Significance of Innovation for competitiveness

ABB India Ltd.

Ganesh Kothawade, Vice President
Significance of Innovation for competitiveness

• Agenda:
  • ABB Overview
  • Global Market
  • Change and Innovation
  • Innovation in entire Value Chain
Significance of Innovation for competitiveness

ABB - Leading Market Position with Global Footprint

~135,000 employees

Present in ~100 countries

$34 billion in revenue (2017)
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ABB India - Leading technology and innovation for sustainable growth

Our footprint in

- **50%**
  - of solar power generated in India passes through ABB equipment

- **50%**
  - of cement plants commissioned in the last 5 years run on ABB’s control system DCS

- **60%**
  - of India’s oil production monitored by ABB solutions

- **52%**
  - of diesel locomotives run on ABB Turbochargers

- **Largest**
  - manufacturer of wind converters in India

- **All**
  - 8 operational metros across the country run on ABB technology
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ABB India - 10 world class manufacturing sites, 22 sales offices
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ABB Nashik facility

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**Plant I**

- 12 acre facility established in 1978 (48,360 SQM)
- Medium voltage hub with 6 product lines
- Dedicated technology & training centre
- ISO 9001, ISO 14001, OHSAS 18001

**Plant II**

- 5 acre of newly established facility (20,668 SQM)
- Medium voltage hub for 2 product lines
- Engineering centre
- Energy efficient & zero discharge facility

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Smart factories with safe & healthy environment
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ABB Nashik Facility

R&D Centre
- Cumulative > 100 man years of pioneering technology development
- 30 patents registered
- Technology development for global markets

Training Centre
- State-of-the-art training facility
- Skill development for employees & customers
- Hands on training > 10,000 man hours

India Engineering Centre
- Project based engineering
- Supporting global requirements
- Advanced design and simulation software

Let’s write the future together
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Global market (Top 15 economies) & India’s Share in export

It's an opportunity for growth

GDP Normal - Trillion USD

Export - Trillion USD

- Source - Public Domain
### Significance of Innovation for competitiveness

Global market expectations

<table>
<thead>
<tr>
<th>Global expectations</th>
<th>Indian Industry at large</th>
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<tbody>
<tr>
<td>✓ World Class products / services</td>
<td>▪ Conventional products</td>
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<tr>
<td>✓ Efficient, state of the art processes / systems</td>
<td>▪ Traditional manufacturing / lack of automation resulting into complex processes</td>
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<tr>
<td>✓ Focus on Safety, Quality and Environment standard compliances</td>
<td>▪ Still in early stages of awareness about HSE &amp; Quality (Chalta Hai approach)</td>
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</table>
| ✓ Responsible sourcing & global compliances  
  – Ex. Conflict free sourcing, Data security / IP regulations, WTO regulations, Human Rights, ILO regulations | ▪ Lack of compliances / awareness to global standards |
| ✓ Transparency & Sustainable business models | ▪ Gap in “Say to do ratio” |
| ✓ Commitment for competitive prices | ▪ Communication and commitment issues |
| | ▪ Prices still higher by 12-20% compared to CN |

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Need for Improvement, Innovation & Change
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Change

- It is not necessary to change. Survival is not mandatory.

W. Edwards Deming

You can’t do today’s job with yesterday’s methods and be in the business tomorrow
"Innovation" can be defined simply as a "new idea, device or method".

Innovation is often viewed as the application of better solutions that meet existing needs, unarticulated needs and new requirements foreseeing future.

Such innovation takes place through more-effective;

- Products / Services,
- Processes / methods,
- Materials / Technologies
- Lean Business Models .........
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Innovation in entire Value chain

Customers
- Bidding
- Sales and Marketing
- Project Management
- Shipment to customer
- Installation & commissioning
- Customer care

Innovative Products, Use of Digital Tools
- Online product traceability, Remote Asset management

Suppliers
- Order Execution
- Engineering
- Production, testing & Quality
- SCM
- Extension of Know-How, Collaboration

Global Engineering, Design optimization and standardization
- Lean processes, Automation, Continuous improvement, Cost-out, Smart Factory

Centralized process and Global database

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Journey towards smart factory

Transformation

Initial Stage
- Zig Zag Assembly flow
- Excessive material & man movement
- High TPT
- Safety hazard
- High Inventory

First Phase
- Achieved unidirectional flow
- Reduction of Man, Material Travel
- Reduction in TPT

Second Phase
- Lean Manufacturing lines
- Created additional space for 2 new products
- Optimized Inventory

Final Stage
- Semi Automated manufacturing line
- Improved productivity,
- Consistent flow and output
- Improved safety

Improvement is not a “One-time job”
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Energy Efficient System

- To restrict external heat
  - Use of DGU (Double glass unit)
  - Roof sheet with underdeck insulation sheet
- Use of HVLS fans resulted in reduction of
  - AHU size by 80000 CFM (70 kW),
  - Water and Space
- Use of VRF (variable refrigerant flow) air conditioning system
  - 30% efficient than conventional
- Use of LEDs across the factory
- Use of motion sensors for auto light switching off on each workstation cluster
- ABB Office automation system to control curtains, AV system, lighting as per desired selection.
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Smart Factory set up

