MARLIN™ STEEL

IFR International Federation of Robotics

4th IFR CEO Round Table at the Automate in Chicago on 22 January 2013

Topic: "Robots create Jobs" December 2012

One of the main focal points of the International Federation of Robotics (IFR) is the promotion of the global robotics industry.

Since 2010, once a year the IFR organizes a press event called "IFR CEO Round Table" discussion with robot suppliers. The 4th IFR CEO Round Table will have a new format which includes both robot users and robotics researchers on the panel instead of robot suppliers.

The IFR is currently in the process of organizing the 4th IFR CEO Round Table in cooperation with the Robotics Industry Association (RIA) of North America, at the Automate in Chicago on 22 January 2013. Topic of discussion will be: "Robots create Jobs"! This title is also the name of the IFR campaign aiming to increase the societal acceptance-level for industrial robots. The IFR undoubtedly expects significant attention from the press and the media.

The schedule of the event which will start at 12:00 noon and will end at 01:30 pm is as follows:

- Presentation of updated results of the study "Impact of industrial Robots on Employment" conducted by Metra Martech, United Kingdom
- Moderated discussion of the panel on "Robots create Jobs"
- Moderator: Bill Lydon, Automation.com
- Get together and a lunch buffet for all attendees. Personal interviews of the panelists and other CEOs from the robotics industry present in the audience or in small group discussions.

CEOs of two small robot using companies in the United States already confirmed their participation:

Drew Greenblatt, President, Marlin Steel

Matt Tyler, President, Vickers Engineering

They all have successfully automated with industrial robots and have saved or created jobs.

Professor Alexander Verl, Head of Fraunhofer Institute for Manufacturing Engineering and Automation and Chairman of the IFR Research Committee will also attend the panel as a robotics expert and researcher.

The IFR is in contact with a big robot user to attend the panel as well. The company not only installed a big number of robots but also created numerous new jobs in the United States.

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WELCOME to the IFR CEO Round Table

Robots create jobs!

AUTOMATE • 2013

22 January 2013, Chicago

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Schedule of the event

- **Welcome, Dr. Shinsuke Sakakibara**, IFR President
- **World Robot Market, Arturo Baroncelli**, IFR Vice President
- **Preview on the updated results of the study „Positive impact of industrial robots on employment“**
  John Dulchinos, President & CEO, Adept Technology and IFR EB member, USA
- **CEO Round Table discussion on „Robots create Jobs“**
- **Get together**
  - Personal interviews
  - Discussion in small groups while taking a snack

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The Voice of Robotics

IFR International Federation of Robotics

- Represents the global robotics industry
- Robotics turnover 2011: $25 billion
- About 50 members:
  - National robot associations
  - R&D institutes
  - Robot suppliers
  - Integrators
- Sponsor of the annual International Symposium on Robotics (ISR)
- Co-Sponsor of the IERA Award
- Primary resource for world-wide data on use of robotics – IFR Statistical Department

44th International Symposium on Robotics
ISR 2013
KINTEX, Ilsan, Korea / October 24-26, 2013

IERA AWARD.
Invention and Entrepreneurship in Robotics and Automation

IFR statistical department

www.ifr.org – www.worldrobotics.org

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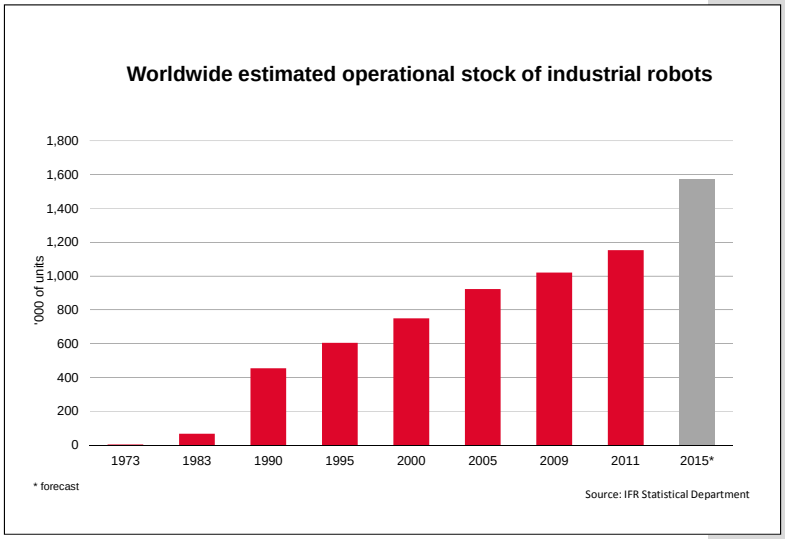
First installation in 1961 – almost 1.6 million will be in operation at the end of 2015!

