



KUKA



KUKA AG

Automatica 2012

Dr. Till Reuter, CEO

May 22, 2012

Global mega trends

Robotics benefiting from global mega trends

Automation in industrialized countries

Sustainability

Automation in emerging markets

Increasing wage levels

Demographic changes



Growth of robot-based automation

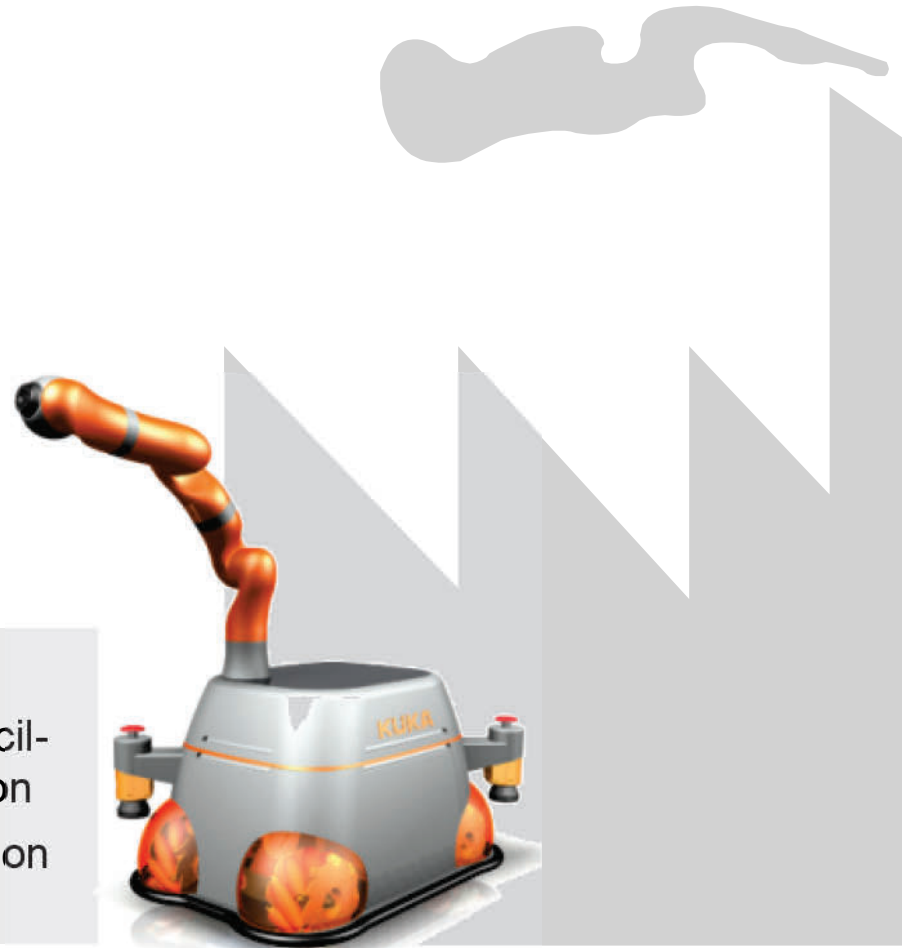
Mega trend: industrialized countries

Focus on general industry and smaller companies

Mega trend 1
Increasing
automation in
industrialized
countries

Solutions from KUKA

- Lightweight robot and small robots (Agilus) facilitate implementation of robot-based automation
- KUKA software has a broad range of application (automation becomes easy)



Mega trend: sustainability

KUKA supplies solutions for lightweight construction



Mega trend 2
Sustainability

Solutions from KUKA

- KUKA makes more efficient production of carbon fibers possible
- KR Quantec with 30% lower energy consumption

Mega trend: emerging countries

KUKA is automotive market leader in China

Mega trend 3

Increasing automation in emerging markets



Solutions from KUKA

- KUKA is market leader in automotive; automotive is one of the first industries to implement robot-based automation
- Automation is the solution to balance increasing quality demands and rising costs in emerging markets



Mega trend: labor costs

KUKA supplies solutions for increasing productivity



Mega trend 4
Rising
labor costs

Solutions from KUKA

- KUKA has 35 years of experience in robot-based automation
- Trend towards the relocation of capacities from emerging markets to industrialized countries

