

# Industrial Robot Market Shares, Strategies, and Forecasts, Worldwide, 2015-2021

https://marketpublishers.com/r/ID1FE417DE9EN.html

Date: July 2015

Pages: 973

Price: US\$ 4,000.00 (Single User License)

ID: ID1FE417DE9EN

## **Abstracts**

LEXINGTON, Massachusetts (May 16, 2015) – WinterGreen Research announces that it has published a new study Industrial Robot: Market Shares, Strategy, and Forecasts, Worldwide, 2015 to 2021. The 2015 study has 1022 pages, 258 tables and figures. Worldwide Industrial Robot markets are poised to achieve significant growth as the automotive early adopter base provides a way for other industries to leverage economies of scale. Industrial Robot infrastructure in one industry makes it easier to extend product sets so that they are more available across all industries, remaking all manufacturing everywhere.

Controllers permit leveraging industrial robot technology to improve automated process via iteration of work cells. Using controllers to leverage efficiencies is an evolving art, extending the current state of the art. Robots can perform tasks at less cost, and do work in a manner that cannot be replicated with human manufacturing workers. Information technology is used to implement the services provided by controllers.

Growth prospects for the industrial robotics industry depend on market opportunity metrics relative to the different industries. Automotive investment levels globally have remained at historical highs. Increasing usage of robotic automation by non-automotive companies is driving the usage of industrial robot automation to a new level.

Increased adoption of industrial robots coupled with a huge push from the industry for collaborative robots, opens opportunities for robotic solutions. In the immediate future industrial robots strengthen the position of every industry, promising more manufacturing efficiency at every level.

The industrial robots have not yet achieved economies of scale, illustrating the market



opportunity that will come quickly after economies of scale are achieved. New technology and improved controllers open the path to economies of scale for industrial robots. As this occurs a new industrial revolution will occur. There are massive numbers of products offered by each major industrial robot vendor. Product consolidation is occurring in the market. Customization of a few products to increase product volume hold the promise of changing the market so it functions at a level that means devices that basically have eluded economies of scale in the past, will now be able to be mass produced.

A few leading vendors profiled in the report lead the market. ABB provides a comprehensive range of robots to help manufacturers improve productivity, product quality and worker safety. Regardless of application ABB has a robot to meet needs of the customer in any industry. ABB has installed 250,000 robots worldwide.

ABB's small IRB 120 multipurpose industrial robot weighs 25kg and can handle a payload of 3kg (4kg for vertical wrist) with a reach of 580mm. It is a cost-effective and reliable choice for generating high production outputs in return for low investment. A white finish Clean Room ISO 5 (Class 100) version, certified by IPA, is available.

With a global install base of nearly 300,000 industrial robots, Yaskawa Motoman has over 150 robot arm models currently in production. Well defined criteria help users find a robotic arm that suits industrial applications. Required payload, reach and repeatability specifications are market aspects. Each robotic arm model is paired with a robot controller that enables workers to program and control tasks of a single robot or coordinate multiple robot arms. Yaskawa. Motoman offers 40 fully integrated, preengineered work cell solutions. These work cells include robots, process equipment, and safety equipment. Cost-effective world solutions are available to meet requirements for safety and easy of use. Customers look for industrial robots that are easy to set up and operate. Industrial robots automate manufacturing, starting with automotive factories providing automated process stat is cheaper, more reliable, and proven. Industrial robots are changing the economics of manufacturing and materials handling in all industries. Industrial robots are poised to change every aspect of modern business.

Robots bring a new industrial revolution. Adoption of industrial robots in non-automotive applications is occurring in the electronics, chemicals, pharmaceutical, and food & beverages industries. Industrial robots have opened up new market opportunities. High installation costs have been largely overcome, making industries in developing markets available to vendors. The adoption of robots in underdeveloped countries occurs



because of the unavailability of skilled labor.

industrial robots are set to bring a new industrial revolution more important than anything seen before. Industrial robots perform repetitive tasks efficiently, they do not eat, they do not make mistakes, they do not get tired, they do what they are told.

Manufacturing plants are frequently long aisles of nothing but robots, no human in sight. Beyond industrial robots that repeat actions, more intelligent robots loaded with sensors, cameras, and intelligent software are able to automate process using controllers to manage action. Use of microprocessors provides a measure of intelligent control over the activity of the robot based on input from the sensors and the cameras.

Think about the current industrial revolution. Before the invention of the automobile, buggy whip manufacturing was a thriving business. No longer. In the same vein, industrial robots hold the promise of eliminating many of the existing jobs in manufacturing. Innovation, centers of excellence. New enterprises promise to replace many of the existing jobs. People need to be flexible, to develop new industries.

Increased adoption of industrial robots coupled with a huge push from the industry for collaborative robots, opens opportunities for robotic solutions. In the immediate future industrial robots strengthen the position of every industry, promising more manufacturing efficiency at every level.

The issue becomes creating jobs and building economies worldwide so people can afford to support a family and a lifestyle and buy the goods that are manufactured so efficiently. This new job creation market thrust will come from industry and government investment in innovation and centers of excellence.

Industrial robots promise to replace 70 to 90% of existing manufacturing jobs. People will learn new ways to achieve an economy, to achieve economic development. An economy needs to adjust, to be flexible if you gave pink slips to more than half the labor force.

According to Susan Eustis, principal author of the market research study, "Industrial robot vendors have discovered that with intelligent use of new technology, they can dominate an aspect of some manufacturing automated process for a particular sector. As the early adopters in the auto industry have proven, robots do the work cheaper and better than humans once a repetitive process has been evolved. Industrial robots make the difference between winning competitive advantage or losing it. Solutions offered by



vendors are creating market growth opportunities."

Industrial robots can perform tasks faster and more accurately than humans. Increases in productivity are provided by industrial robots. Robots help reduce overall manufacturing costs in developing and developed countries. Markets are expected to rise 11.5% annually through 2021. Industrial robot markets at \$22 billion in 2014 are anticipated to reach \$48.9 billion by 2021.

WinterGreen Research is an independent research organization funded by the sale of market research studies all over the world and by the implementation of ROI models that are used to calculate the total cost of ownership of equipment, services, and software. The company has 35 distributors worldwide, including Global Information Info Shop, Market Research.com, Research and Markets, Electronics.CA, Bloomberg, and Thompson Financial.

WinterGreen Research is positioned to help customers face challenges that define the modern enterprises. The increasingly global nature of science, technology and engineering is a reflection of the implementation of the globally integrated enterprise. Customers trust WinterGreen Research to work alongside them to ensure the success of the participation in a particular market segment.