IFR statistical department



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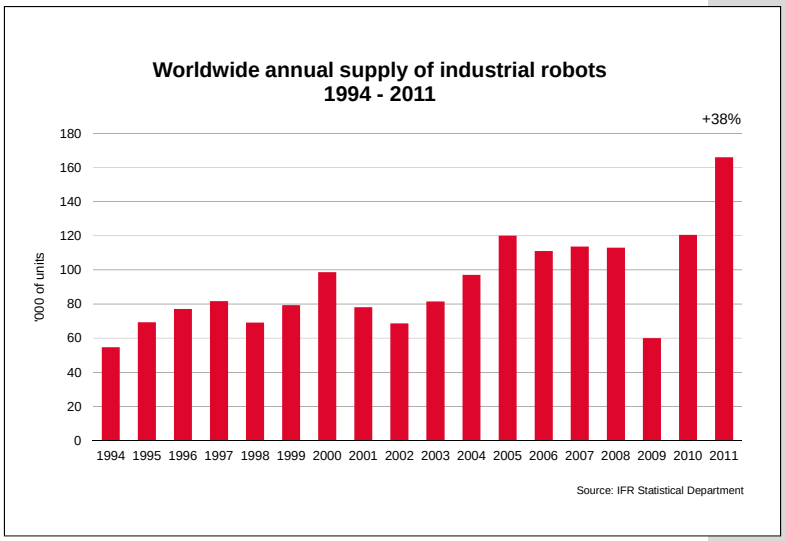
2011 - the most successful year in 50 years of industrial robots



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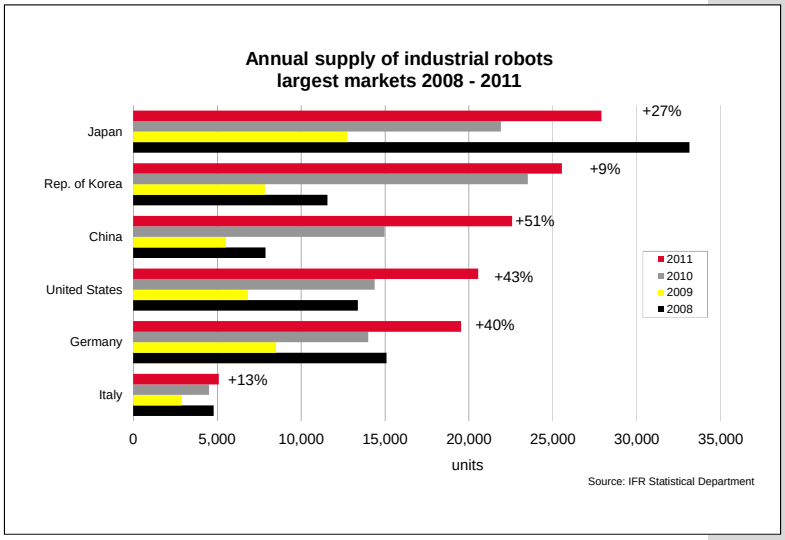
Japan on top - drivers of the growth: China, United States, Germany



