 136

7.2.2.2.5.1 Use of magnetic grippers to handle smallest workpieces 136

TABLE 62 MAGNETIC GRIPPER MANUFACTURERS 136

7.2.2.3 Robotic screwdrivers 137

7.2.2.3.1 Ability of robotic screwdrivers to apply consistent torque during screwdriving 137

7.2.2.4 Sanding and deburring tools 137

7.2.2.4.1 Adoption of sanding and deburring tools to remove imperfections in objects 137

7.2.2.5 Others 138

7.2.3 DRIVES 138

7.2.3.1 Reliance on drives to convert electrical energy into mechanical energy 138

7.2.4 CONTROLLERS 138

7.2.4.1 Importance of controllers in enabling safe and effective human-robot collaboration 138

7.2.5 SENSORS 139

7.2.5.1 Employment of sensors help convert information into meaningful data 139

7.2.6 POWER SUPPLIES 139

7.2.6.1 Selecting suitable power supplies for cobots is crucial 139

7.2.7 MOTORS 139

7.2.7.1 Deployment of motors to power cobots using rotational or linear force 139

7.2.8 OTHERS 140

7.3 SOFTWARE 140

7.3.1	STRONG FOCUS OF COBOT MANUFACTURERS ON DEVELOPING INTUITIVE PROGRAMMING SOFTWARE	140
8	COLLABORATIVE (COBOT) ROBOT MARKET, BY APPLICATION	142
8.1	INTRODUCTION	143
FIGURE 39	COLLABORATIVE ROBOT (COBOT) MARKET: BY APPLICATION	143
TABLE 63	COLLABORATIVE ROBOT (COBOT) MARKET RANKING ANALYSIS, BY APPLICATION	144
FIGURE 40	HANDLING APPLICATIONS TO HOLD LARGEST SHARE OF COLLABORATIVE ROBOT (COBOT) MARKET DURING FORECAST PERIOD	144
TABLE 64	COLLABORATIVE ROBOT (COBOT) MARKET, BY APPLICATION, 2019-2022 (USD MILLION)	145
TABLE 65	COLLABORATIVE ROBOT (COBOT) MARKET, BY APPLICATION, 2023-2029 (USD MILLION)	145
TABLE 66	COLLABORATIVE ROBOT (COBOT) MARKET, BY APPLICATION, 2019-2022 (UNITS)	145
TABLE 67	COLLABORATIVE ROBOT (COBOT) MARKET, BY APPLICATION, 2023-2029 (UNITS)	146
8.2	HANDLING	147
TABLE 68	COMPANIES OFFERING COLLABORATIVE ROBOTS FOR HANDLING APPLICATIONS	147
TABLE 69	HANDLING: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (USD MILLION)	147
TABLE 70	HANDLING: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (USD MILLION)	148
TABLE 71	HANDLING: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (UNITS)	148
TABLE 72	HANDLING: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (UNITS)	148
8.2.1	PICK-AND-PLACE	149
8.2.1.1	Pick-and-place tasks easiest to program for first-time users	149
8.2.2	MATERIAL HANDLING	149
8.2.2.1	Technological advancements to increase capabilities of material-handling collaborative robots (cobots)	149
8.2.3	PACKAGING & PALLETIZING	150
8.2.3.1	Packing and palletizing often require medium payload cobots	150
8.2.4	MACHINE TENDING	151
8.2.4.1	Cobots used alongside CNC, injection, and blow molding machines	151
TABLE 73	HANDLING: COLLABORATIVE ROBOT (COBOT) MARKET, BY TYPE, 2019-2022 (USD MILLION)	151
TABLE 74	HANDLING: COLLABORATIVE ROBOT (COBOT) MARKET, BY TYPE, 2023-2029 (USD MILLION)	152
8.3	ASSEMBLING & DISASSEMBLING	153
TABLE 75	COMPANIES OFFERING COLLABORATIVE ROBOTS FOR ASSEMBLING & DISASSEMBLING APPLICATIONS	153
TABLE 76	ASSEMBLING & DISASSEMBLING: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (USD MILLION)	153
TABLE 77	ASSEMBLING & DISASSEMBLING: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (USD MILLION)	153
TABLE 78	ASSEMBLING & DISASSEMBLING: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (UNITS)	154
TABLE 79	ASSEMBLING & DISASSEMBLING: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (UNITS)	154
8.3.1	NUT FASTENING	155
8.3.1.1	Cobots suitable for nut fastening on medium and large workpieces	155
8.3.2	SCREWDRIVING	155
8.3.2.1	Cobots can handle torque forces required for screwdriving applications	155
8.4	WELDING & SOLDERING	155
8.4.1	COLLABORATIVE ROBOTS USED FOR WELDING SUITABLE FOR LOW VOLUME, HIGH MIX OPERATIONS	155
TABLE 80	COMPANIES OFFERING COLLABORATIVE ROBOTS FOR WELDING & SOLDERING APPLICATIONS	156
TABLE 81	WELDING & SOLDERING: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (USD MILLION)	156
TABLE 82	WELDING & SOLDERING: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (USD MILLION)	156
TABLE 83	WELDING & SOLDERING: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (UNITS)	157
TABLE 84	WELDING AND SOLDERING: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (UNITS)	157
8.5	DISPENSING	158
TABLE 85	COMPANIES OFFERING COLLABORATIVE ROBOTS FOR DISPENSING APPLICATIONS	158
TABLE 86	DISPENSING: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (USD MILLION)	159