WinterGreen Research supports various market segment programs; provides trusted technical services to the marketing departments. It carries out accurate market share and forecast analysis services for a range of commercial and government customers globally. These are all vital market research support solutions requiring trust and integrity.



## **Contents**

#### INDUSTRIAL ROBOT MARKET EXECUTIVE SUMMARY

Robot Market Driving Forces
Robots Bring A New Industrial Revolution
Industrial Robot Target Markets
Industrial Robots Third Wave Of Automated Process
Industrial Robot Market Shares
Industrial Robots Market Shares
Industrial Robot Market Forecasts

#### 1. INDUSTRIAL ROBOT DESCRIPTION AND MARKET DYNAMICS

- 1.1 Industrial Robot Markets
  - 1.1.1 Robots Make Production More Efficient
  - 1.1.2 Robots Find A Place in Industry
  - 1.1.3 Challenges to the Use Of Industrial Robots
- 1.2 Robots Achieve Reduced Labor Costs
- 1.3 Buggy Whips
- 1.3.1 Industrial Robots Promise To Replace 70 To 90% Of Existing Manufacturing Jobs
- 1.3.2 Industrial Robots In Auto Factories Multi-Tasking: Welding, Riveting, Bonding And Installing A Component
  - 1.3.3 Advent Of Low-Cost Automation
  - 1.3.4 Tesla's factory
  - 1.3.5 Everyone Will Have Access To A Personal Robot
- 1.4 Global Economy
  - 1.4.1 Robotics as Key Economic Enabler
  - 1.4.2 US Economy

#### 2. INDUSTRIAL ROBOTS MARKET SHARE AND MARKET FORECASTS

- 2.1 Robot Market Driving Forces
  - 2.1.1 Robots Bring A New Industrial Revolution
  - 2.1.2 Industrial Robot Target Markets
  - 2.1.3 Industrial Robots Third Wave Of Automated Process
- 2.2 Industrial Robot Market Shares
- 2.2.1 Industrial Robots Market Shares



- 2.2.2 ABB
- 2.2.3 Kuka
- 2.2.4 Fanuc
- 2.2.5 Denso
- 2.2.6 Kawasaki Robotics
- 2.2.7 Yaskawa
- 2.2.8 Mitsubishi Electric Corp.
- 2.2.9 Nachi Fujikoshi Corp.
- 2.2.10 Pari Robotics
- 2.2.11 Kuka / Reis Robotics
- 2.2.12 Automotive Robotics and Systems
- 2.2.13 Rockwell Automation
- 2.2.14 Schunk GmbH
- 2.2.15 Staubli International AG
- 2.2.16 Toshiba TM Robotics
- 2.2.17 Yamaha Robotics
- 2.2.18 Comau
- 2.2.19 Epson
- 2.2.20 Industrial Robot Market Share Segment Shipments by Cell Size
- 2.2.21 Industrial Robot Market Installed Base
- 2.2.22 General Industrial Robot Markets
- 2.2.23 Automotive Robot Market Shares
- 2.2.24 Systems Body-In-White Market Shares,
- 2.2.25 SCARA Industrial Robot Market Shares.
- 2.3 Industrial Robot Market Forecasts
  - 2.3.1 Industrial Robots Market Unit Forecasts
  - 2.3.2 Robotic Trends
- 2.4 Industrial Robots Market Segments
- 2.4.1 Industrial Robot Market Forecasts, Market Segments: Automotive, Body In White, Food, Beverages, Packaging, Metals, Heavy Machinery, Plastics And Rubber, And Solar / Other
  - 2.4.2 Automobile Industry Industrial Robots
  - 2.4.3 Robot Density in Automotive and General Industry
- 2.4.4 Industrial Robot Market Forecasts, Market Segments: Welding, Painting, Material Handling, Logistical, Packaging, Palletizing
  - 2.4.5 Industrial Paint Robots
  - 2.4.6 Industrial Paint Robot ROI
  - 2.4.7 Industrial Robot Market Forecasts, Market Segments: Welding Segments.
  - 2.4.8 Industrial Robot Market Forecasts, General Manufacturing and Other Segments



- 2.4.9 Industrial Robot Market Forecasts, Market Segments: Articulated, Cylindrical, Cartesian, And Scara
  - 2.4.10 Articulated Industrial Robots
  - 2.4.11 Industrial 6-Axis, 5-Axis, and 4-Axis SCARA Robots
  - 2.4.12 Cartesian Industrial Robots
  - 2.4.13 Advanced Industrial Robotics Market Penetration
  - 2.4.14 Industrial Robot Welding
  - 2.4.15 Yaskawa Motoman Robotic Welding and Cutting
  - 2.4.16 Industrial Robot Palletizing
  - 2.4.17 Robotics End User Trends
  - 2.4.18 Foxcomm Doubles Total Robotics Installed Base
  - 2.4.19 Industrial Robot Automated Material Handling
- 2.5 Industrial Robots ROI
- 2.6 Industrial Robots Pricing
- 2.7 Industrial Robots Regional Market Segments
  - 2.7.1 US
  - 2.7.2 Europe
  - 2.7.3 Asia Pacific
  - 2.7.4 Japan
  - 2.7.5 Japan
  - 2.7.6 Chinese Industrial Robots Market
  - 2.7.7 Leading Chinese Mainland Industrial Robot Players
  - 2.7.8 Chinese Industrial Robot Companies
  - 2.7.9 ABB Developing Markets Opportunities

#### 3. INDUSTRIAL ROBOT PRODUCT DESCRIPTION

- 3.1 Robotic Manufacturing Equipment
  - 3.1.1 ABB
  - 3.1.2 Kawasaki Robotics
  - 3.1.3 Kuka Automotive Production Complexity
  - 3.1.4 Yaskawa Motoman
  - 3.1.5 Fanuc
  - 3.1.6 Global Industrial Robotics Market Segmentation
- 3.2 ABB
  - 3.2.1 ABB Process Industry Control Robots
  - 3.2.2 ABB Comprehensive Range Of Robots
  - 3.2.3 ABB IRB 120 For Flexible And Compact Production
  - 3.2.4 ABB IRB 140