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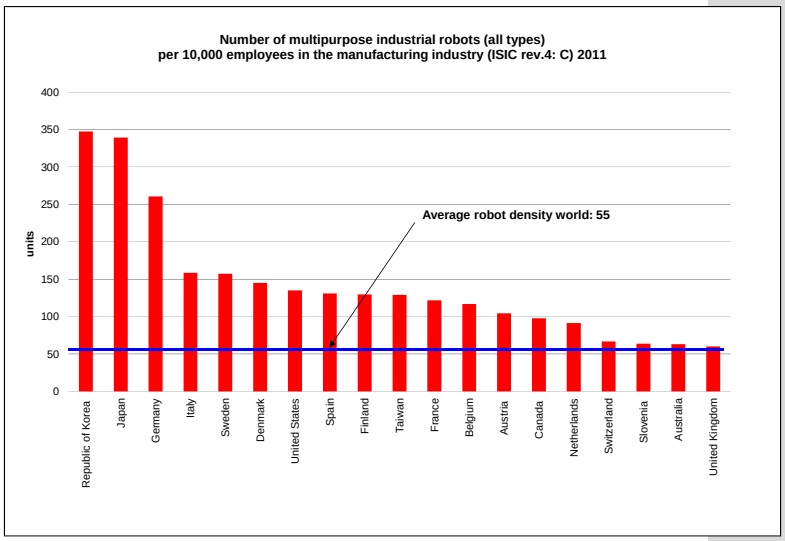
Korea, Japan and Germany are the most automated countries in the world



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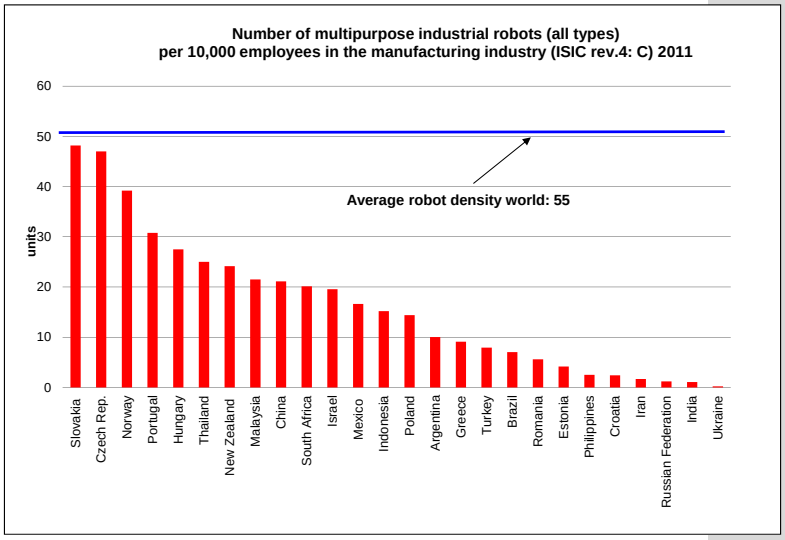
Emerging markets: Robot density is still far below average



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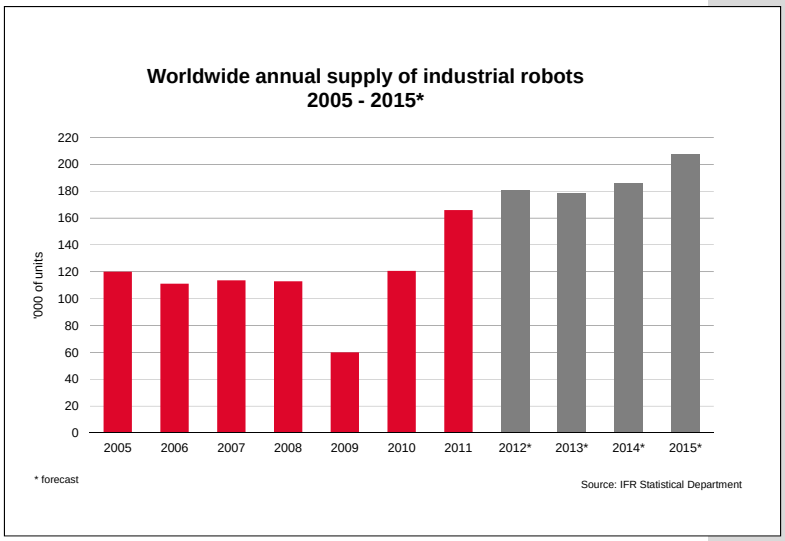
Continued success of industrial robots



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Participants of the Discussion

- **Drew Greenblatt**, President & Owner, Marlin Steel, USA
- **Matt Tyler**, President & CEO, Vickers Engineering, USA
- **John Dulchinos**, President & CEO, Adept Technology, USA
- **Professor Alexander Verl**, Head of Fraunhofer Institute for Manufacturing Engineering, Germany
- **Bill Lydon**, Editor, Automation.com, USA (Moderator)
  wlydon@automation.com

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IFR CEO Round Table at the AUTOMATE 2013
22 January 2013, Chicago, United States

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Robots create jobs!

