**ABB today**

Two clear value propositions

---

**Bringing electricity from any power plant to any plug**

- Power Grids
- Electrification Products

... a stronger, smarter and greener grid

... electrification of all consumption points

---

**Automating industries from natural resources to finished products**

- Industrial Automation
- Robotics and Motion

... perfection in automation

... robotics and intelligent motion solutions

---

Partner of choice for...

#1 #2 #2 #1 motion #2 robotics
Power Grids
Partner of choice for a stronger, smarter and greener grid

Market size
~$80 bn market\(^1\) in 2018

Offering
Broadest offering of products systems, services and software for power transmission and distribution

Main competitors

<table>
<thead>
<tr>
<th>Position of strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market and technology leader</td>
</tr>
<tr>
<td>Unrivalled application know-how</td>
</tr>
<tr>
<td>Truly global player with largest installed base</td>
</tr>
<tr>
<td>Leading software and automation solutions</td>
</tr>
<tr>
<td>Industry leading margins</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Orders and revenues</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ bn</td>
</tr>
<tr>
<td>Orders</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>10.5</td>
</tr>
<tr>
<td>9.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Op. EBITA</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ bn, margin %</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>10.1%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thousand</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>35.0</td>
</tr>
<tr>
<td>2016</td>
</tr>
</tbody>
</table>

\(^1\)Consolidated (unconsolidated ~$112 bn market); \(^2\)Comparative growth
**Power Grids**

Business breakdown and trends

**Offering**

- Digital equipment: real time supervision, higher reliability, maintenance optimization
- Digitally enhanced systems: faster installation, more configurable power quality, higher penetration of renewables, managing less predictable supply & demand
- Software & operations: more real-time control, smart asset mgmt., planning optimization

**Customers**

- Transmission & distribution: 1-3% growth trend from increasing complexity, interconnections, aging infrastructure, physical cyber security
- Integrating renewables: >3% growth for long distance transmission, storage, bi-directional flow, power stability, microgrids
- Connecting consumers: rail electrification, datacenters, EVs, industry

**Geography**

- Emerging markets: grid build out, renewable integration, interconnections, electrification of society
- Developed markets: renewable integration, interconnections, aging infrastructure, power quality, security of supply, electrification of transport

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## Power Grids
Partner of choice for a stronger, smarter and greener grid

<table>
<thead>
<tr>
<th><strong>Products &amp; components</strong></th>
<th><strong>System &amp; automation</strong></th>
<th><strong>Consultancy, services &amp; software</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Distribution transformers</td>
<td>Substations</td>
<td>Consulting, planning services</td>
</tr>
<tr>
<td>Power transformers</td>
<td>Grid automation</td>
<td>Network control, operation services</td>
</tr>
<tr>
<td>HV gas / air insulated</td>
<td>FACTS</td>
<td>Asset &amp; workforce management</td>
</tr>
<tr>
<td>switchgear</td>
<td>HVDC and UHVDC</td>
<td>Asset performance management</td>
</tr>
<tr>
<td>Power quality components</td>
<td>Microgrids, BESS</td>
<td>Maintenance services</td>
</tr>
</tbody>
</table>

### Competitive position

- #1 Automation
- #1 HVDC

### Major competitors

- Siemens
- TBEA
- GE
- Hyundai
- Nari
- Schneider Electric
- IBM

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FACTS: Flexible Alternating Current Transmission Systems; HVDC: High-voltage Direct Current transmission systems; BESS: Battery Energy Storage Systems
Electrification Products
Partner of choice for electrification of all consumption points

Market
~$166 bn market in 2018

Offering
Broadest global portfolio of low- and medium-voltage products and solutions for intelligent protection and connection
Pre-engineered, packaged solutions and services tailored to customers’ needs

Main competitors

Position of strength
Complete portfolio for electrification of “the site”
Strong distributor relationships
Geographically balanced production and R&D footprint
Strong growth segments EV charging, renewables, data centers
Innovative products and solutions
Intelligent solutions for smarter buildings

Key figures

Orders and revenues
$ bn

<table>
<thead>
<tr>
<th></th>
<th>Orders</th>
<th>Revenues</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>9.8</td>
<td>10.1</td>
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<tr>
<td>2017</td>
<td>9.9</td>
<td>10.1</td>
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</table>