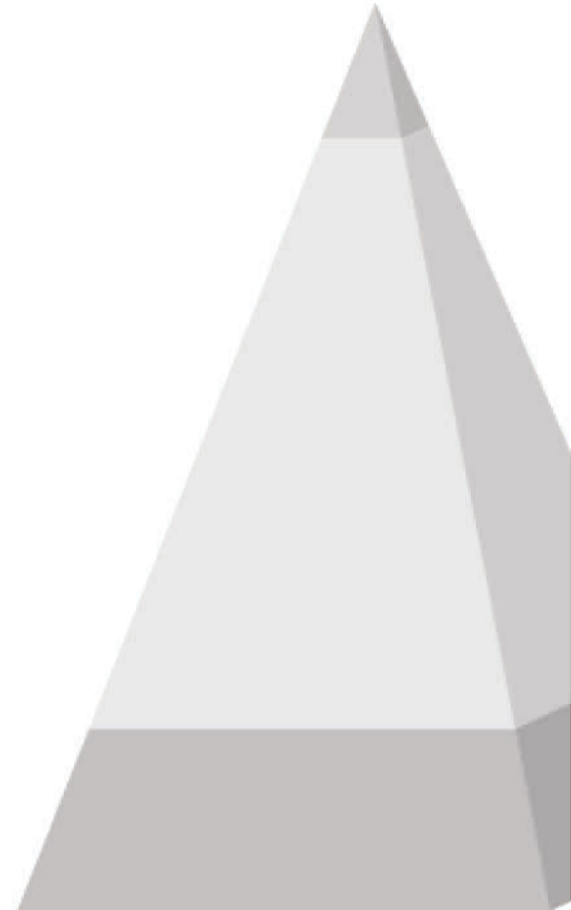
Mega trend: demography

KUKA promotes human-machine collaboration

Mega trend 5
Demographic changes

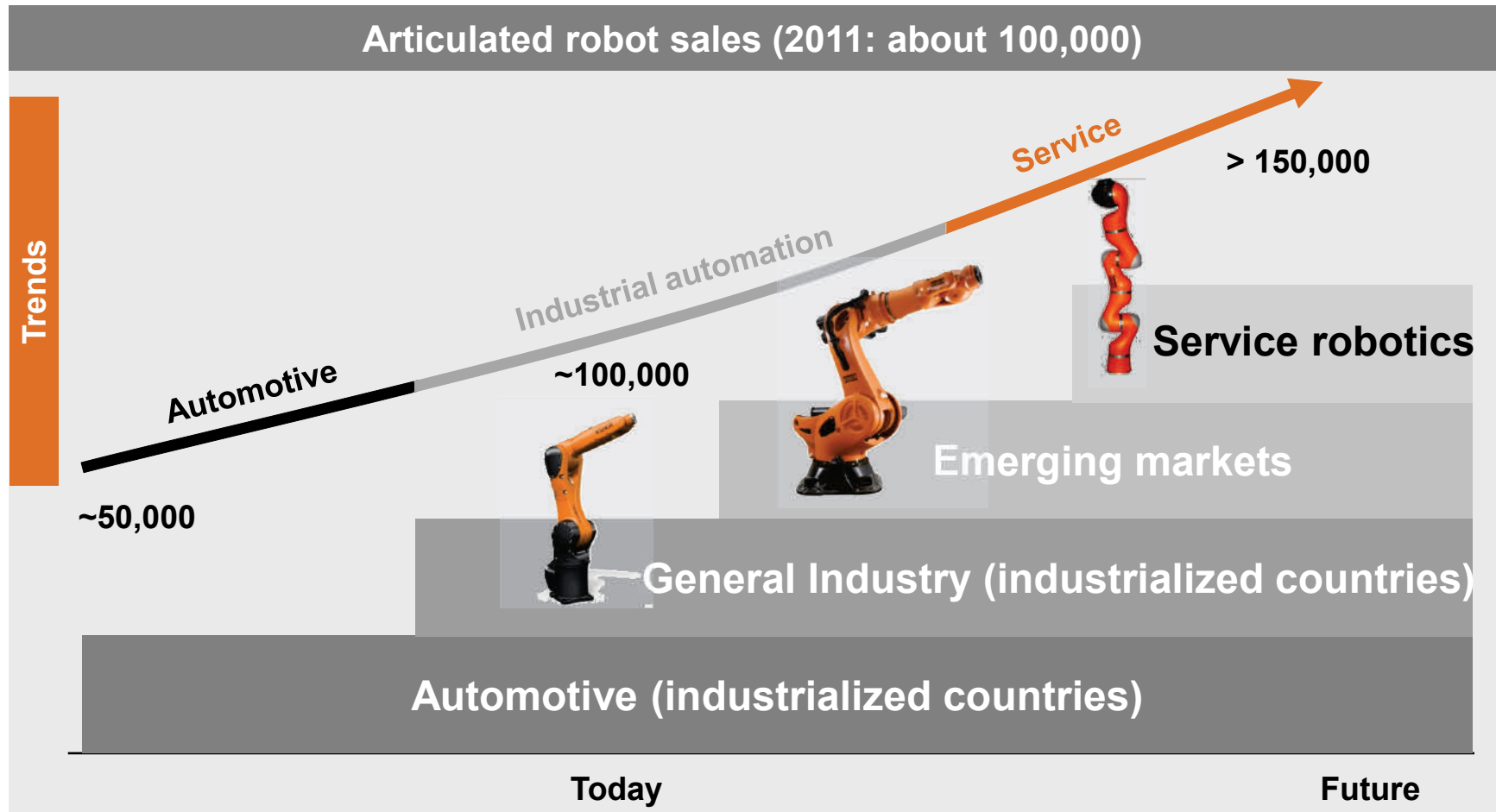
Solutions from KUKA

- Lightweight robot with safe human-machine interaction
- KUKA successfully implements robots in the healthcare sector



Development of robot-based automation

Robot applications increasing sharply



Robotics – Market position development

KUKA Robotics captures market position 2 in 2011

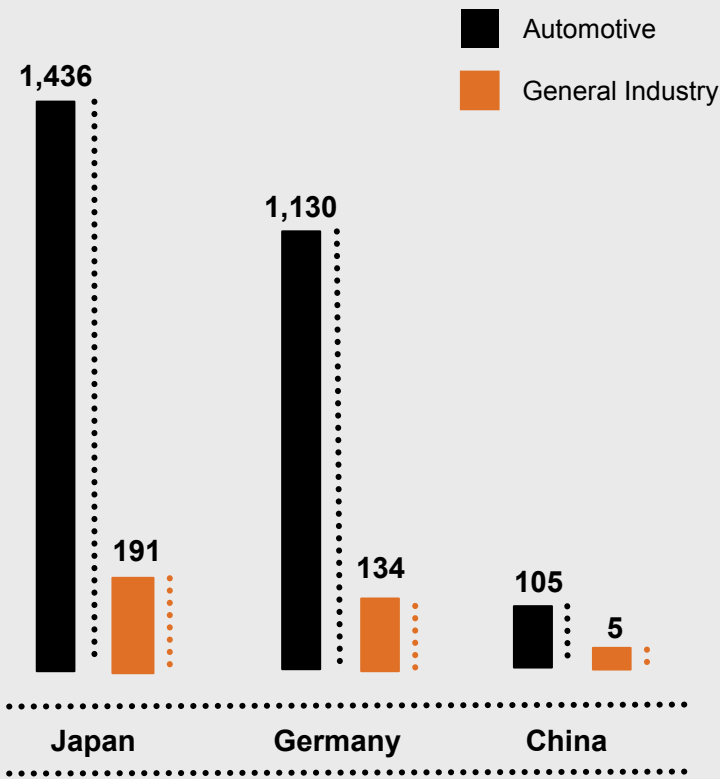


Fanuc, **KUKA**, ABB and Yaskawa together have a global market share of approximately 66%