- 3.2.5 ABB IRB 140 Small, Powerful And Fast 6-Axes Robot
- 3.2.6 ABB IRB 6660 For Press Tending
- 3.2.7 ABB IRB 6650S Full Vertical And Horizontal Stroke Motion
- 3.2.8 ABB IRB 360 FlexPicker
- 3.2.9 ABB IRB 5500 FlexPainter
- 3.2.10 ABB IRB 5500 FlexPainter
- 3.2.11 ABB Material Handling Robots
- 3.2.12 ABB IRB 1200 Material Handling And Machine Tending
- 3.2.13 ABB Power IRB 7600 Built To Handle Work-Pieces Weighing 500 kg
- 3.2.14 ABB Symphony Plus
- 3.2.15 ABB IRB 2600ID Arc Welding
- 3.2.16 ABB IRB 1520ID Lean Arc Welder
- 3.2.17 ABB IRB Cost of Ownership Reductions
- 3.2.18 ABB YuMi
- 3.2.19 ABB YuMi Robotic Co-Worker
- 3.2.20 ABB Human Robot Collaboration
- 3.2.21 ABB Human Robot Collaboration
- 3.2.22 ABB YuMi Dual Arm Robots
- 3.3 Kuka Robots
  - 3.3.1 Kuka LBR IIWA
  - 3.3.2 Kuka LBR IIWA 7 R800
  - 3.3.3 Kuka LBR IIWA 7 R820
  - 3.3.4 Kuka KR 5 ARC
  - 3.3.5 Kuka KR 16 L6-2
  - 3.3.6 Kuka KR 5-2 ARC HW Specialist Arc Welding
  - 3.3.7 Kuka KR 16-2 F for Tasks In The Glass Industry
  - 3.3.8 Kuka KR 16-2 CF For Industry Including the Cleanroom
  - 3.3.9 Kuka KR 90 R2700 PRO (KR QUANTEC PRO)
  - 3.3.10 Kuka KR 40 PA Palletizing Robot
  - 3.3.11 Kuka 120 R3200 PA
  - 3.3.12 Kuka 1000 1300 TITAN PA
  - 3.3.13 Kuka 1000 L950 TITAN PA
  - 3.3.14 Kuka Customer Production Focus
  - 3.3.15 Kuka Robots in the Industry
  - 3.3.16 Kuka Robots in the Food Processing Industry
- 3.3.17 Kuka Automation in Agriculture
- 3.4 Fanuc
  - 3.4.1 Fanuc ARC Mate
  - 3.4.2 Fanuc LR Mate Series



- 3.4.3 Fanuc F-200iB
- 3.4.4 Fanuc M-1iA
- 3.4.5 Fanuc M-2iA
- 3.4.6 Fanuc M-3iA
- 3.4.7 Fanuc M-10iA
- 3.4.8 Fanuc M-20iA
- 3.4.9 Fanuc M-410iA
- 3.4.10 Fanuc M-410iC
- 3.4.11 Fanuc M-420iA
- 3.4.12 Fanuc M-430iA
- 3.4.13 Fanuc M-710iA
- 3.4.14 Fanuc M-900iA
- 3.4.15 Fanuc M-900iB
- 3.4.16 Fanuc M-2000iA
- 3.4.17 Fanuc Paint Robots
- 3.4.18 Fanuc R-1000iA
- 3.4.19 Fanuc R-2000iB
- 3.4.20 Fanuc R-2000iC
- 3.4.21 FANUC
- 3.4.22 Fanuc Vegetable Sorting Robot
- 3.4.23 FANUC Robodrill DiA5 Series
- 3.5 Denso Wave
  - 3.5.1 Denso HS-G Series
  - 3.5.2 Denso HM-G Series
  - 3.5.3 Denso VM-G Series
  - 3.5.4 Denso VS-G Series
  - 3.5.5 Denso New VS-G Series
  - 3.5.6 Denso VP-G Series
  - 3.5.7 Denso XR-G Series
- 3.6 Yaskawa Motoman
  - 3.6.1 Yaskawa Motoman Arc Welding Robots
  - 3.6.2 Yaskawa Motoman 7-Axis Robotic Welding Arm
  - 3.6.3 Yaskawa Motoman Spot Welding Robots
  - 3.6.4 Yaskawa Motoman Assembly Robots
  - 3.6.5 Yaskawa Motoman Material Cutting Robot
  - 3.6.6 Yaskawa Motoman Die Casting Robots
  - 3.6.7 Yaskawa Motoman Dispensing Robots
  - 3.6.8 Yaskawa Motoman Machining Robots
  - 3.6.9 Yaskawa Motoman Material Removal Robots



- 3.6.10 Yaskawa Motoman Press Tending Robots
- 3.6.11 Yaskawa Motoman Robots for Warehouse Distribution Centers
- 3.6.12 Yaskawa Motoman Machine Tending Robots
- 3.6.13 Yaskawa Motoman Robotic Palletizer Models
- 3.6.14 Yaskawa Motoman Part Transfer Robots
- 3.6.15 Yaskawa Motoman Robots for Primary and Secondary Packaging
- 3.6.16 Yaskawa Motoman Clinical Lab Robots
- 3.6.17 Yaskawa Motoman Analytic Specimen Capabilities
- 3.6.18 Yaskawa Motoman AutoSorter
- 3.6.19 Yaskawa Motoman Painting Robots
- 3.6.20 Yaskawa Motoman Robot Painting to Specifications
- 3.7 Staubli Robotics: Innovative SCARA and 6-Axis Robots And Software Solutions
  - 3.7.1 Staubli TP80 Fast Picker Robot
  - 3.7.2 Staubli TS40 SCARA robot
  - 3.7.3 Staubli TS60 SCARA robot
  - 3.7.4 Staubli TS80 SCARA robot
  - 3.7.5 Staubli TX40 6-Axis Industrial Robot
  - 3.7.6 Staubli TX2-40 6-Axis Industrial Robot
  - 3.7.7 Staubli TX60 6-Axis Industrial Robots
  - 3.7.8 Staubli TX2-60 6-Axis Industrial Robots
  - 3.7.9 Staubli TX90 6-Axis Industrial Robot
  - 3.7.10 Staubli TX2-90 6-Axis Industrial Robot
  - 3.7.11 Staubli RX160 6-Axis Industrial Robot
  - 3.7.12 Staubli TX200 6-Axis Heavy Payload Robot
  - 3.7.13 Staubli TX340 SH Industrial Robot
  - 3.7.14 Staubli Painting Robots
- 3.8 Logistics Services Robots
  - 3.8.1 Amazon Kiva Mobile-Robotic Fulfillment System
- 3.8.2 Swisslog WarehouseRunner for Storage and Retrieval: Increase Efficiency