Op. EBITA
$ bn, margin %

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
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</thead>
<tbody>
<tr>
<td>Op. EBITA</td>
<td>14.7 %</td>
<td>15.0 %</td>
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Employees
Thousand

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
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</thead>
<tbody>
<tr>
<td>Employees</td>
<td>42.5</td>
<td>42.2</td>
</tr>
</tbody>
</table>
Electrification Products
Business breakdown and key end-market growth trends

**Channels**

Approximation, % of revenues

- Distributors
- Internal
- Utilities
- EPC
- OEM
- Products
- Systems
- Services

**Digitalization:** connectivity and communication, digital models and configurators

**Services:** condition monitoring and diagnostics, cloud connection and cyber security, collect, provide and process data

**Customers**

Approximation, % of revenues

- Distribution
- Renewables
- Conventional generation
- Mining & Metals
- O&G, Chemical
- Other Industry
- Buildings
- Other Transport & Infrastructure

**Buildings:** 1-3% growth trend from shift to smart buildings

**Industry:** solid growth from digitalization as well as safety

**Renewables:** double-digit growth

**Geography**

% of revenues

- Europe
- Americas
- AMEA

**Emerging markets:** construction and infrastructure trends in key markets such as China and India. Urbanization and renewable integration

**Developed markets:** smart and energy efficient buildings. Intelligent power distribution. Growing datacenter and EV fast-charging infrastructure

---

1Illustrative, based on 2016 estimates for end-market breakdown. Data from 2017 excludes GE IS acquisition that completed end H1 2018;

2Wholesale distributors include e.g.: Sonepar, Rexel, Wesco, Imelco; 3OEMs include e.g.: SMA, Vestas, Emerson, Caterpillar, Bombardier
Electrification Products
Partner of choice for electrification of all consumption points

**Electrical distribution**
- LV/MV switchgear
- Distribution boards
- Circuit breakers
- Solar inverters

**Automation / Control**
- MV grid automation
- Motor control centers
- Intelligent breakers
- UPS

**Installation**
- Enclosures
- DIN-rail products
- Wire and cable management
- Wiring accessories

**Building solutions**
- Smarter buildings
- Smarter homes
- Smarter mobility

**Competitive position**
- MV #1 / LV #2
- Electrification #2

**Major competitors**
- EATON
- Schneider Electric
- SIEMENS
- CHINT
- SEL
- Toshiba
- SMA
-华为
- POWELL

**EV fast charging #1**
- TESLA
- ADELTA
- Efacec
- SIEMENS
- EATON
- LeGRAND
- Panduit
- Hager
- LEVITON

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1Market leader as an independent EV fast-charging supplier
Industrial Automation
Partner of choice for industrial automation

Market
~$130 bn market in 2018

Offering
Control systems, software, measurement & analytics
Industry-specific power & automation solutions, products (e.g. electric ship propulsion) and services

Main competitors

Position of strength
Integrated control product, system and service offering
Advanced process control & optimization software and know-how
Integrated power and automation solutions
Largest installed base, advanced services
Deep domain and process expertise

Key figures

Orders and revenues
$ bn

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orders</td>
<td>6.0</td>
<td>6.7</td>
</tr>
<tr>
<td>Revenues</td>
<td>6.6</td>
<td>6.9</td>
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</table>

Op. EBITA
$ bn, margin %

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>0.9</td>
<td>1.0</td>
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</tbody>
</table>

Employees
Thousand

<table>
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<tr>
<th></th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>42.5</td>
<td>42.2</td>
</tr>
</tbody>
</table>

1Unconsolidated; 2Comparable growth
Industrial Automation

Business breakdown and key end-market growth trends

**Offering**

- **Digitalization:** growth opportunity building on largest installed base in power generation and process industry
- **Services:** supporting customers remotely with advanced services and optimization

**Customers**

- **Chemicals:** positive fundamentals
- **F&B, pharma & discrete industries:** >3% growth supported by population growth, increasing disposable income
- **Cruise ships:** strong demand from Asian and North American operators

**Geography**

- **Emerging markets:** penetration of basic automation still rising, aging installed base provides upgrade opportunities
- **Developed markets:** leveraging digital to achieve next level of productivity, energy efficiency and safety

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October 29, 2018 | Slide 11 | Data from 2017 excludes the acquisition of B&R
# Industrial Automation