Robotics – Potential: China

KUKA benefiting strongly from rising wage levels

Robot density (number of robots per 10,000 employees)



Facts relating to China

Market

- China expected to be world's largest robot market in 2013¹
- Wages in China increased by about 20% in 2011
- Accelerated wage rises in China²
 - CAGR: +10% (00-05) and +19% (05-10)

KUKA Robotics in China

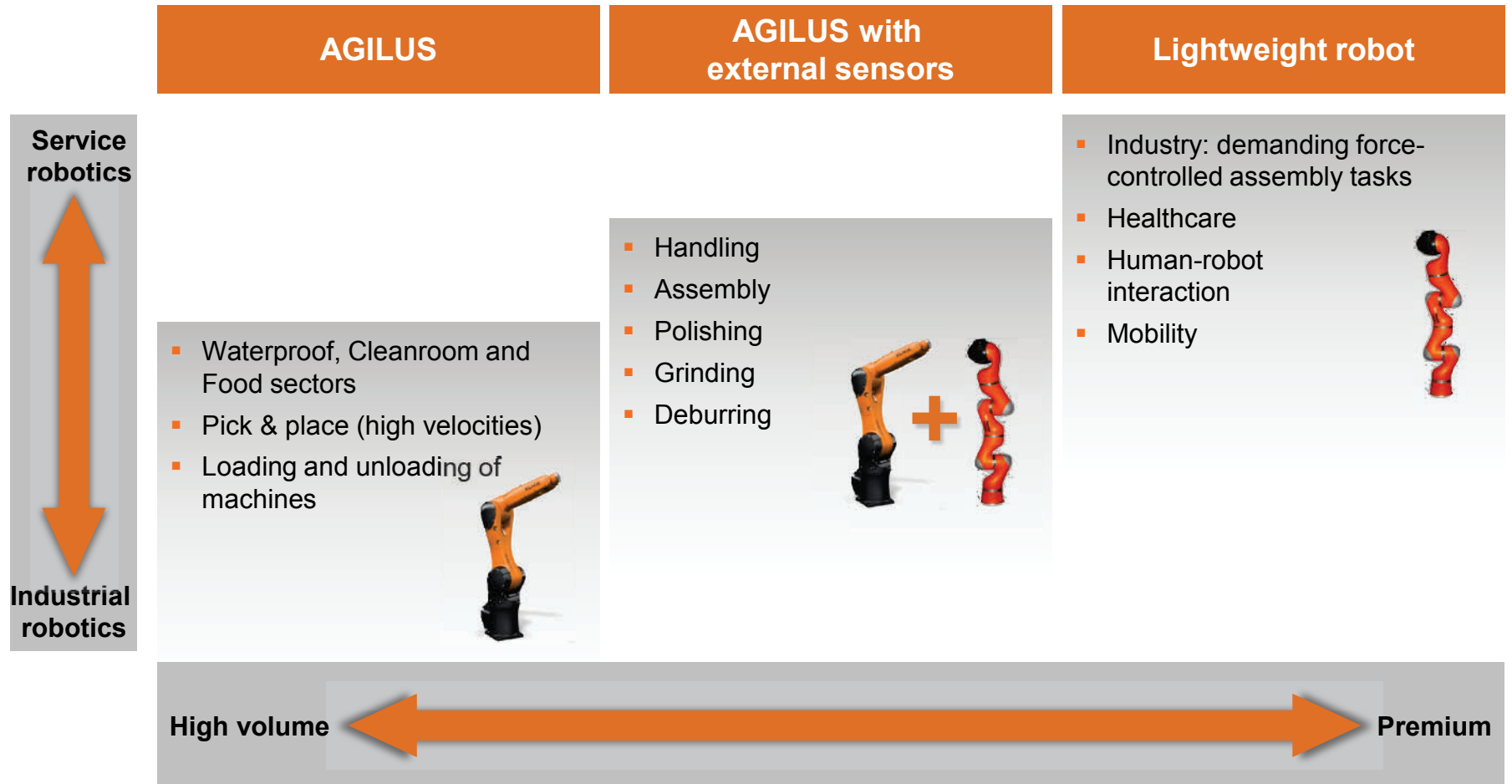
- Automotive market leader for articulated robots
 - Strong market position with OEMs from industrialized countries and with local OEMs
- Increase in General Industry sales through expansion of local assembly capacity and product design to meet local demand