John Dulchinos
CEO Adept Technology
Member of the RIA Board & IFR Executive Board

IFR statistical department

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Positive Impact of Industrial Robots on Employment

- Study background / Scope
- Factors affecting robot use
- Employment in manufacturing
- Effect of robots on employment
- Future
- Results of Study

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Positive Impact of Industrial Robots on Employment - Background

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- Initiated by **International Federation of Robotics**
- Conducted by **Metra Martech, London**
  - Specialist market research company
  - Established for over 50 years
  - Extensive industrial experience
  - Significant international experience

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Scope of Study

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- **Impact of robots on employment in manufacturing**
  - Automotive
  - Electrical & Electronics
  - Food & Beverage
  - Chemicals, Pharmaceuticals, Rubber & Plastics
  - Metalworking & Foundries
- **Six country focus**
  - USA, Brazil
  - Japan, Korea, China
  - Germany

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Economic Factors

- Displacement & re-employment
- Globalization
- Speed of technological development
- Age & skill profiles
- Wage levels
- Health & safety legislation

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Market Factors Affecting Robot Use

- Growth of China and India
- Continuing technology development
- Environment and lifestyle trends
- Population growth
- Availability of low cost labour
- Aging population
- Skills gaps generally

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2000 to 2011: Overall rise in employment

- Rising of overall employment in most countries
- Reduction of employment in manufacturing in the developed countries,
  - often a small reduction
  - coincides with an increase in output and an increase in robotics use, except in the case of Japan.
- 2000 – 2011: More jobs gained in total than lost in manufacturing
- The new jobs have been in:
  - distribution and services,
  - new manufacturing applications

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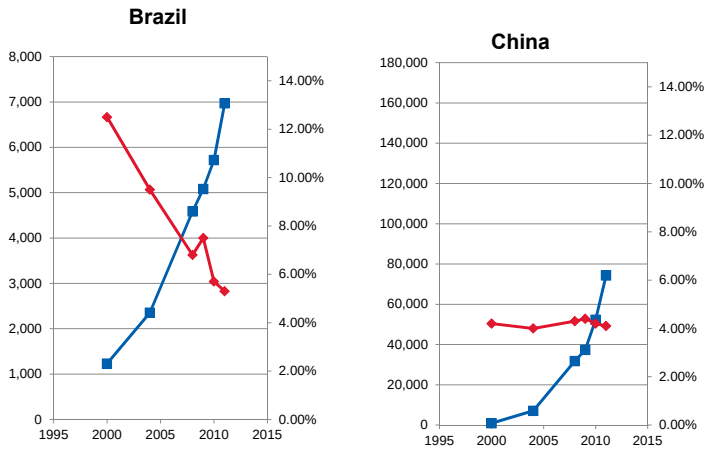
Increase in robot stock – decrease of unemployment rate



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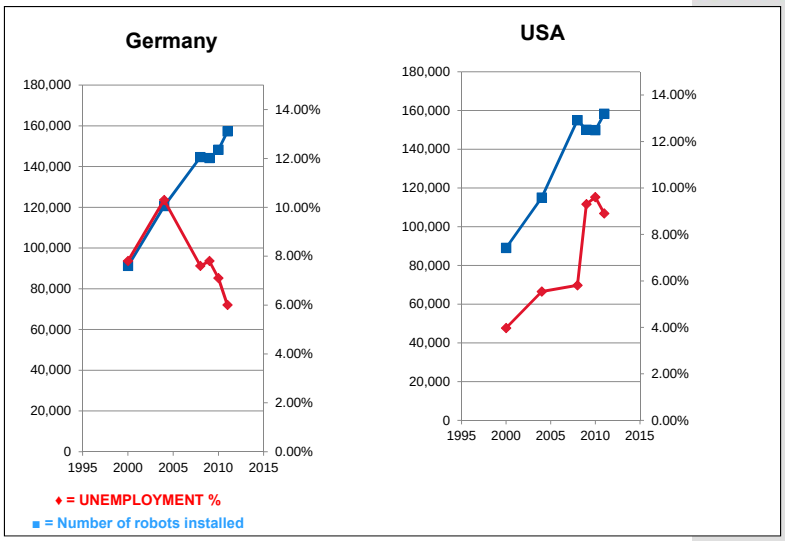