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

TABLE 87 DISPENSING: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (USD MILLION) 159

TABLE 88 DISPENSING: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (UNITS) 159

TABLE 89 DISPENSING: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (UNITS) 160

8.5.1 GLUING 161

8.5.1.1 Robotic gluing ensures quality and consistency of application 161

8.5.2 PAINTING 161

8.5.2.1 Cobot painting suitable for low-volume production 161

8.6 PROCESSING 162

TABLE 90 COMPANIES OFFERING COLLABORATIVE ROBOTS FOR PROCESSING APPLICATIONS 162

TABLE 91 PROCESSING: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (USD MILLION) 162

TABLE 92 PROCESSING: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (USD MILLION) 163

TABLE 93 PROCESSING: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (UNITS) 163

TABLE 94 PROCESSING: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (UNITS) 163

8.6.1 GRINDING 164

8.6.1.1 Force/torque sensors used along with end effectors for grinding tasks 164

8.6.2 MILLING 164

8.6.2.1 Milling tasks consist of deburring, chamfering, and scraping operations 164

8.6.3 CUTTING 165

8.6.3.1 Cobots used for cutting applications on very small scale 165

TABLE 95 COLLABORATIVE ROBOT (COBOT) MARKET, BY PROCESSING, 2019-2022 (USD MILLION) 165

TABLE 96 COLLABORATIVE ROBOT (COBOT) MARKET, BY PROCESSING, 2023-2029 (USD MILLION) 165

8.7 OTHERS 166

TABLE 97 COMPANIES OFFERING COLLABORATIVE ROBOTS FOR OTHER APPLICATIONS 166

TABLE 98 OTHERS: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (USD MILLION) 167

TABLE 99 OTHERS: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (USD MILLION) 167

TABLE 100 OTHERS: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (UNITS) 167

TABLE 101 OTHERS: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (UNITS) 168