1) Source: IFR World Robotics

2) Source: BCG

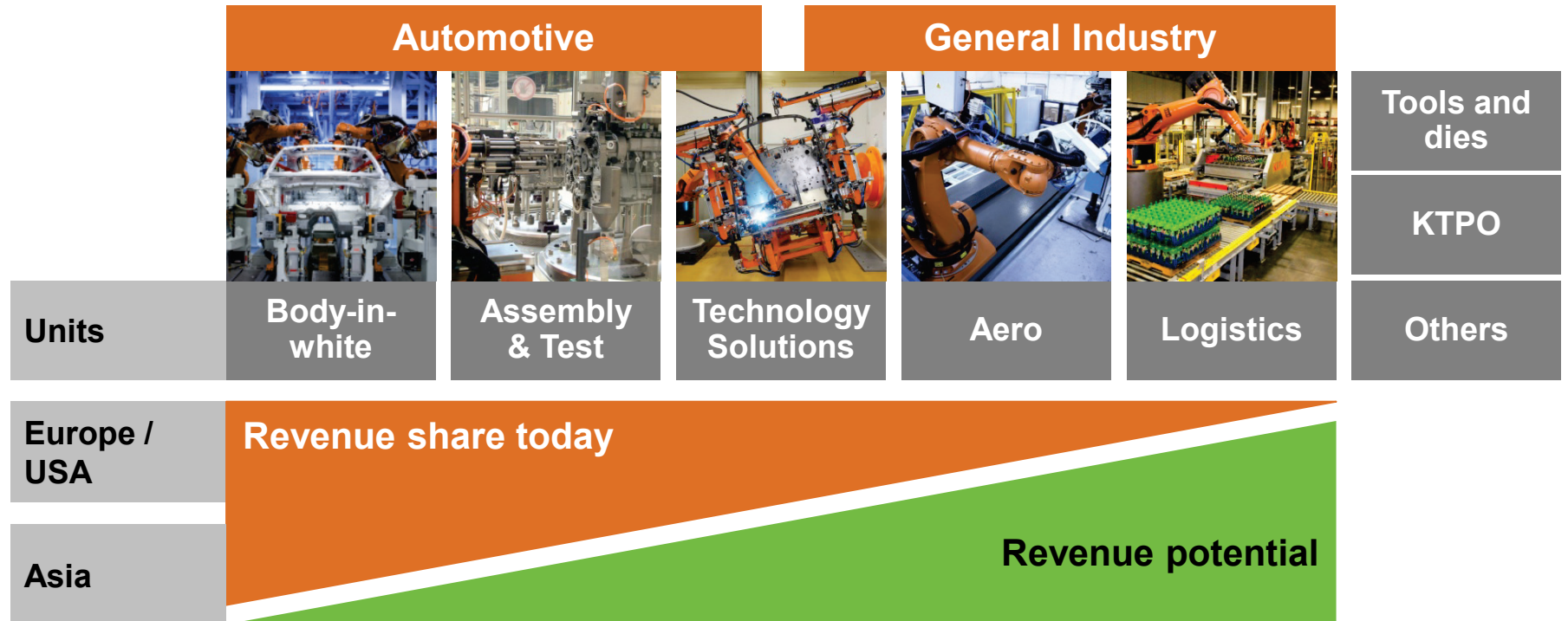
Robotics – Potential: product portfolio

KUKA robots creating new markets



Systems – Potential: focusing

Areas of focus in automotive and general industry



Strategy

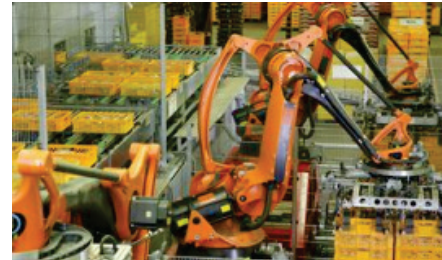
Value enhancement of KUKA

Systems



Robotics

Industrial Robotics



Advanced Robotics



Long-term strategy

- Safeguard automotive business
- Increase general industry business
- Strengthen global positioning

- Increase revenues in healthcare segment
- Market entry in service robotics

Medium-term target margins

5%+

12%

The KUKA logo is displayed in a bold, orange, sans-serif font in the top right corner of the image. The background of the entire slide is a photograph of a large industrial factory floor. In the foreground, two large orange KUKA robotic arms are visible, one on the left and one on the right. The robot on the right is more prominent, showing its base and the 'KUKA' branding on its arm. In the background, several workers in dark clothing are blurred, suggesting movement. A white car is partially visible on the right side of the background. The factory has a high ceiling with a complex network of steel beams and overhead cranes. The overall lighting is bright and industrial.

Robotics

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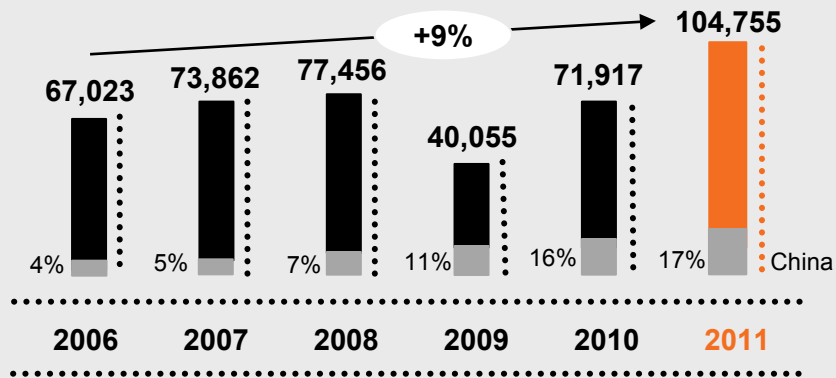
Manfred Gundel, CEO Robotics

