Partner of choice for Robotics and Intelligent Motion™

ABB Innovation & Technology Day
Sami Atiya, President Robotics and Motion Division
Important Notices

Presentations given during the ABB Innovation & Technology Day 2017 includes forward-looking information and statements including statements concerning the outlook for our businesses. These statements are based on current expectations, estimates and projections about the factors that may affect our future performance, including global economic conditions, and the economic conditions of the regions and industries that are major markets for ABB Ltd. These expectations, estimates and projections are generally identifiable by statements containing words such as “expects,” “believes,” “estimates,” “targets,” “plans,” “outlook” or similar expressions.

There are numerous risks and uncertainties, many of which are beyond our control, that could cause our actual results to differ materially from the forward-looking information and statements made in this presentation and which could affect our ability to achieve any or all of our stated targets. The important factors that could cause such differences include, among others:

- business risks associated with the volatile global economic environment and political conditions
- costs associated with compliance activities
- market acceptance of new products and services
- changes in governmental regulations and currency exchange rates, and,
- such other factors as may be discussed from time to time in ABB Ltd’s filings with the U.S. Securities and Exchange Commission, including its Annual Reports on Form 20-F.

Although ABB Ltd believes that its expectations reflected in any such forward-looking statement are based upon reasonable assumptions, it can give no assurance that those expectations will be achieved.

The presentations and the related discussion may also contain or refer to non-GAAP measures of performance. Definitions of these measures and reconciliations between these measures and their US GAAP counterparts can be found in the “Financial information” documents under “Quarterly results and annual reports” on our website at http://new.abb.com/investorrelations/
# Robotics and Motion division

## Overview

### Offering

<table>
<thead>
<tr>
<th></th>
<th>Robotics and Intelligent Motion™ solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Robotics # 2</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Motion # 1</strong></td>
<td></td>
</tr>
</tbody>
</table>

### Customers

<table>
<thead>
<tr>
<th></th>
<th>Utilities</th>
<th>Industry</th>
<th>Transport &amp; Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Utilities</strong></td>
<td>~10%</td>
<td>~77%</td>
<td>~13%</td>
</tr>
<tr>
<td><strong>Industry</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transport &amp; Infrastructure</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Geographies

<table>
<thead>
<tr>
<th></th>
<th>Globally</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asia, Middle East, Africa</strong></td>
<td>30%</td>
</tr>
<tr>
<td><strong>Americas</strong></td>
<td>34%</td>
</tr>
<tr>
<td><strong>Europe</strong></td>
<td>36%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>$8 bn</th>
<th>50 mn motors and drives installed</th>
<th>&gt;300,000 robots sold to date</th>
<th>~26,000 employees</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Robotics # 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tbody>
</table>

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Robotics and Motion

Robotics
Shaping the workplace of the future

Motion
“Moving” the industrial world
Creating customer value with our unique technologies

- **Multimove extreme precision control**
- **3D integrated vision inspections**
- **Digitally enabled paint atomizer**

- **Stainless steel encapsulated motor**
- **Industry-specific drive for water**
- **World efficiency record in 44MW motor**

Customer value, incl. quality, resource efficiency, speed
Our focus sectors
A >$100 bn market for ABB expected to grow ~3% p.a.\(^1\)

<table>
<thead>
<tr>
<th>Utilities</th>
<th>Industry</th>
<th>Transport &amp; Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind</td>
<td></td>
<td>Traction</td>
</tr>
<tr>
<td>Water &amp; waste water</td>
<td></td>
<td>HVAC(^2)</td>
</tr>
</tbody>
</table>

\(^1\)Expected growth 2017-20; \(^2\)Heating, ventilation, and air conditioning
We address the main trends in our markets

**Socioeconomic trends**

- Demographics and shortage of skilled workers
- Energy efficiency and water scarcity
- Individualization and convenience
- Environmental regulations and state influence

**Technology trends**

- Flexible automation and increasing complexity
- IoT / digitalization
- Artificial Intelligence
ABB Intelligent Motion™ solutions drive global energy efficiency