Digitalization

**E Gallery**
- Interactive
- User friendly
- Accommodates more data
- Adoptable

**E Gemba**
- Web based tool
- Interactive
- Maintains history
- Sends MOM

**Integrated Traceability System**
- Web based system
- Real time data
- Mistake Proofing
- Operator assistance

**Remote testing facility**
- Customer lounge
- Remote FAT

A step towards Industry 4.0
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Smart Factory set up
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Process improvement through innovation

Continuous improvement culture

- Safety First – Don’t Look the other way
- 4Q – Data analysis for improvement and problem solving
- Kaizen – small improvements
- Poka yoke – ensure consistency
- OPQ – to generate Cost out projects
- Gemba – to align team towards common goal

Engaging people for continuous improvement

4Q projects development

Kaizen development

Safety Reporting Tools

Cost-out Energy Saving
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Cost out through Innovation

Following parameters needs to be maintained inside clean room

- Temperature: 22 ± 2 °C
- Relative Humidity (rH): 50 ± 5%
- Pressure: +50 to +60Pa
- Room Cleanliness: ISO Class 6

rH control process:

- HSD Consumption Reduced by 75% (65,678 Liter)/year
- Electricity Consumption Reduced by 17% (668,626 kWh)/year
- CO2 equivalent saved (732 Ton of CO2)
- Return On Investment – 4 Months/year
Overall process is focused to improve quality, cost competitiveness and compliance

- Supplier Qualification Based on
  - Financial capacity, Manufacturing set-up
  - Technical competency, Manpower
- Sustainability and compliance
- Commitment to High standards of Ethics and code of conduct
- Online Global database, eRFQ
- Centralized P2P (Procurement to Pay to process)

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Collaboration with Suppliers
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Innovation through Joint Efforts

• Onsite Training on special processes
• Online Tool condition & calibration Monitoring
• Use of PokaYoke / Kaizen techniques
• Kanban, Kitting, Vendor to Manufacturing line
• Process Improvements with Focus on Prevention
• Involvement of suppliers during product development stage
• Extending HSE and sustainability culture
• Promoting suppliers for Global sourcing

Know-How and Collaboration with Suppliers for Quality & Cost excellence
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Customer connect through digitalization

Marketing and communication

- Webinar for knowledge sharing and communication
- Local partnering to be cost competitive; meeting local legal, taxation and regulatory requirements
- SFDC and configurators to create dynamic platform for opportunity handling
- Using Latest communication techniques such as Skype, Blue Jeans, Doodle, VC etc.
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Customer connect through digitalization

Information at a click

- Mobile app for:
  - Product brochure
  - Instruction manual (Multi-language)
  - Installation and Maintenance Video in the application
  - FAQ
  - Link to service support portal

- Equipment user can scan the product bar code to have:
  - Product Profile (Sr. no, Year of manufacturing etc.)
  - RTC for that particular product
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Customer connect through digitalization

Remote Asset management

- Cloud based equipment healthcare platform
- Centralization database
- RFID based data sensing for condition monitoring
- Predictable preventive maintenance
- Real-time alerts
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Product Innovation

Traditional way

Innovative solution

Compact, Ready to Plug, Multifunction, Cost Effective
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Evolution of technology to meet customer need

Innovation is Key to success
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Survival of the fittest

Price Erosion across product lines

Growth in our Market Share

Sustainable growth in challenging market through continuous Innovation
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ABB Nashik – Export footprint

Worldwide reference Sold in > 100 countries

Albania, Angola, Argentina, Australia, Austria, Azerbaijan, Bangladesh, Botswana, Bhutan, Brazil, Canada, Chile, China, Colombia, Croatia, Cz Republic, D’congo, Egypt, Estonia, Ethiopia, France, Finland, Georgia, Germany, Ghana, Greece, Guyana, Guatemala, Hungary, Honduras, India, Indonesia, Iran, Iraq, Israel, Italy, Jordan, Kazakhstan, Kenya, Kuwait, Laos, Lesotho, Malaysia, Mauritius, Mexico, Morocco, Mozambique, Myanmar, Namibia, Nepal, New Zealand, Netherland, Nigeria, Oman, Panama, Paraguay, Peru, Philippines, Poland, Serbia, Senegal, Slovakia, Slovenia, Malaysia, Mauritius, Mexico, Morocco, Mozambique, Myanmar, Namibia, Nepal, New Zealand, Netherland, Nigeria, Oman, Panama, Paraguay, Peru, Philippines, Poland, Serbia, Senegal, Slovakia, Slovenia, Spain, Saudi Arabia, South Africa, Sri Lanka, Sweden, Switzerland, Tanzania, Turkey, Thailand, Tunisia, Ukraine, Uganda, Uruguay, Uzbekistan, UAE, USA, Vietnam, West Indies, Zambia, Zimbabwe, Lebanon, Lithuania.