May 22, 2012

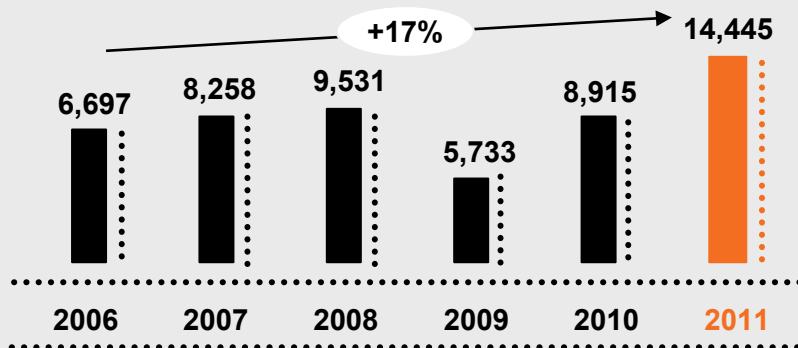
Market for articulated robots

Development of robot market and Robotics

Market: articulated robot sales¹



Robotics: articulated robot sales¹



Development

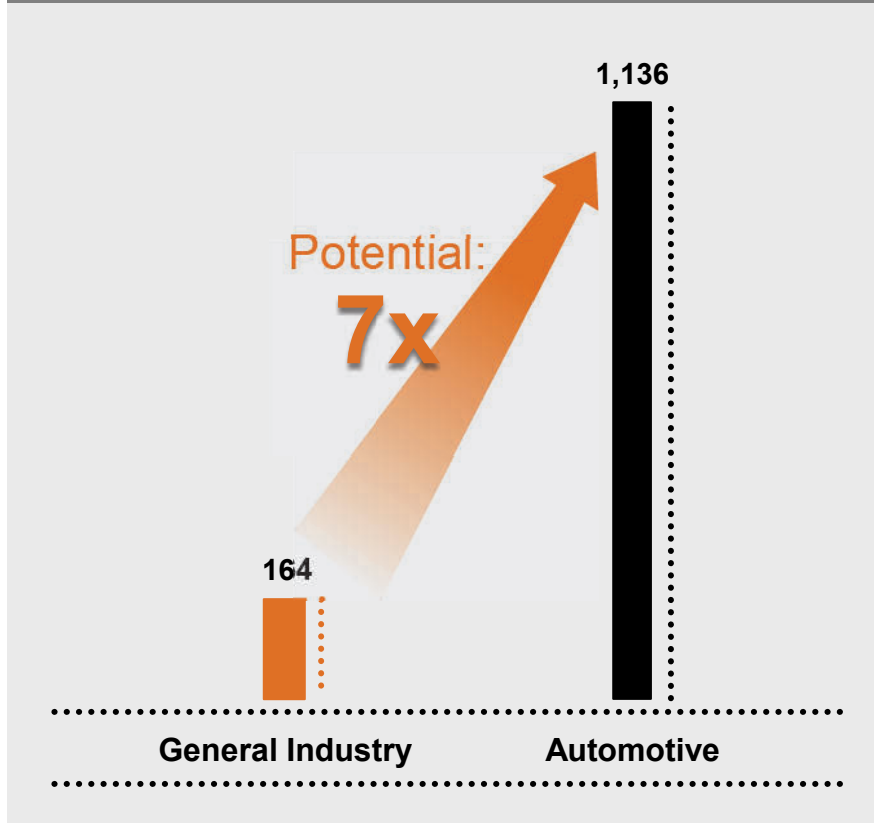
- New sales record achieved in 2011
 - Market growth in 2011: +46%
 - Market breakdown 2011: 70% GI and Tier1
30% Automotive
-
- New sales record achieved in 2011
 - Robotics market share up to 13.8%;
w/o strong position in small robots
 - Robotics growth in 2011: +62%