### Throughout the Warehouse

- 3.8.3 C&D Robotics ATL Automatic Truck Loading
- 3.8.4 Motoman Robotic Truck Unloading and Mixed-Case Depalletizing
- 3.8.5 Yaskawa Motoman Packaging
- 3.8.6 Yaskawa Motoman Palletizing
- 3.9 Adept Technology Inc.
  - 3.9.1 Adept SCARA Robot Adept Cobra ePLC800 Inverted SCARA 4-Axis Robot
  - 3.9.2 Adept Parallel Robot (Delta Robot): Adept Quattro ePLC800H
  - 3.9.3 Adept Six-Axis Robot Adept Viper ePLC850
  - 3.9.4 Adept Linear Modules Adept Python



- 3.10 Aurotek Corp.
  - 3.10.1 Aurotek Automation & Robotics
  - 3.10.2 Aurotek Actuator
  - 3.10.3 Aurotek Motion Controller
- 3.11 Axium Inc.
  - 3.11.1 Axium Palletizing Solutions Axium IxOFlex Scalable
  - 3.11.2 Axium IxOFlex T Tissue Palletizing Solution
  - 3.11.3 Axium EOP End of Press Robotic Palletizing
  - 3.11.4 Axium RRFlex Rail Mounted Palletizing Solution
  - 3.11.5 Axium ROP Mixed Load Palletizing
  - 3.11.6 Axium WrapBotic Palletizing and Wrapping Solution For Unstable Loads
- 3.11.7 Axium Depalletizing Solutions: Axium DP500 Sorter Robotic Folding Carton Sorter
  - 3.11.8 Axium DP240 Layer Depalletizer
  - 3.11.9 Axium DP500 Feeder Robotic Folding Carton Feeder
- 3.11.10 Axium CIS Case Measuring & Inspection System
- 3.11.11 Axium Case Packing Solutions: Axium BD-X-65 Tissue Box Collating Solution
  - 3.11.12 Axium CP-4X Case Packer 4 axis
  - 3.11.13 Axium CP-6X Case Packer 6 Axis
  - 3.11.14 Axium MP900 Mixed Case Packing
- 3.12 Daihen Corp.
  - 3.12.1 Daihen FD-V6 STANDARD ARC WELDING ROBOT
  - 3.12.2 Daihen FD-V6L Long Reach Arc Welding Robot
  - 3.12.3 Daihen FD-B4 Through-Arm Cable ARC Welding Robot
- 3.12.4 Daihen FD-B4L EXTENDED REACH THROUGH-ARM CABLE ARC WELDING ROBOT
- 3.12.5 Daihen FD-H5 Compact ARC Welding Robot
- 3.12.6 Daihen FD-V20 LONG REACH ARC WELDING ROBOT
- 3.13 Ellison Technologies.
  - 3.13.1 Ellison Bulk Mail Handling
  - 3.13.2 Ellison Robot Swing Boom
  - 3.13.3 Ellison Tilt/Rotate Table
  - 3.13.4 Ellison Headstock/Tailstock
  - 3.13.5 Ellison Index Tables
  - 3.13.6 Fanuc/Ellison Vision
  - 3.13.7 Ellison Gripper Systems
- 3.14 Mitsubishi Electric Corp.
- 3.14.1 Mitsubishi Vertical Type Robots



- 3.15 Nachi Fujikoshi Corp.
  - 3.15.1 Nachi SRA100/166/210/166L/120EL
  - 3.15.2 Nachi SRA166/210-01A
  - 3.15.3 Nachi SRA100H/SRA133HL
  - 3.15.4 Nachi SRA100B/100J
  - 3.15.5 Nachi Arc Welding NB/NV Series
  - 3.15.6 Nachi SC series SC700
  - 3.15.7 Nachi SC series SC500
  - 3.15.8 Nachi SC series SC400L
  - 3.15.9 Nachi MC350/MC280/MC470P
  - 3.15.10 Nachi SC series SC400LC
  - 3.15.11 Nachi ST133CF/166CF/210CF-01
  - 3.15.12 Nachi SJ80C-18D/24D, SJ120C-28D/28S
  - 3.15.13 Nachi Compact and Super Fast Robot MZ04
  - 3.15.14 Nachi MZ07 the World's Fastest Lightweight, Compact Robot
  - 3.15.15 Nachi ST210TP
  - 3.15.16 Nachi LP130/180/210-01
  - 3.15.17 Nachi MR35/50
  - 3.15.18 Nachi MR20/20L
  - 3.15.19 Nachi MC35/50/70
  - 3.15.20 Nachi MC20/MC10L
  - 3.15.21 Nachi MC12S
  - 3.15.22 Nachi SRA100/166/210/166L/120EL
- 3.16 Epson Robots
- 3.17 Pari Robotics
  - 3.17.1 Pari Gantry Robots
  - 3.17.2 Pari Portal Robots
  - 3.17.3 Pari Robot Transporters
- 3.18 Reis Robotics
  - 3.18.1 Reis VERTICAL ARTICULATED ARM
  - 3.18.2 Reis Linear Kinematics
  - 3.18.3 Reis Horizontal Articulated Arm
  - 3.18.4 Reis Hybrid Kinematics
  - 3.18.5 Reis ROBOTSTAR VI THE STAR AMONG ROBOT CONTROLS
- 3.19 Rockwell Automation Inc.
  - 3.19.1 Rockwell Robotic Solutions
  - 3.19.2 Rockwell Packaging
  - 3.19.3 Rockwell Cartoner
  - 3.19.4 Rockwell Case Packer



- 3.19.5 Rockwell Horizontal Flow Wrapper
- 3.19.6 Rockwell Vertical Form, Fill & Seal
- 3.19.7 Rockwell Material Handling
- 3.19.8 Rockwell Conveyors
- 3.19.9 Developments by Cisco and Rockwell Automation
- 3.19.10 Rockwell Palletizing
- 3.19.11 Rockwell Sortation
- 3.19.12 Rockwell Factory Machines
- 3.20 Schunk GmbH
  - 3.20.1 SCHUNK Mobile Gripping Systems.
  - 3.20.2 SCHUNK Clamping Technology
  - 3.20.3 SCHUNK Gripping Systems
- 3.21 Toshiba Machine TM Robotics
  - 3.21.1 Toshiba Machine TM SCARA THP550
  - 3.21.2 TM SCARA THP700
  - 3.21.3 TM SCARA TH1050A
  - 3.21.4 TM SCARA THL1000
- 3.22 Yamaha Robotics
  - 3.22.1 Yamaha YK600XGL
  - 3.22.2 Yamaha YK500TW
  - 3.22.3 Yamaha YK1200X
  - 3.22.4 Yamaha YK1000XGS
  - 3.22.5 Yamaha YK1000XC
- 3.23 Kawasaki Robotics
- 3.24 Universal Robots
- 3.25 MIT Autonomous Gardener Equipment Mounted On The Base of a Roomba