8.7.1 INSPECTION AND QUALITY TESTING 168

8.7.2 DIE-CASTING AND MOLDING 169

9 COLLABORATIVE ROBOT (COBOT) MARKET, BY INDUSTRY 170

9.1 INTRODUCTION 171

FIGURE 41 COLLABORATIVE ROBOT (COBOT) MARKET: BY INDUSTRY 171

FIGURE 42 COLLABORATIVE ROBOT (COBOT) MARKET FOR ELECTRONICS INDUSTRY TO RECORD HIGHEST CAGR DURING FORECAST PERIOD 171

TABLE 102 COLLABORATIVE ROBOT (COBOT) MARKET, BY INDUSTRY, 2019-2022 (USD MILLION) 172

TABLE 103 COLLABORATIVE ROBOT (COBOT) MARKET, BY INDUSTRY, 2023-2029 (USD MILLION) 172

TABLE 104 COLLABORATIVE ROBOT (COBOT) MARKET, BY INDUSTRY, 2019-2022 (UNITS) 173

TABLE 105 COLLABORATIVE ROBOT (COBOT) MARKET, BY INDUSTRY, 2023-2029 (UNITS) 173

9.2 AUTOMOTIVE 174

9.2.1 COLLABORATIVE ROBOTS UTILIZED TO PERFORM LIGHT AND REPETITIVE TASKS 174

TABLE 106 AUTOMOTIVE: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2019-2022 (USD MILLION) 176

TABLE 107 AUTOMOTIVE: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2023-2029 (USD MILLION) 176

TABLE 108 AUTOMOTIVE: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (USD MILLION) 176

TABLE 109 AUTOMOTIVE: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (USD MILLION) 177

9.3 ELECTRONICS 178

9.3.1 COLLABORATIVE ROBOTS CAN MANAGE SMALL AND FRAGILE COMPONENTS 178

TABLE 110 ELECTRONICS: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2019-2022 (USD MILLION) 179

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

TABLE 111 ELECTRONICS: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2023-2029 (USD MILLION) 179

TABLE 112 ELECTRONICS: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (USD MILLION) 179

TABLE 113 ELECTRONICS: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (USD MILLION) 180

9.4 METALS & MACHINING 181

9.4.1 COLLABORATIVE ROBOTS USED ALONGSIDE CNC AND OTHER HEAVY MACHINERY TO AUTOMATE VARIOUS TASKS 181

TABLE 114 METALS & MACHINING: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2019-2022 (USD MILLION) 182

TABLE 115 METALS & MACHINING: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2023-2029 (USD MILLION) 182

TABLE 116 METALS & MACHINING: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (USD MILLION) 183

TABLE 117 METALS & MACHINING: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (USD MILLION) 183

9.5 PLASTICS & POLYMERS 184

9.5.1 COLLABORATIVE ROBOTS IDEAL FOR PLASTICS AND POLYMER INDUSTRY DUE TO LOW PAYLOAD CAPACITY 184

TABLE 118 PLASTICS & POLYMERS: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2019-2022 (USD MILLION) 185

TABLE 119 PLASTICS & POLYMERS: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2023-2029 (USD MILLION) 186

TABLE 120 PLASTICS & POLYMERS: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (USD MILLION) 186

TABLE 121 PLASTICS & POLYMERS: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (USD MILLION) 186

9.6 FOOD & BEVERAGES 187

9.6.1 COLLABORATIVE ROBOTS DEPLOYED IN FOOD INDUSTRY IN PRIMARY AND SECONDARY HANDLING APPLICATIONS 187

TABLE 122 FOOD & BEVERAGES: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2019-2022 (USD MILLION) 188

TABLE 123 FOOD & BEVERAGES: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2023-2029 (USD MILLION) 189

TABLE 124 FOOD & BEVERAGES: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (USD MILLION) 189

TABLE 125 FOOD & BEVERAGES: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (USD MILLION) 189

9.7 FURNITURE & EQUIPMENT 190

9.7.1 COLLABORATIVE ROBOTS PERFORM VARIOUS PICK-AND-PLACE AND MACHINE-TENDING TASKS 190

TABLE 126 FURNITURE & EQUIPMENT: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2019-2022 (USD MILLION) 191

TABLE 127 FURNITURE & EQUIPMENT: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2023-2029 (USD MILLION) 191

TABLE 128 FURNITURE & EQUIPMENT: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (USD MILLION) 192

TABLE 129 FURNITURE & EQUIPMENT: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (USD MILLION) 192

9.8 HEALTHCARE 193

9.8.1 COLLABORATIVE ROBOTS UTILIZED IN NON-SURGICAL APPLICATIONS 193

TABLE 130 HEALTHCARE: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2019-2022 (USD MILLION) 194