1) IFR (International federation of robotics) preliminary data 2011 and KUKA

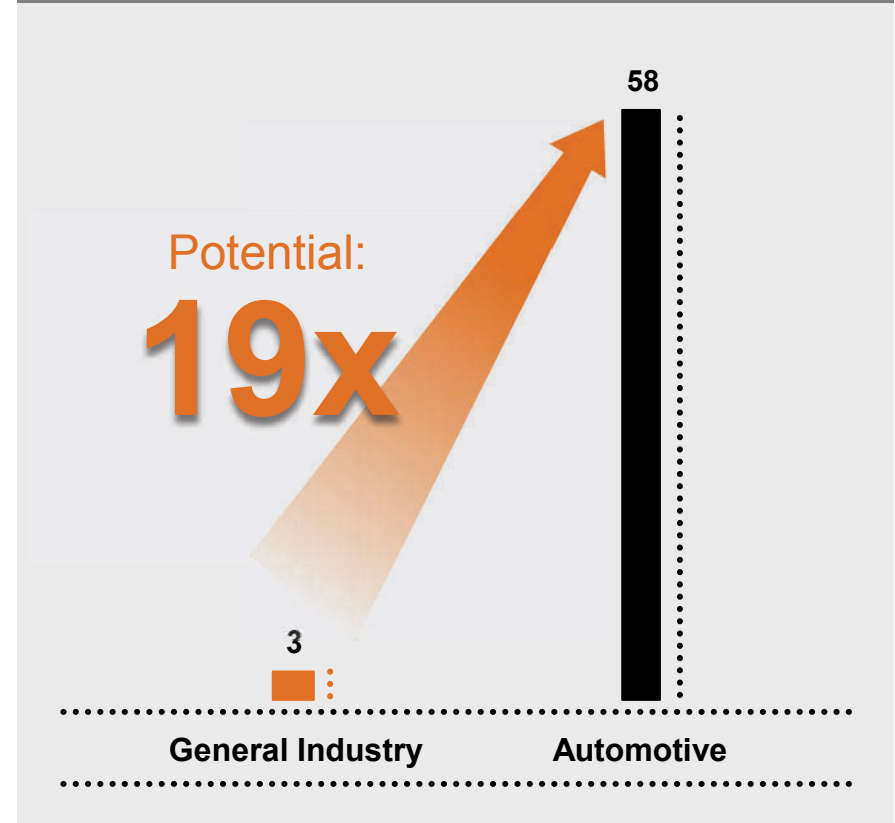
General Industry – Market analysis

Potential: Low robot density in General Industry

Number of robots per 10,000 employees in top 4 countries¹



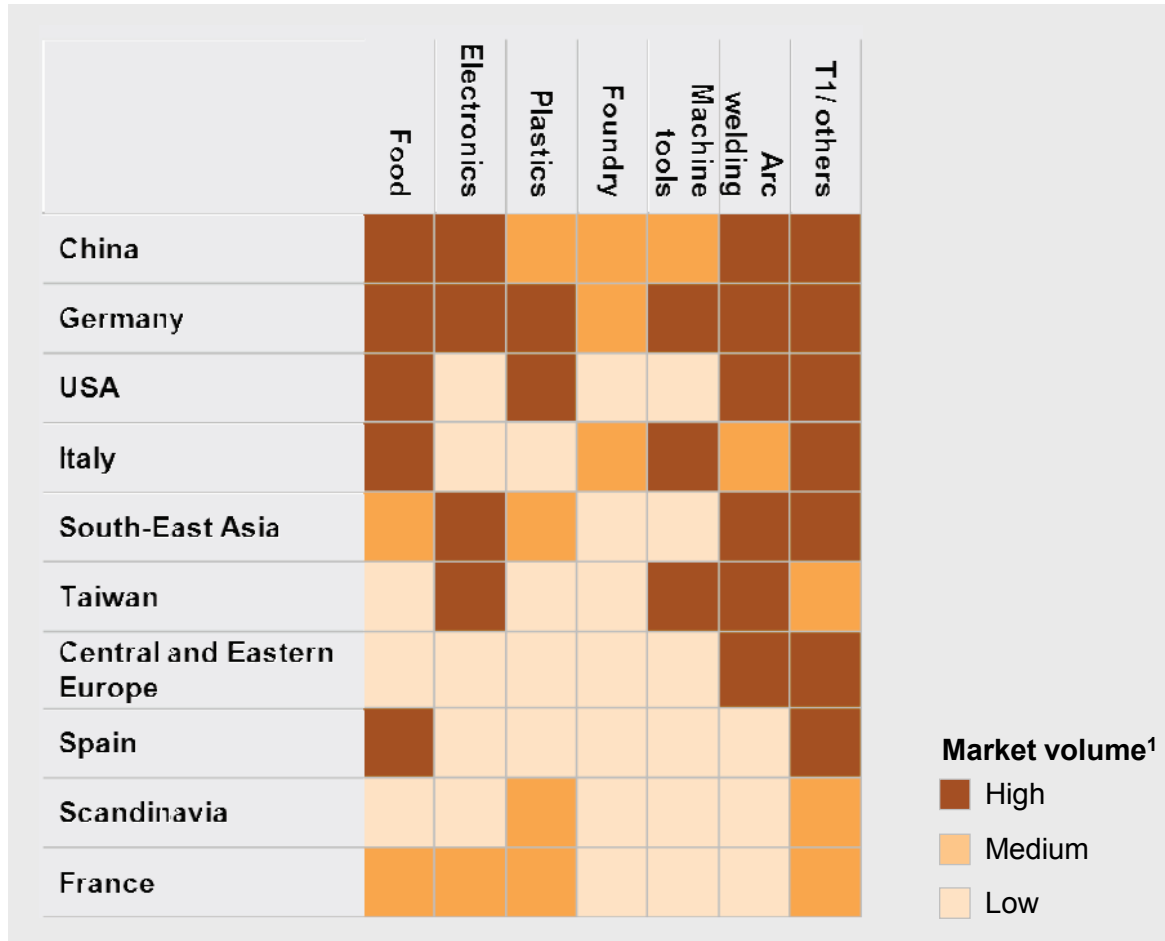
Number of robots per 10,000 employees in BRIC countries



1) Japan, Korea, Germany and Italy in 2010

General Industry – Segments and countries

Focus on 10 countries/regions + 7 segments



Measures

- The 10 countries/ regions in focus represent 80% of the global General Industry market
- Managers responsible for sectors/regions appointed
- “Sales, Service and Product Management” unit in all countries/regions
- Increase number of industry specialists
- Set-up of key account management in General Industry

1) Source: IFR. Annual market volume – high: >300 robots / medium 150-300 robots / low <150 robots

General Industry – Example: food/palletizing

Attractive market due to local focus



Market description

- High market potential due to standardization
 - Installation of around 3,000 industrial robots per year in the food industry
 - Growth potential in Asia: food/palletizing segment one of the first markets to be automatized after Automotive and Tier 1
- 90% of robots sold via system integrators
- Number of large goods distribution centers in the food industry increasing rapidly
- Countries in focus: Germany, Spain, USA, Italy and China

General Industry – Example: food/palletizing

Leading position due to broad product range



Advantages Robotics

- Short cycle times – fastest palletizing robots in cycle time comparisons
- With maximum payload, virtually no reduction in cycle time compared to minimum payload (same robot)
- Best product portfolio in the palletizing robot class – coverage of all payload ranges from 40 to 1300 kg
- High IP65¹ protection rating for all palletizing robots
- All motors operate without an additional fan (even at full load)
- Low energy consumption

1) IP 65 – Ingress Protection. IP Code classifies the degrees of protection provided against the intrusion (e.g. dust, water etc.) in mechanical casings.

General Industry – Example: machine tools

Growth market machine tools



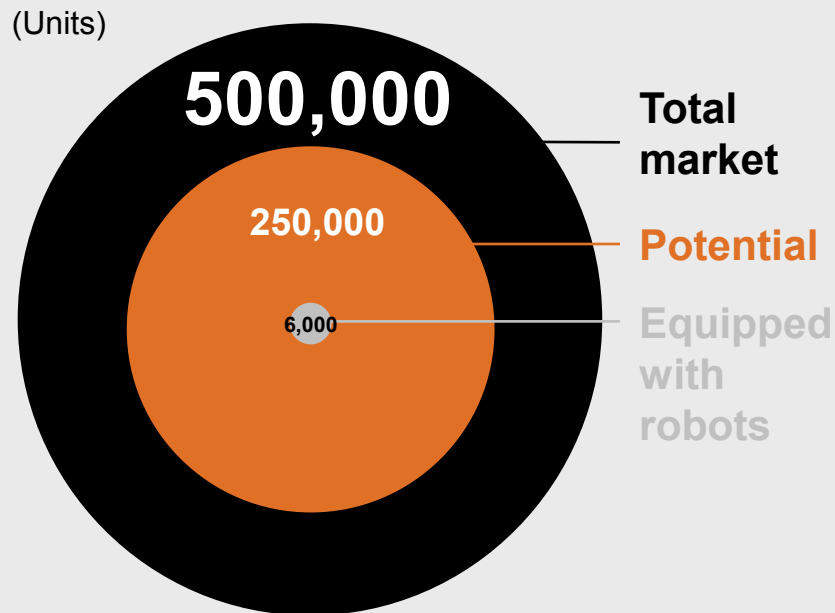
Market description

- Large number and broad spectrum of system integrators worldwide
- Combination of “machine tools + automation solutions” offers sales potential for machine tool manufacturers
- Good opportunities for automation by lightweight robots
- Countries in focus: Germany, China, Taiwan and USA