#### 4. INDUSTRIAL ROBOT TECHNOLOGY

- 4.1 SCARA Robots
- 4.1 Nanotechnology
- 4.2 Sensor Technology
  - 4.2.1 Robot System Architecture
  - 4.2.2 Automation Technology Replaces Manual Labor Tasks
  - 4.2.3 Behavior-Based Robotics
  - 4.2.4 Proprietary Sensor Technology
  - 4.2.5 System Design & Architecture
- 4.3 Welding Robots
- 4.4 Material Handling Robots:



- 4.5 Painting Robots
  - 4.5.1 Paint Robots
- 4.6 Plasma Cutting Robots:
- 4.7 Robotic Assistants: Co-Robots
- 4.7.1 Low-Cost Robots Baxter, UR5 and UR10 for Small And Medium Business (SMEs)
- 4.8 Industrial Robots Degrees-Of-Freedom
  - 4.8.1 Motion characteristics
  - 4.8.2 Continuous Path Robots
  - 4.8.3 Accuracy and repeatability
- 4.9 Robotics and Automation Scope and Standards
  - 4.9.1 Use Of Standard Industrial Robots
  - 4.9.2 IEEE Standards Initiatives Affecting Industrial Robots

#### **5 ROBOT COMPANY DESCRIPTION**

- 5.1 ABB Robotics
  - 5.1.1 ABB and IO Deliver Direct Current-Powered Data Center Module
  - 5.1.2 ABB / Validus DC Systems DC Power Infrastructure Equipment
  - 5.1.3 ABB Technology
  - 5.1.4 ABB Global Lab Power
  - 5.1.5 ABB Global Lab Automation
  - 5.1.6 ABB Strategy
  - 5.1.7 ABB Global Leader In Power And Automation Technologies
  - 5.1.8 ABB Power Products
  - 5.1.9 ABB Power Systems
  - 5.1.10 ABB Customers
  - 5.1.11 ABB Partners
  - 5.1.12 ABB Discrete Automation and Motion
  - 5.1.13 ABB Low Voltage Products
  - 5.1.14 ABB Process Automation
- 5.2 Adept Technology
  - 5.2.1 Adept Technology Leading Provider Of Intelligent Vision-Guided Robotics
- 5.3 American Robot Corporation
- 5.4 Anhui Efort Intelligent Equipment
- 5.5 Apex Automation
- 5.6 Arotech
  - 5.6.1 Arotech's Power Systems Division (APSD)
- 5.7 Apex Automation and Robotics



- 5.8 Association for Advancing Automation (A3)
- 5.9 Aurotek
  - 5.9.1 Aurotek's Training and Simulation Division (ATSD)
  - 5.9.2 Aurotek Target Markets
- 5.10 Axium
- 5.11 BAE Systems
  - 5.11.1 BAE Systems Organization
  - 5.11.2 BAE Systems Performance
  - 5.11.3 BAE Systems Key Facts
  - 5.11.4 BAE Systems Strategy
  - 5.11.5 BAE Systems Operational Framework
  - 5.11.6 Key Performance Indicators (KPIs)
  - 5.11.7 BAE Systems Risk Management
- 5.12 Changzhou Mingseal Robotic Technology
- 5.13 Daimler AG/Mercedes-Benz
  - 5.13.1 Daimler AG Revenue
- 5.14 Denso Wave
  - 5.14.1 Denso Development Network
- 5.15 DJI Innovation
- 5.16 DMG Mori Ellison Technologies
- 5.16.1 DMG Mori Ellison Technologies Brings Mastery Of Advanced Manufacturing Technology
- 5.17 Durr
- 5.18 EBZ
- 5.19 ECA Robotics
- 5.20 Elbit Systems
  - 5.20.1 Elbit Systems Principal Market Environment
  - 5.20.2 Elbit Systems
- 5.21 Epson
  - 5.21.1 Epson Automation on Assembly Lines Using Robots
- 5.22 Evatran Group
- 5.23 Fanuc
  - 5.23.1 FANUC Corporation
  - 5.23.2 Fanuc Revenue
  - 5.23.3 Fanuc Joint Venture With General Electric in the FA field
- 5.24 Fiat / Comau
- 5.25 Fuji Heavy Industries
  - 5.25.1 Subaru Automotive Business
  - 5.25.2 Subaru of America



- 5.26 GSK
- 5.27 Harbin BOSHI Automation
- 5.28 Harbin Haier & HIT Robot Technology
- 5.29 Harmonic Drive Systems
  - 5.29.1 Applications for Harmonic Drive products:
  - 5.29.2 Harmonic Drive Servo Actuators
  - 5.29.3 Harmonic Drive Gearheads
  - 5.29.4 Harmonic Planetary Gearhead
- 5.30 HuaHeng Welding
- 5.31 Hyundai Heavy Industries
- 5.32 International Federation of Robotics (IFR)
- 5.33 Kawasaki Robotics
- 5.34 Kuka
  - 5.34.1 KUKA Dominant Customer Segment, Automotive Industry
  - 5.34.2 Kuka Revenue
  - 5.34.3 Kuka Competition
  - 5.34.4 Kuka Innovative Technology
  - 5.34.5 Kuka Well Positioned With A Broad Product Portfolio In Markets With Attractive

#### **Growth Prospects**

- 5.34.6 Kuka Strategy
- 5.34.7 Kuka Corporate Policy
- 5.34.8 Kuka Customers
- 5.34.9 KUKA Acquires 51% of Reis Robotics
- 5.34.10 Kuka Positioning in Robotics and Systems
- 5.35 MESNAC
- 5.36 Mitsubishi
  - 5.36.1 Mitsubishi Electric Corp.
- 5.37 Nabtesco
- 5.38 Nachi Fujikoshi Corp.
  - 5.38.1 Nachi Fujikoshi Business
- 5.39 National Institute of Standards and Technology
- 5.40 Osaka Transformer Company OTC / Daihen
  - 5.40.1 Daihen Innovative Technology
  - 5.40.2 Daihen
- 5.41 Panasonic
  - 5.41.1 Sanyo
  - 5.41.1 SANYO 2011 Sales Of Solar Photovoltaic Systems
  - 5.41.2 Panasonic / Sanyo Solar Ark
  - 5.41.3 Panasonic /Sanyo Solar Stone Brewing Company Reference Account