TABLE 131 HEALTHCARE: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2023-2029 (USD MILLION) 194

TABLE 132 HEALTHCARE: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (USD MILLION) 195

TABLE 133 HEALTHCARE: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (USD MILLION) 195

9.9 LOGISTICS 195

9.9.1 COLLABORATIVE ROBOTS USED FOR PICK AND PLACE APPLICATIONS 195

TABLE 134 LOGISTICS: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2019-2022 (USD MILLION) 196

TABLE 135 LOGISTICS: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2023-2029 (USD MILLION) 196

TABLE 136 LOGISTICS: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (USD MILLION) 197

TABLE 137 LOGISTICS: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (USD MILLION) 197

9.10 OTHERS 197

TABLE 138 OTHERS: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2019-2022 (USD MILLION) 198

TABLE 139 OTHERS: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2023-2029 (USD MILLION) 199

TABLE 140 OTHERS: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2019-2022 (USD MILLION) 199

TABLE 141 OTHERS: COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD, 2023-2029 (USD MILLION) 199

10 COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION 201

10.1 INTRODUCTION 202

FIGURE 43 COLLABORATIVE ROBOT (COBOT) MARKET: BY REGION 202

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

TABLE 142 □ COLLABORATIVE ROBOT (COBOT) MARKET RANKING ANALYSIS, BY REGION □ 202

FIGURE 44 □ ASIA PACIFIC TO HOLD LARGEST SHARE OF COLLABORATIVE ROBOT (COBOT) MARKET DURING FORECAST PERIOD □ 203

TABLE 143 □ COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2019-2022 (USD MILLION) □ 203

TABLE 144 □ COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2023-2029 (USD MILLION) □ 203

TABLE 145 □ COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2019-2022 (UNITS) □ 204

TABLE 146 □ COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2023-2029 (UNITS) □ 204

10.2 □ NORTH AMERICA □ 204

10.2.1 □ IMPACT OF RECESSION ON COLLABORATIVE ROBOT (COBOT) MARKET IN NORTH AMERICA □ 205

FIGURE 45 □ NORTH AMERICA: COLLABORATIVE ROBOT (COBOT) MARKET, BY COUNTRY □ 205

FIGURE 46 □ NORTH AMERICA: COLLABORATIVE ROBOT (COBOT) MARKET SNAPSHOT □ 206

TABLE 147 □ NORTH AMERICA: COLLABORATIVE ROBOT (COBOT) MARKET, BY COUNTRY, 2019-2022 (USD MILLION) □ 206

TABLE 148 □ NORTH AMERICA: COLLABORATIVE ROBOT (COBOT) MARKET, BY COUNTRY, 2023-2029 (USD MILLION) □ 207

TABLE 149 □ NORTH AMERICA: COLLABORATIVE ROBOT (COBOT) MARKET, BY COUNTRY, 2019-2022 (UNITS) □ 207

TABLE 150 □ NORTH AMERICA: COLLABORATIVE ROBOT (COBOT) MARKET, BY COUNTRY, 2023-2029 (UNITS) □ 207

TABLE 151 □ NORTH AMERICA: COLLABORATIVE ROBOT (COBOT) MARKET, BY INDUSTRY, 2019-2022 (USD MILLION) □ 208

TABLE 152 □ NORTH AMERICA: COLLABORATIVE ROBOT (COBOT) MARKET, BY INDUSTRY, 2023-2029 (USD MILLION) □ 208

10.2.2 □ US □ 209

10.2.2.1 □ Increased demand for cobots across various industries to drive market □ 209

10.2.3 □ CANADA □ 210

10.2.3.1 □ Increased foreign investments in automotive sector to support market growth □ 210

10.2.4 □ MEXICO □ 212

10.2.4.1 □ Government measures to augment manufacturing activities to fuel market growth □ 212