General Industry – Example: machine tools

Great market potential

Machine tools market (2011)



Only 1.7% of machine tools sold in 2011 were equipped with robots

Advantages Robotics

- Return on investment (ROI) for customers significantly increased by Robotics portfolio (Agilus, KR Quantec, KR C4 - control)
- **mxAutomation:** Simple operator control
 - Robot programming based on PLC¹; extensive programming know-how available on the market
 - (Almost) every CNC² controller is equipped with a PLC¹
- **KUKA.CNC:** Milling by robot
 - Robot used as a machine tool
 - Interesting segments: lightweight construction and large work space

1) PLC = Programmable Logic Controller 2) CNC = Computer numerical control

General Industry – Product portfolio

Launch of Agilus to win General Industry customers



Agilus product features

- Payloads of 6 and 10 kg available for vertical arm robots
-> Expansion of Robotics' product portfolio
- Reaches of 700, 900 and 1100 mm
- Waterproof, Cleanroom and Food variants available
- Coverage of more applications and sectors
- Complete in-house development

General Industry – Product portfolio Agilus launch timeline



General Industry – Product portfolio

Strong competitive advantages of Agilus



Competitive advantages

- Low cycle times – fastest 5/6-axis robot
- SafeOperation functionality available
- Comprehensive product portfolio in this robot class (incl. Light weight robot)
- Low energy consumption
- Modular design and use of shared parts
- Common control technology and software options (incl. technology packages) for all KUKA robots

**AGILUS is distinguished by its
INNOVATION and QUALITY**

Robot market in China

Robotics – Strong partner in China



Facts about Robotics China

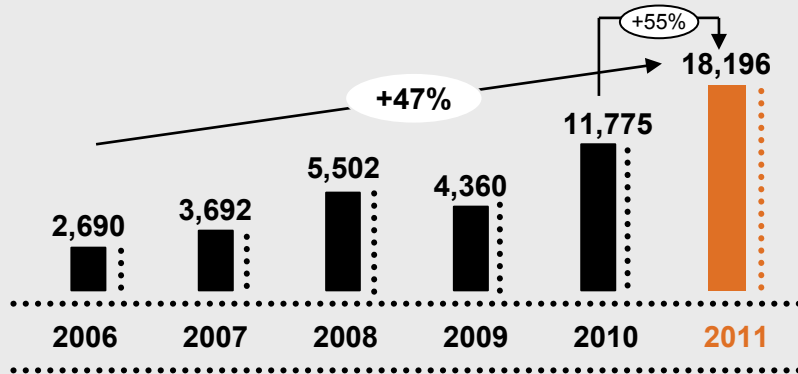
- Market entry: 1997
- Market share in 2011: 16%¹
- Employees: 140
- Installed robot base by Robotics: > 7.000
- Assembly capacity expected to increase to 5.000 robots p.a. at YE12
- Strategy Automotive and General Industry:
 - Increase local presence by additional regional offices (Shanghai, Beijing, Guangzhou, Chongqing, Changchun)
 - Expansion of system partner network.

1) IFR (International federation of robotics) preliminary data 2011 and KUKA

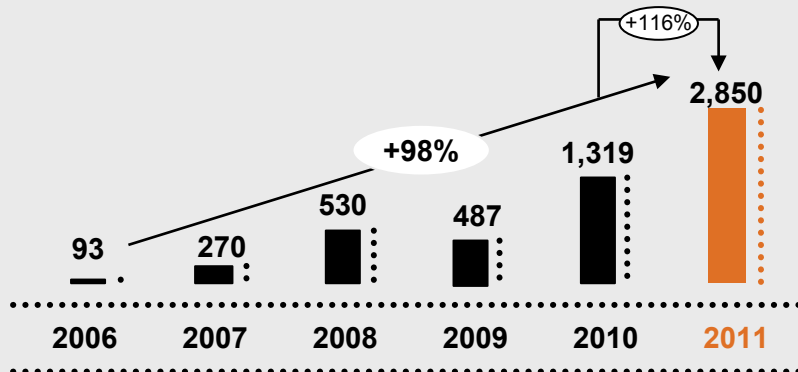
Robot market in China

KUKA growing faster than the market

Market: Articulated robots, shipments¹



Robotics: Articulated robots, shipments¹



Market drivers in China

- Market conditions are changing:
 - Increase of labor costs
 - Reduced availability of skilled labor
 - Productivity improvements
 - Increase of quality demand (Export)
 - Worker safety

- Expansion in other industries:
 - Automotive was first industry to implement robots, followed by Tier1, metal industry etc.