- 5.41.4 Panasonic / Sanyo Solar LumenHAUS Reference Account
- 5.41.5 I nSpec / SANYO
- 5.41.6 SANYO and InSpec Group Partnership Generates Multiple Solar Installations in

## Oregon

- 5.42 Pari Robotics
- 5.43 Pedsco
- 5.44 Re2, Inc
  - 5.44.1 Re Leading Developer
  - 5.44.2 Re2 Forerunner High Speed Inspection Robot
  - 5.44.3 Re2 ForeRunner RDV
  - 5.44.4 Re2 HST High-Speed Teleoperation
- 5.45 ReconRobotics
  - 5.45.1 ReconRobotics Tactical, Micro-Robot Systems
- 5.46 Reis Robotics
- 5.46.1 Reis Robotics Foundry Systems, Laser Applications, Arc Welding, And

## **Photovoltaics**

- 5.46.1 Reis Robot Systems And Process-Oriented System Solutions
- 5.47 Rethink Robotics
- 5.48 Robosoft
- 5.49 Robotic Industries Association (RIA)
- 5.50 Rockwell Automation
  - 5.50.1 Rockwell Automation Operating Segments
  - 5.50.2 Rockwell Automation Long-term Strategy
  - 5.50.3 Rockwell Automation Acquisitions
  - 5.50.4 Rockwell Automation Profile
- 5.51 Schunk GmBH
- 5.52 Shanghai STEP Electric
  - 5.52.1 Step Industrial Automation, Electric Drive, Energy, And Environmental

#### Protection

- 5.53 Shenzhen Jasic Technology
  - 5.53.1 Jasic Integrated Welding Solution Provider
  - 5.53.2 Jasic Integrated Welding Solution Target Markets
  - 5.53.3 Jasic Integrated Welding Solutions
- 5.54 Shibuya Seiki
  - 5.54.1 Shibuya Kogyo Pharmaceutical Application Examples
  - 5.54.2 Shibuya Kogyo Robotic System For Handling Soft Infusion Bags
  - 5.54.3 Shibuya Kogyo Robotic Cell Culture System "CellPRO"
  - 5.54.4 Shibuya Kogyo Robotic System For Leaflet & Spoon Placement
  - 5.54.5 Shibuya Kogyo Robotic Collating System



## 5.54.6 Shibuya Kogyo Automated Aseptic Environmental Monitoring System

- 5.55 SDR Tactical Robot
- 5.56 SIASUN Robot & Automation
- 5.57 Staubli
  - 5.57.1 Staubli Industrial Robots
  - 5.57.2 Staubli Controllers
  - 5.57.3 Staubli Software
  - 5.57.4 Typical applications of Staubli robots
  - 5.57.5 Staubli International AG
- 5.58 Tangshan Kaiyuan Group / Tangshan Kaiyuan Welding (TKSW)
- 5.59 Thyssen
- 5.60 Toshiba
  - 5.60.1 Toshiba Machine
  - 5.60.2 TM Robotics Europe
  - 5.60.3 TM Robotics Americas
- 5.61 Universal Robots
- 5.62 VDE
- 5.63 Yamaha
  - 5.63.1 Yamaha Robotics
- 5.64 Yaskawa
  - 5.64.1 Yaskawa Revenue
  - 5.64.2 Yaskawa Business
  - 5.64.3 YASKAWA Electric Motion Control
  - 5.64.4 YASKAWA Electric Robotics
  - 5.64.5 YASKAWA Electric System Engineering
  - 5.64.6 YASKAWA Electric Information Technology
  - 5.64.7 Yaskawa / Motoman
  - 5.64.8 Yaskawa Motoman
- 5.65 Selected Robot Companies
  - 5.65.1 Selected Robot Companies



## **List Of Tables**

#### LIST OF TABLES AND FIGURES

Figure ES-1 ABB IRB 140 Industrial Robot

Figure ES-2 Kuka Industrial Robot

Table ES-3 Robots Poised To Change Manufacturing Economics

Table ES-4 Robots Bring A New Industrial Revolution

Table ES-5 Industrial Robot Target Markets

Table ES-6 Industrial Robotic Market Opportunity

Table ES-7 Industrial Robot Market Challenges

Table ES-8 Industrial Robot Technical Challenges

Table ES-9 Industrial Robot Market Driving Forces

Table ES-10 Industrial Robot Market Shares, Dollars, Worldwide, 2014

Figure ES-11 Industrial Robot Market Forecasts, Dollars, Worldwide, 2015-2021

Table 1-1 Aspects of Manufacturing Sector Modernization

Figure 1-2 Industrial Robots in Auto Factories Multi-Tasking: Welding, Riveting, Bonding And

Figure 1-3 Differences in Global Demand for Electrification Developed vs.

**Underdeveloped Economies** 

Table 1-4 Critical Capabilities In Robotics Needed To Take Robotics To The

Figure 1-5 Global Demand for Productivity and Energy Efficiency Driving Robot Markets

Figure 1-6 ABB Developed and Emerging Market Robot Perspective

Figure 2-1 ABB IRB 140 Industrial Robot

Figure 2-2 Kuka Industrial Robot

Table 2-3 Robots Poised To Change Manufacturing Economics

Table 2-4 Robots Bring A New Industrial Revolution

Table 2-5 Industrial Robot Target Markets

Table 2-6 Industrial Robotic Market Opportunity

Table 2-7 Industrial Robot Market Challenges

Table 2-8 Industrial Robot Technical Challenges

Table 2-9 Industrial Robot Market Driving Forces

Table 2-10 Industrial Robot Market Shares, Dollars, Worldwide, 2014

Table 2-11 Industrial Robot Market Shares, Dollars, Worldwide, 2014

Figure 2-12 Kuka Positioning in Automotive Robotics and Systems

Table 2-13 Industrial Robot Market Segment Shipments by Cell Size, Low End,

Table 2-14 Industrial Robot Market Segment Shipments by Work Cell Size, Low

Table 2-15 Industrial Robot Market Installed Base Shares, Number of Robot Cells,

Figure 2-16 Articulated Robot Sales



Table 2-17 General Industrial Robot Market Shares, Market Shares, Dollars, Worldwide, 2014

Table 2-18 Automotive Robot Market Shares, Dollars, Worldwide, 2014

Table 2-19 Systems Body-In-White Market Shares, Market Shares, Dollars, Worldwide, 2014