10.3 □ EUROPE □ 213

10.3.1 □ IMPACT OF RECESSION ON COLLABORATIVE ROBOT (COBOT) MARKET IN EUROPE □ 213

FIGURE 47 □ EUROPE: COLLABORATIVE ROBOT (COBOT) MARKET, BY COUNTRY □ 214

FIGURE 48 □ EUROPE: COLLABORATIVE ROBOT (COBOT) MARKET SNAPSHOT □ 214

TABLE 153 □ EUROPE: COLLABORATIVE ROBOT (COBOT) MARKET, BY COUNTRY, 2019-2022 (USD MILLION) □ 215

TABLE 154 □ EUROPE: COLLABORATIVE ROBOT (COBOT) MARKET, BY COUNTRY, 2023-2029 (USD MILLION) □ 215

TABLE 155 □ EUROPE: COLLABORATIVE ROBOT (COBOT) MARKET, BY COUNTRY, 2019-2022 (UNITS) □ 215

TABLE 156 □ EUROPE: COLLABORATIVE ROBOT (COBOT) MARKET, BY COUNTRY, 2023-2029 (UNITS) □ 216

TABLE 157 □ EUROPE: COLLABORATIVE ROBOT (COBOT) MARKET, BY INDUSTRY, 2019-2022 (USD MILLION) □ 216

TABLE 158 □ EUROPE: COLLABORATIVE ROBOT (COBOT) MARKET, BY INDUSTRY, 2023-2029 (USD MILLION) □ 217

10.3.2 □ GERMANY □ 217

10.3.2.1 □ Prominent presence of automotive and electronics industries to propel market □ 217

10.3.3 □ ITALY □ 218

10.3.3.1 □ Changing consumer needs in automotive sector to drive adoption of collaborative robots □ 218

10.3.4 □ SPAIN □ 219

10.3.4.1 □ Adoption of automation in manufacturing industries to drive demand for collaborative robots □ 219

10.3.5 □ FRANCE □ 220

10.3.5.1 □ Government funding to boost automation and deployment of collaborative robots □ 220

10.3.6 □ UK □ 221

10.3.6.1 □ Investments in R&D to revive automotive industry to offer high market growth potential □ 221