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Driving forces for using robots Updated conclusions

1. Only robots can produce to satisfactory precision and consistency standards, at an affordable cost,
   → **Increasing importance!**
2. Work conditions are unsatisfactory
   → **The recession has reduced attention to this factor!**
3. Manufacturing in a high labour costs country is threatened by a low labour cost area.
   → **Critical factor in the re-balancing of the world manufacturing economies!**

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Other important observations

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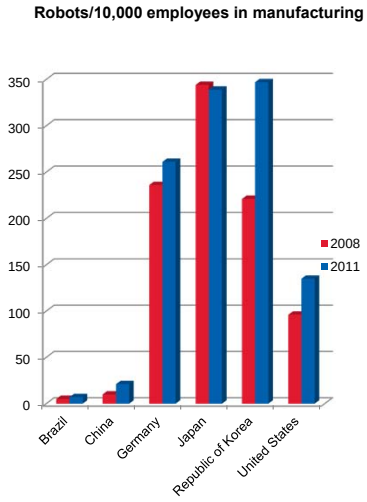
- Korea has greatly increased its robot density
- USA has proportionately half the number of robots used by Germany.
- Japan and Germany
  - declining populations
  - well placed to maintain industry by using still more robotics to continue to lead in product quality.



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Other important observations

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- Skills shortages, have not been relieved by re-training during the recession and remain an important problem for industry.
- The concept of “Jobless recovery” is evident
  - organizations come out of a recession leaner
  - needing fewer employees
- Service sector continues to absorb most of the displaced people.
- Some of these new service people owe their jobs to new robot driven industry.
- There is more caution about the speed of acceptance of electric vehicles.

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Preserving Industry

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Opportunity for protecting local manufacturing employment in situations where:

- Total cost of producing locally can be kept equal to or below the lower cost overseas manufacture (+ transport cost).
- Benefits of having local service and support almost outweigh the lower cost overseas manufacture (+ transport cost) but would be a clear advantage if cost could be lowered.
- A company cannot get enough production in the local market to be viable, but with robotics could increase production at lower cost and export.

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The jobs impact in USA of trade with China 2001 - 2011

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- **More than 2.1 million jobs were lost manufacturing industries by trade with China**
- Rapidly growing imports of computer and electronic products for 54.9 percent of the $217.5 billion increase in the U.S. trade deficit with China
- The growth of this deficit contributed to the elimination of 1,064,800 U.S. jobs in computer and electronic products
- In 2011, the total U.S. trade deficit with China was $301.6 billion—$139.3 billion of which was in computer and electronic products.

Source: The China Toll, Robert E Scott, Economic Policy Institute August 2012

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Potential new activity jobs 2012 - 2020

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- Continued development of new products
  - development of electronics and communication technology
  - manufacture of service robots
  - development and mass adoption of renewable energy technologies
- Expansion of existing economies and industries, notably automotive
- Greater use of robotics in the SME sectors
- Greater use of robotics in the food sector
- Expansion of the robotics sector itself, to cope with the growth in demand

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Potential new activity jobs 2012 - 2020

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- Continued development of new products
  - 550,000 to 1,400,000
- Due to current industry expansion
  - 450,000 to 700,000
- Downstream jobs
  - 900,000 to 1,400,000

Total potential of job creation by robotics:

1.9 million to 3.5 million between 2012 and 2020

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Job creation due to robotics

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New jobs due to Robotics	Total
Up to 2008	8 to 10 million
2008 to 2011	500,000 to 750,000
2012 to 2016	900,000 to 1.5 million
2016 to 2020	1 to 2 million

Additional: when manufacturing jobs are saved, jobs throughout the community where the factories are also are saved

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Study Findings at a glance

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Direct employment due to robotics:

4 to 6 million jobs created in world manufacturing

That is 3 to 5 jobs per robot in use.

Indirect employment downstream of this, increases this number to 8 – 10 million

1.9 to 3.5 million jobs to be created by robots in the next eight years.

Robots create jobs!

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