Table 2-20 SCARA Industrial Robot Market Shares, Dollars, Worldwide, 2014

Figure 2-21 Industrial Robot Market Forecasts, Dollars, Worldwide, 2015-2021

Table 2-22 Industrial Robot Market Forecasts, Worldwide, 2015-2021

Table 2-23 Industrial Robot Market Totals, Shipped Units and Dollars, Average Cost

Table 2-24 Industrial Robot Market Forecasts, Units, Worldwide, 2015-2021

Figure 2-25 Robotics Market Growing by 22,000 Units in 2012

Table 2-26 Industrial Robotic Trends

Table 2-27 Industrial Robot Market Forecasts, Market Segments: Automotive, Body in White,

Table 2-28 Industrial Robot Market Forecasts, Market Segments: Automotive, Body in White,

Figure 2-29 Global Automotive Production

Table 2-30 Industrial Robot Market Forecasts, Welding, Painting, Material Handling, Logistical, Packaging,

Table 2-31 Industrial Robot Market Forecasts, Market Segments: Welding, Painting, Material Handling,

Table 2-32 Industrial Robot Market Forecasts, Market Segments: Welding Segments, Dollars, Worldwide,

Table 2-33 Industrial Robot Market Forecasts, Market Segments: Welding Segments, Percent, Worldwide,

Table 2-34 Industrial Robots General Manufacturing and Other Segments

Table 2-35 Industrial Robot Market Forecasts, Market Segments: Articulated,

Cylindrical, Cartesian, and

Table 2-36 Industrial Robot Market Forecasts, Market Segments: Articulated,

Cylindrical, Cartesian, and

Figure 2-37 Market Potential for Industrial Robots

Figure 2-38 Articulated Robot Sales

Figure 2-39 Robot Strategy: Increased Share In General Industry

Figure 2-40 Global Sales of Industrial Robots

Figure 2-41 Industrial Automation Market Opportunity

Figure 2-42 Global Automotive Production

Figure 2-43 Robotics Market Growing by 22,000 Units

Table 2-44 Countries That Are Fast Adopters Of Technology And Advanced Industrial

Table 2-45 Yaskawa Motoman Robotic Welding Functions



Table 2-46 Industrial Robotic Automated Palletizing Platform Functions

Table 2-47 Robotic Palletizer Features And Benefits:

Figure 2-48 Robotics End User Trends

Table 2-49

Figure 2-50 Industrial Robot Welder

Table 2-51 Advantages of Robot Welding Over Manual Welding

Figure 2-52 Cycle Time Market Potential for Industrial Robots

Figure 2-53 Industrial Robot Regional Market Segments, Dollars, 2014

Table 2-54 Industrial Robot Regional Market Segments, 2014

Table 2-55 Industrial Robotic Market Factors for Accelerated Growth in North America

Figure 2-56 Chinese Industrial Robots

Figure 2-57 Chinese Vendor Growing Force in Industrial Robot Markets

Figure 2-58 Mainland China Industrial Robot

Figure 3-1 Robot Based Assembly

Figure 3-2 Automotive Production Complexity

Table 3-3 Global Industrial Robotics Market Segmentation

Figure 3-4 ABB Remote Service of Factories

Figure 3-5 ABB IRB 120

Figure 3-6 ABB IRB 140

Table 3-7 ABB IRB 6660 Press Tending Industrial Robot Features

Table 3-8 ABB IRB 6660 for Press Tending Benefits

Figure 3-9 ABB IRB 6650S Full Vertical And Horizontal Stroke Motion

Table 3-10 ABB IRB 6650S Features

Figure 3-11 ABB IRB 360 FlexPicker

Table 3-12 ABB FlexPainter IRB 5500 Benefits

Figure 3-13 ABB IRB 5500 - FlexPainter

Table 3-14 ABB FlexPainter IRB 5500 Non-Batch Painting And Multiple Colors Benefits