10.3.7 □ REST OF EUROPE □ 221

10.4 □ ASIA PACIFIC □ 222

10.4.1 □ IMPACT OF RECESSION ON COLLABORATIVE ROBOT (COBOT) MARKET IN ASIA PACIFIC □ 222

FIGURE 49 □ ASIA PACIFIC: COLLABORATIVE ROBOT (COBOT) MARKET, BY COUNTRY □ 223

FIGURE 50 □ ASIA PACIFIC: COLLABORATIVE ROBOT (COBOT) MARKET SNAPSHOT □ 223

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

TABLE 159 ASIA PACIFIC: COLLABORATIVE ROBOT (COBOT) MARKET, BY COUNTRY, 2019-2022 (USD MILLION) 224

TABLE 160 ASIA PACIFIC: COLLABORATIVE ROBOT (COBOT) MARKET, BY COUNTRY, 2023-2029 (USD MILLION) 224

TABLE 161 ASIA PACIFIC: COLLABORATIVE ROBOT (COBOT) MARKET, BY COUNTRY, 2019-2022 (UNITS) 225

TABLE 162 ASIA PACIFIC: COLLABORATIVE ROBOT (COBOT) MARKET, BY COUNTRY, 2023-2029 (UNITS) 225

TABLE 163 ASIA PACIFIC: COLLABORATIVE ROBOT (COBOT) MARKET, BY INDUSTRY, 2019-2022 (USD MILLION) 226

TABLE 164 ASIA PACIFIC: COLLABORATIVE ROBOT (COBOT) MARKET, BY INDUSTRY, 2023-2029 (USD MILLION) 226

10.4.2 CHINA 227

10.4.2.1 Increasing investments in automation to contribute to market growth 227

10.4.3 SOUTH KOREA 228

10.4.3.1 Deployment of significant number of cobots in automotive and electronics industries to drive market 228

10.4.4 JAPAN 229

10.4.4.1 Use of electric and hybrid vehicles to fuel market for cobots 229

10.4.5 TAIWAN 230

10.4.5.1 Growth of electrical & electronics industry to drive market 230

10.4.6 THAILAND 230

10.4.6.1 Thailand 4.0 initiative to drive market for cobots during forecast period 230

10.4.7 INDIA 231

10.4.7.1 Huge potential for deployment of cobots in manufacturing sector to support market growth 231

10.4.8 REST OF ASIA PACIFIC 232

10.5 ROW 233

10.5.1 IMPACT OF RECESSION ON COLLABORATIVE ROBOT (COBOT) MARKET IN ROW 233

FIGURE 51 ROW: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION 233

FIGURE 52 ROW: COLLABORATIVE ROBOT (COBOT) MARKET SNAPSHOT 234

TABLE 165 ROW: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2019-2022 (USD MILLION) 234

TABLE 166 ROW: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2023-2029 (USD MILLION) 235

TABLE 167 ROW: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2019-2022 (UNITS) 235

TABLE 168 ROW: COLLABORATIVE ROBOT (COBOT) MARKET, BY REGION, 2023-2029 (UNITS) 235

TABLE 169 ROW: COLLABORATIVE ROBOT (COBOT) MARKET, BY INDUSTRY, 2019-2022 (USD MILLION) 235

TABLE 170 ROW: COLLABORATIVE ROBOT (COBOT) MARKET, BY INDUSTRY, 2023-2029 (USD MILLION) 236

10.5.2 MIDDLE EAST & AFRICA 237

10.5.2.1 Automation across industries to drive market 237

10.5.3 SOUTH AMERICA 238

10.5.3.1 South America to witness high growth in adoption of collaborative robots during forecast period 238

11 HUMAN-ROBOT COLLABORATIVE OPERATIONAL ENVIRONMENT (QUALITATIVE) 239

11.1 INTRODUCTION 239

11.2 SAFETY-RATED MONITORED STOP 239

11.3 HAND GUIDING 240

11.4 SPEED REDUCTION AND SEPARATION MONITORING 240

11.5 POWER AND FORCE LIMITING 241

12 INTEGRATION OF COBOTS AND IOT (QUALITATIVE) 243

12.1 INTRODUCTION 243

12.2 CONNECTIVITY TECHNOLOGY 244

12.2.1 ETHERNET 244

12.2.2 WI-FI 244

12.2.3 BLUETOOTH 245

12.2.4 CELLULAR 245

12.2.4.1 4G connectivity 245

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

12.2.4.2 5G connectivity 245

12.3 INTEROPERABILITY SOFTWARE 246

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

Collaborative Robot Market by Payload (Up to 5 Kg, 5-10 kg, 10-20 kg, more than 20 kg), Component, Robotic Arm, End Effectors, Drives, Controllers, Sensors, Power Supply, Motors, Software), Application, Industry and Region - Global Forecast to 2029

Market Report | 2023-07-18 | 330 pages | MarketsandMarkets

To place an Order with Scotts International:

- Print this form
- Complete the relevant blank fields and sign
- Send as a scanned email to support@scott's-international.com

ORDER FORM:

Select license	License	Price
	Single User	\$4950.00
	Multi User	\$6650.00
	Corporate License	\$8150.00
	Enterprise Site License	\$10000.00
		VAT
		Total

*Please circle the relevant license option. For any questions please contact support@scott's-international.com or 0048 603 394 346.

** VAT will be added at 23% for Polish based companies, individuals and EU based companies who are unable to provide a valid EU Vat Numbers.

Email*	<input type="text"/>	Phone*	<input type="text"/>
First Name*	<input type="text"/>	Last Name*	<input type="text"/>
Job title*	<input type="text"/>		
Company Name*	<input type="text"/>	EU Vat / Tax ID / NIP number*	<input type="text"/>
Address*	<input type="text"/>	City*	<input type="text"/>

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scott's-international.com

www.scott's-international.com

Zip Code*

Country*

Date

2026-03-11

Signature

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com