

Training at ABB India
Developing your full potential



Index

This is ABB	4
ABB in India	5
Our service portfolio	6
Creating value through knowledge sharing	8
Product training modules	10
Industry specific training modules	19
Domain specific training modules	20
Training modules at a glance	22

This is ABB

ABB is one of the world's leading power and automation engineering companies that enable utility and industry customers to improve their performance while lowering environmental impact.

Our portfolio ranges from light switches to robots, and from huge electrical transformers to control systems that manage entire power networks and factories. We provide solutions for secure, energy-efficient generation, transmission and distribution of electricity, and for increasing productivity in industrial, commercial and utility operations.

Technology plays a key role for ABB. We have seven research centers, 6,000 scientists and 70 university collaborations across the world – all working to develop unique technologies that make our customers more competitive.

Sustainability is integral to all aspects of our business. We strive to balance economic, environmental and social objectives and integrate them into our daily business decisions. Sustainability considerations cover our entire value chain, from how we design and manufacture products, to how we behave in the communities where we operate and towards one another.

ABB in India

The sub-continent has witnessed an unprecedented level of economic expansion. To sustain this growth, ABB in India is actively reaching out and partnering with stakeholders to discover new ways of applying innovation, technology and global experience to find solutions to help build and sustain a low carbon economy.

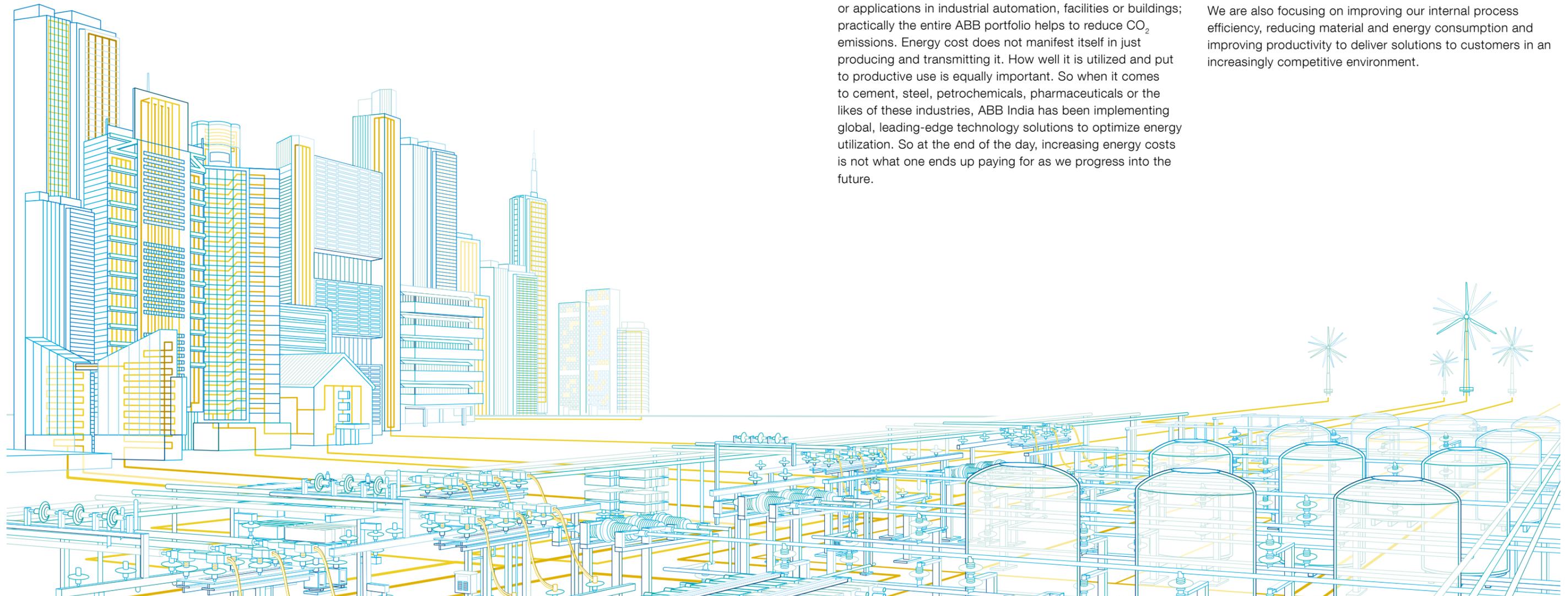
Energy is a critical driver to accelerating economies. But what is more relevant in today's environment is making energy sustainable and a viable proposition. Nature makes energy available in various forms. And to harness this energy effectively and efficiently, ABB has developed technologies to utilize the latent energy that lies in the power of ocean water to natural resources like coal and to far more sustainable solutions like the sun and the wind.

Whether it is for power generation, transmission, distribution or applications in industrial automation, facilities or buildings; practically the entire ABB portfolio helps to reduce CO₂ emissions. Energy cost does not manifest itself in just producing and transmitting it. How well it is utilized and put to productive use is equally important. So when it comes to cement, steel, petrochemicals, pharmaceuticals or the likes of these industries, ABB India has been implementing global, leading-edge technology solutions to optimize energy utilization. So at the end of the day, increasing energy costs is not what one ends up paying for as we progress into the future.

Our strategy is to leverage our domain expertise in power and automation technologies to help utilities and industries improve productivity, efficiency and reliability of operations while reducing environmental footprint. Through various initiatives, we are continuously addressing customer needs, investing resources in indigenization, localization and manufacturing to develop products and solutions to cater to specific customer requirements through enhanced and customer delivery models.