Figure 3-15 ABB Material Handling Robots

Figure 3-16 ABB FlexPicker

Figure 3-17 ABB IRB 7600

Figure 3-18 ABB Welding Robots

Figure 3-19 ABB IRB 2600ID Arc Welding

Table 3-20 ABB IRB 2600ID Industrial Robot High Output Applications

Figure 3-21 ABB IRB 1520ID Lean Arc Welder

Figure 3-22 ABB YuMi

Table 3-23 ABB Collaborative Robotic Co-Worker YuMi Functions

Figure 3-24 ABB Human - Robot Collaboration

Figure 3-25 ABB Human - Robot Collaboration

Table 3-26 ABB YuMi Robot Functions



Table 3-27 ABB YuMi Collaborative, Dual-Arm Small Parts Assembly Robot Functions

Figure 3-28 ABB Cross Division Collaboration

Figure 3-29 Kuka Line of Industrial Robots

Table 3-30 Kuka Industrial Robot Innovations

Table 3-31 Kuka Competitive Advantage

Figure 3-32 Kuka LBR IIWA 7 R800

Figure 3-33 Kuka LBR IIWA 7 R820 Robots Used In The Vicinity

Figure 3-34 Kuka KR 5 ARC

Figure 3-36 Kuka KR 5-2 ARC HW Specialist Arc Welding

Figure 3-37 Kuka KR 16-2 F for Tasks In The Glass Industry

Figure 3-38 Kuka KR 16-2 CF For Industry Including the Cleanroom

Figure 3-39 Kuka Quantec

Figure 3-40 KukaSize and Versatility Advantages of Quantec Industrial Robot

Figure 3-41 Kuka KR 40 PA Palletizing Robot

Figure 3-42 Kuka 1000 1300 TITAN PA

Figure 3-43 Kuka 1000 L950 TITAN PA

Figure 3-44 Kuka Customer Production Focus

Figure 3-45 Kuka Automotive Stages of Implementation

Figure 3-46 Kuka US Auto Initiatives

Figure 3-47 Kuka Product Strategy

Figure 3-48 Kuka Robots

Figure 3-49 Kuka Material Handling Robots

Figure 3-50 Kuka Industry Standard Robots Used in Agriculture

Figure 3-51 Kuka Welding Robots in the Industry

Figure 3-52 Kuka Robots in Industry

Figure 3-53 Kuka Robots in the Food Processing Industry

Figure 3-54 Kuka Robots

Figure 3-55 Kuka Plasma Cutting Robot

Figure 3-56 FANUC Pick-And-Place Robot

Figure 3-57 Fanoc Robotic Manufacturing Technology

Figure 3-58 Robotic Manufacturing

Figure 3-59 Fanuc Robot Factories

Figure 3-60 Fanuc M-3iA Robots Sorting Boxes

Figure 3-61 FANUC Robodrill DiA5 Series

Figure 3-62 FANUC Welding Robots

Figure 3-63 FANUC Material Handling Robots

Figure 3-64 FANUC Plasma Cutting Robot

Figure 3-65 Denso Wave Industrial Robot Categories

Figure 3-66 Yaskawa Motoman Robots



Figure 3-67 Staubli 4-Axis And 6-Axis Robots

Figure 3-68 Staubli TP80 Fast Picker Robot 540 3.8 Logistics Services Robots

Figure 3-69 Motoman Robots Pick, Pack, and Palletize

Figure 3-70 Yaskawa Motoman Picking

Figure 3-71 Yaskawa Motoman Packaging

Figure 3-72 Yaskawa Motoman Palletizing

Figure 3-73 Motoman Partners in Logistics and Warehousing

Figure 3-74 Epson Industrial Robots

Table 3-76 Kawasaki Industrial Robot Applications:

Figure 3-77 Universal Robots UR3

Table 78 Universal Robots Applications

Figure 3-79 MIT Smart Gardener Robot

Figure 4-1 Technological Innovation in Industrial Robots

Table 4-2 Sensor Technology Functions

Table 4-3 Robot System Architecture

Table 4-4 Proprietary Sensor Technology

Table 4-5 System Design & Architecture

Figure 4-6 Tracks Followed By The Atomiser In The Engine Compartment Of

Figure 4-7 EcoBell 2 HD Atomiser

Table 4-8 Tight Scientific Collaboration Between Different Disciplines

Figure 5-1 Key Facts ABB Robotics

Table 5-2 ABB Product Launches

Figure 5-3 ABB Technology and Innovation

Table 5-4 ABB Global Lab Target Technologies

Figure 5-5 ABB PetroChemical Customer

Figure 5-6 ABB Disruptive Technologies

Figure 5-7 ABB Data Center Efficiency

Table 5-8 ABB's Global Lab Automation Target Solutions

Table 5-9 ABB Active Current Research Areas

Figure 5-10 Driving PIIE IN Utilities, Industry and Transport

Figure 5-11 ABB Division Structure and Portfolio

Figure 5-12 ABB Power Systems

Figure 5-13 ABB In Oil, Gas, and Chemicals

Figure 5-14 ABB Discrete Automation and Motion

Figure 5-15 ABB Process Automation

Table 5-15 Adept Technology Fiscal 2014 Segments With Increase In The Robotics

Table 5-16 Apex Automation and Robotics Customer Base

Table 5-17 Apex Automation and Robotics Positioning

Table 5-18 Axium Target Markets



Table 5-19 BAE Systems Company Positioning

Figure 5-20 BAE Systems Strategy

Table 5-21 BAE Systems Standards

Table 5-22 ECA Robotics Range Of Products

Table 5-23 Elbit Systems Activities:

Table 5-24 Elbit Systems Activities:

Figure 5-25 Fanuc Welding Robot

Figure 5-26 Fanuc Industrial Robots

Figure 5-27 Fanuc Global Network

Figure 5-28 Fanuc's Organization

Figure 5-29 Fanuc Revenue

Figure 5-30 Fanuc Revenue

Figure 5-31 Fiat / Comau Body Welding

Figure 5-32 Fuji Industrial Robots

Figure 5-32 Kuka Vision for Expansion of Robotic Markets

Figure 5-33 Kuka Customers

Figure 5-34 Kuka Regional (10) and Segment (7) Focus

Figure 5-35 Kuka Positioning with Smart Tools

Figure 5-36 Kuka Positioning in Robotics and Systems

Table 5-37 Mitsubishi Electric FA Core Competencies

Figure 5-38 Nabtesco Cycloidal Gearbox

Figure 5-39 Nabtesco Cycloidal Gearboxes

Table 5-40 NACHI-FUJIKOSHI Group Management Policies

Figure 5-41 Nachi Fujikoshi Tools And Bearing Based On Its Quality Materials

Figure 5-42 Nachi Fujikoshi Manufacturing Process Assembly - Machining Division Priorities

Table 5-43 Nachi Fujikoshi Robot Market Sectors

Table 5-44 NIST Performance Measurements

Figure 5-45 Panasonic / Sanyo Solar HIT Garage Roof Panels

Figure 5-46 Panasonic / Sanyo Solar HIT Roof Panels

Figure 5-47 Panasonic / Sanyo Solar HIT Panels

Figure 5-47 Re Core Technologies

Figure 5-48 Re Unmanned Ground Vehicles

Figure 5-49 Re Forerunner Key Features

Figure 5-50 Re2 Open Architecture for Robots

Table 5-51 Rockwell Automation Long-term Strategy Positioning

Figure 5-52 Step Industrial Automation

Table 5-53 Jasic Integrated Welding Solution Target Markets

Figure 5-54 Jasic Integrated Welding Solutions



Table 5-55 Shibuya Kogyo Robotic System

Figure 5-56 Shibuya Kogyo Robotic System For Leaflet & Spoon Placement

Figure 5-57 Shibuya Kogyo Robotic Collating System

Figure 5-58 Shibuya Kogyo Automated Aseptic Environmental Monitoring System

Table 5-56 Typical Applications of Staubli Robots

Table 5-57 Target Markets for Staubli Robots

Table 5-58 Staubli Product Range Of Robots

Figure 5-59 Universal Industrial Robot

Figure 5-60 UC Davis Using Yahama Helicopter Drones For Crop Dusting

Figure 5-61 Yamaha Crop Dusting Initiatives

Figure 5-62 YASKAWA Electric Group Businesses



#### I would like to order

Product name: Industrial Robot Market Shares, Strategies, and Forecasts, Worldwide, 2015-2021

Product link: https://marketpublishers.com/r/ID1FE417DE9EN.html

Price: US\$ 4,000.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer

Service:

info@marketpublishers.com

## **Payment**

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <a href="https://marketpublishers.com/r/ID1FE417DE9EN.html">https://marketpublishers.com/r/ID1FE417DE9EN.html</a>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:	
Last name:	
Email:	
Company:	
Address:	
City:	
Zip code:	
Country:	
Tel:	
Fax:	
Your message:	
	**All fields are required
	Custumer signature

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <a href="https://marketpublishers.com/docs/terms.html">https://marketpublishers.com/docs/terms.html</a>

To place an order via fax simply print this form, fill in the information below and fax the completed form to +44 20 7900 3970