Electricity demand will double

Electricity demand in TWh

- 2015: 21 TWh
- 2035: 39 TWh (82% increase)

28% consumed by powertrains

Well positioned to capture value

- 50 mn installed base and 5 mn new devices every year
- Last year saved ~510 TWh of electricity...
- ... and prevented 410 mn tons of CO₂ emissions

Source: IEA Energy-efficiency policy opportunities for electric motor-driven systems – assumes that Industry consumes ~42% global electricity and ~2/3 are used to move electric motors; ABB analysis
**Electrical powertrains drive competitive advantage**

Our technology could help our customer’s profitability by +100 bps

<table>
<thead>
<tr>
<th></th>
<th>% P&amp;L powertrain electricity cost</th>
<th>% P&amp;L impact(^1) from ABB technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement</td>
<td>14</td>
<td>+210 bps</td>
</tr>
<tr>
<td>Steel</td>
<td>12</td>
<td>+180 bps</td>
</tr>
<tr>
<td>Paper</td>
<td>8</td>
<td>+130 bps</td>
</tr>
<tr>
<td>Chemicals</td>
<td>8</td>
<td>+120 bps</td>
</tr>
</tbody>
</table>

\(^1\)Assume 30% savings on powertrain energy consumption; 50% of savings are transferred to their customers.
Driving customer value through Intelligent Motion™ solutions

Power train scope

- Power supply
- My Drive
- My Motor
- My Mechanical Power Transmission

Enabling our partners to capture value with ABB Ability™

- Connected equipment
- Smart sensor
- Remote control centers
- Advanced analytics
- Service & parts

Improving Overall Equipment Effectiveness (OEE) – safety, uptime, speed and yield

RM core competency
Collaboration with external or internal ABB partner
What is Robotics?
It is much more than just hardware...

Muscles...
Motion from actuators and motors

Senses...
Sensors and vision systems

Brains...
Controllers, applications, and software

Hands...
Intelligent tools, accessories, and grippers

...combined with domain expertise and applications know-how for customer value.
ABB’s leading offering portfolio

Unmatched products portfolio

Domain expertise to provide unique solutions and applications

Engineering and systems for a superior customer value proposition

From robots to robotics
ABB Robotics provide customer value along the life cycle

Customer asset lifecycle

- Plan / design
- Build
- Operate

Our enhanced digital value proposition

- RobotStudio®
- Unique portfolio
- RobotWare
- Customer service

Our “traditional” value proposition

- Planning partner
- Product, solutions, systems partner
- Operations partner

Our customer relationship

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Increasing adoption of robotic solutions

Relative industry size

Robotic maturity

Robotic S-Curve

Time

Industrial

Service

Shoe industry

Warehousing & logistics

Automotive

Electronics

Plastic / Chemicals

Metals / machinery

Food & Beverage

Construction

Agriculture

Restaurants

Education

Security

Hotels

Retail

Healthcare

Source: IFR, IHS, McKinsey Global Institute, "A future that works"
Shifting Robotics and Motion’s Center of Gravity
Helping customers solve their problems and drive differentiation in their markets

- Superior customer experience
- Ride robotization wave and leverage motion #1 position
- Bolt-on acquisitions
- Expand into growing segments and regions
- Focus on Power, Water, Service Robotics, digitalization

Lowering risk

Driving organic growth

- Service expansion
- AI leadership
- Compelling digital value proposition
- Expand in less cyclical industries
- Monetize trends supporting our industries

Strengthening competitiveness
What we stand for
Partner of choice in....

Robotics and Intelligent Motion™ solutions

We enable customers to lead in safety, productivity and energy efficiency.
What you will see today

**Robotics factory tour**

Two examples of ABB’s automotive solutions: Flexible Axle Assembly and ABB FlexWasher

**Robotics solutions**

New industries and applications: RobotStudio®, SafeMove2, and logistics automation

**Hands-on lunch with ABB robots**

Experience robotics innovation and technologies: eight interactive demo-cells and displays