**Partner of choice for industrial automation**

<table>
<thead>
<tr>
<th>Industry-specific solutions &amp; services</th>
<th>Control systems &amp; software</th>
<th>Measurement &amp; analytics</th>
<th>Propulsion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated electrification &amp; automation solutions</td>
<td>Process and discrete control (DCS, PLC)</td>
<td>Pressure, temperature, flow, level, force measurement</td>
<td>Electric propulsion systems for ships</td>
</tr>
<tr>
<td>Systems and advanced services</td>
<td>Adv. process control &amp; manufacturing execution systems</td>
<td>Analizers</td>
<td>Large turbochargers &gt;500kW</td>
</tr>
<tr>
<td>Process industries #1 – 5 Marine #1</td>
<td>DCS #1; PLC Top 5 APC/MES software #1/2</td>
<td>Measurement &amp; analytics top 3 – 5</td>
<td>Electric marine propulsion #1 Turbocharging #1</td>
</tr>
</tbody>
</table>

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October 29, 2018  Slide 12  ^Leader in Force Measurement
**Robotics and Motion**
Partner of choice for robotics and intelligent motion solutions

**Market**
~$106 bn market in 2018\(^1\)

**Offering**
Robotics and intelligent motion solutions

**Key figures**

<table>
<thead>
<tr>
<th>Orders and revenues</th>
<th>$ bn</th>
<th>(+8)%(^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orders</td>
<td>7.9</td>
<td>7.9</td>
</tr>
<tr>
<td>Revenues</td>
<td>8.5</td>
<td>8.4</td>
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</table>

<table>
<thead>
<tr>
<th>Op. EBITA</th>
<th>$ bn, margin %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2</td>
<td>15.6%</td>
</tr>
<tr>
<td>1.3</td>
<td>15.0%</td>
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</table>

<table>
<thead>
<tr>
<th>Employees</th>
<th>Thousand</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>26.6</td>
</tr>
<tr>
<td>2017</td>
<td>27.1</td>
</tr>
</tbody>
</table>

**Main competitors**

- KUKA
- SIEMENS
- FANUC
- SEW EURODRIVE
- ABB

**Position of strength**

Technology leader in fast-growing robotics market

Broadest robotics portfolio and large installed base

Largest motion player with unmatched global reach

At the cutting edge of power electronics and quality, renewables, and electric transportation

\(^1\)Unconsolidated; \(^2\)Comparable growth
Robotics and Motion

Business breakdown and key end-market growth trends

**Offering**

Digitalization: will continue gaining relevance and will drive customer expectations

Services: growing reliance on data management and statistical productivity

**Customers**

Automotive: growing specifically in emerging markets like Asia

3C & semicon: robotization of manufacturing processes

Food & Beverage: population and income growth, lifestyle changes

**Geography**

Emerging markets: automation and productivity driving robotization, key market China

Developed markets: US and European macro-economic trends and digitalization supporting growth, political risks

- **% of revenues**
  - Renewables
  - Conventional generation
  - O&G, Chemicals
  - Automotive
  - Mining & Metals
  - Food & Bev.
  - Other Industry
  - Rail
  - Buildings
  - Marine
  - Utilities
  - Industry
  - Transport & Infra.

- **% of revenues**
  - Europe
  - Americas
  - AMEA

- **Emerging markets**
  - Europe
  - Americas
  - AMEA

- **Developed markets**
  - Europe
  - Americas
  - AMEA
Robotics and Motion
Partner of choice for robotics and intelligent motion solutions

**Robotics**
- Industrial robots, software and IoTSP connected services
- Robotic applications and systems for diverse industries

**Drives**
- LV AC drives up to 5,600 kW
- MV drives to 100 MW
- Wind converters
- Digital services and software tools
- Propulsion converters

**Motors & Generators**
- LV motors to 1,200 kW
- HV motors to 80 MW
- Power generators to 80 MW
- Mechanical power transmission

**Competitive position**

<table>
<thead>
<tr>
<th>Robotics</th>
<th>Drives</th>
<th>Motors &amp; Generators</th>
</tr>
</thead>
<tbody>
<tr>
<td>#2 DÜRR</td>
<td>#1 Danfoss</td>
<td>#1 SEW Eurodrive</td>
</tr>
<tr>
<td>KUKA</td>
<td>YASKAWA</td>
<td>SIEMENS</td>
</tr>
<tr>
<td>YASKAWA</td>
<td></td>
<td>TECO</td>
</tr>
</tbody>
</table>

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