1) IFR (International federation of robotics) preliminary data 2011 and KUKA

Robot market in China

China: Robotics captures market position 3 (2010: 5)



Robot market in China

Selection of local customers in China

Automotive

Logos of automotive companies in China:

- 上海大众汽车有限公司 SHANGHAI VOLKSWAGEN
- GAC
- 中国重汽 SINOTRUK
- 一汽-大众 FAWER • VOLKSWAGEN
- SAIC MOTOR 上海汽车
- Brilliance Auto 华晨汽车
- JAC 江淮汽车
- CHANA
- 长安福特 ChanganFord
- CHERY
- 江铃汽车 JMC
- 吉利汽车 GEELY AUTOMOBILE
- DFV

General Industry

Logos of general industry companies in China:

- FOXCONN 富士康科技集团
- XCMG 徐工集团
- 怡寶 Cestbon
- 福耀集团 FUYAO GROUP
- 模塑科技 JIANGNAN MPT CO., LTD.
- TSINGTAO 青岛啤酒
- BAOSTEEL
- 红塔集团 HONGTA GROUP
- CSR 中国南车
- Budweiser 百威啤酒
- SANY
- SNOW 雪花啤酒
- 永济电机 YONGE YONG JI ELECTRIC
- DEC 东方电气 DONGFANG ELECTRIC
- CNR 中国北车股份有限公司 China CNR Corporation Limited

Guidance Robotics

Increase market share in automotive and in general industry

Market share Robotics Ø 2006-2011

Goals until 2017

Automotive



~28%

- Defend market #1 position
- Increase number of OEM customers

Target market share 2017: ~30%

General Industry



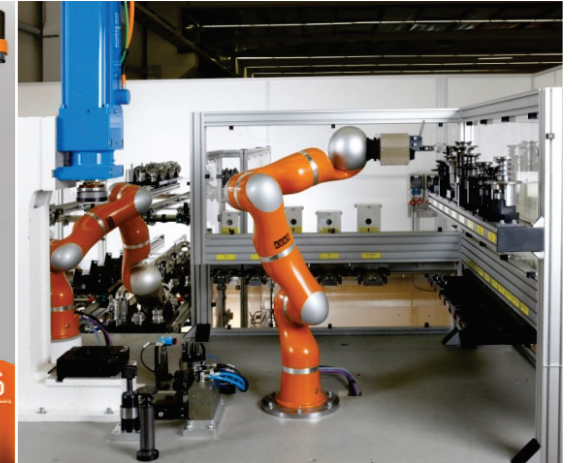
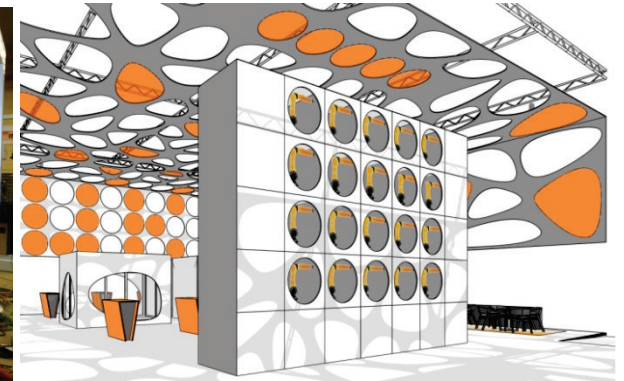
~6%

- Increase market share by 100bp p.a.
- Increase number of customers in General Industry

Target market share 2017: ~15%

Automatica – Automation Becomes Easy

The future is bright the future is orange



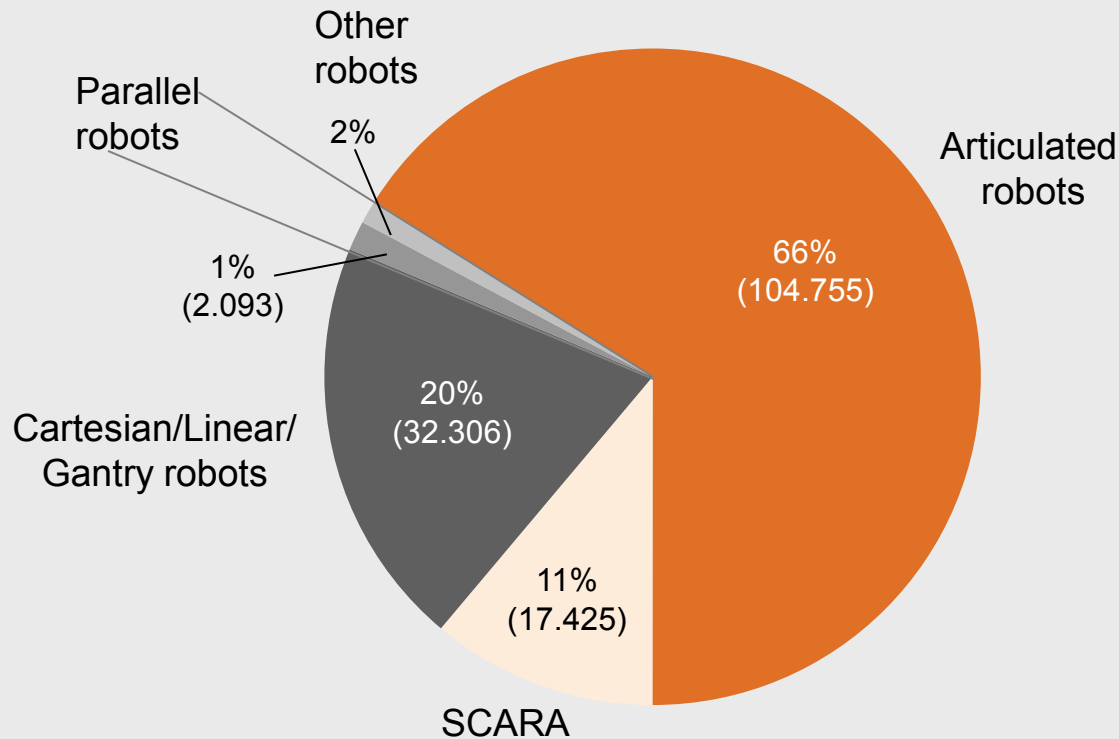
Robotics

Backup

Robot market in total

Robot market in total grew by 31% in 2011

Total robot market in 2011



Total robot market in 2011: 158,272

Development in 2011

- Total market: +31%
- Articulated robots: +46%
- Scara: +26%
- Cartesian/ Linear/ Gantry robots: +13%
- Parallel robots: +61%
- Other robots: -71%

Disclaimer

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