To enhance our presence and sustain technology leadership, ABB is capitalizing on mega trends such as urbanization and emerging economies, resource efficiency and climate change, exploiting disruptive opportunities, such as direct current (DC) technologies, to enable a wide range of energy efficient automation and power solutions.

We are also focusing on improving our internal process efficiency, reducing material and energy consumption and improving productivity to deliver solutions to customers in an increasingly competitive environment.



Our service portfolio

Service is an integral and important channel to improve customer intimacy and enhance value proposition. The service strategy is to unleash the full potential of the entire organization to take advantage of huge and growing installed base, which constitutes a large opportunity to increase the service offerings and to enhance customer value.

Our competent and experienced service teams develop, build and deliver holistic solutions to drive efficiency and productivity improvements by utilizing ABB's existing advanced knowledge and capabilities. Driven by customer needs, service teams across various product groups, functions and regions work together to offer comprehensive solutions for optimal improvements and value addition.

ABB Full Potential Service Strategy builds on strong foundations of the huge and continuously growing installed base, technologically superior products and solutions and long and proven engineering competences. The objective is to take advantage of these key imperatives to maximize the Return on Assets and improve productivity, availability, reliability and in turn the profitability for the customers.

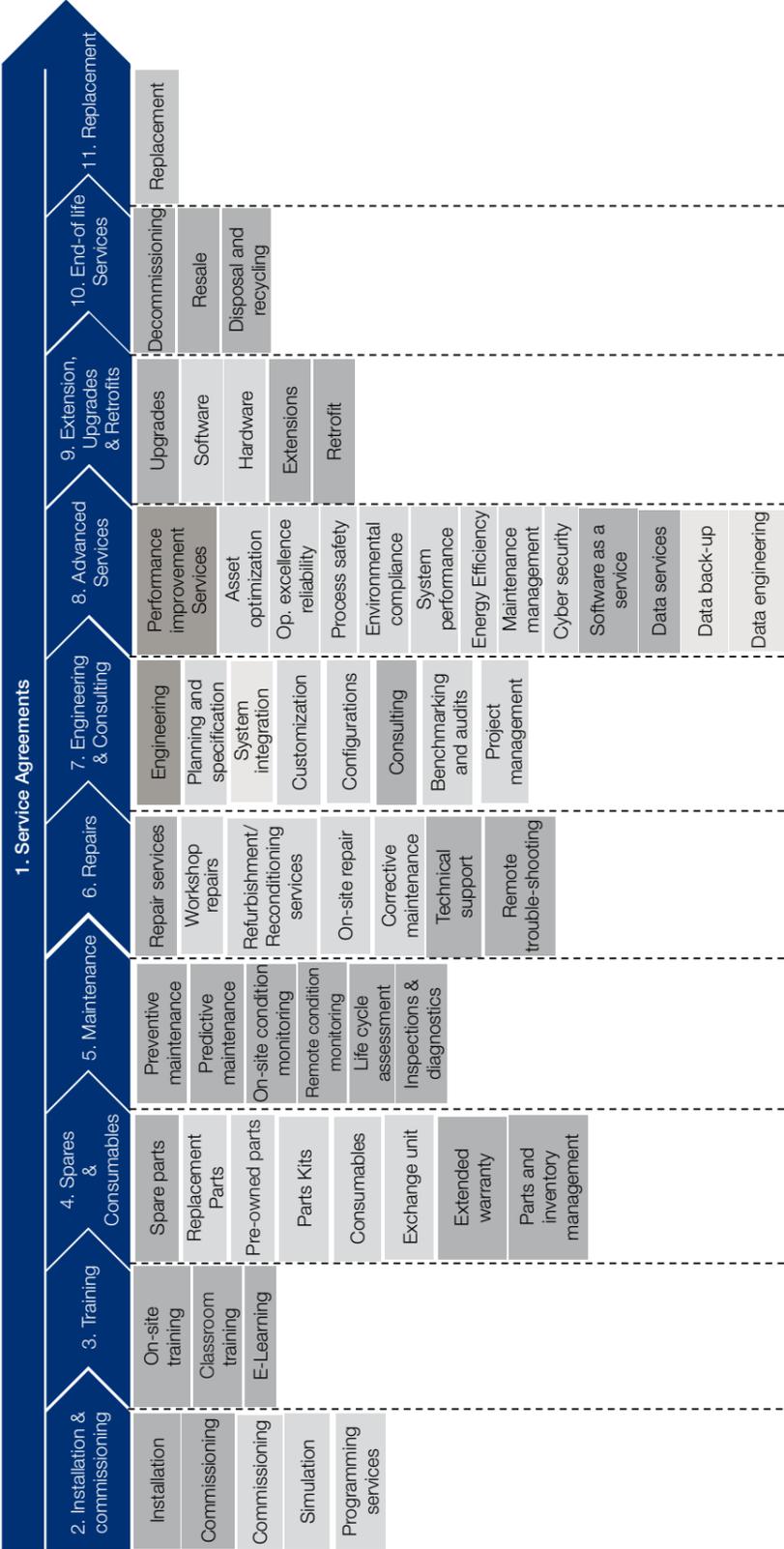
Through a holistic service portfolio from conventional life cycle support (like spare parts, training and field services) to more advanced solutions (like upgrades, evolution & retrofit solutions, optimization), ABB offers a complete range of solutions for all customer needs. Leveraging on the combined strength of strong electrical product portfolio and vast application knowledge, ABB is best prepared and equipped to cater to the needs of emerging trends and demands of energy efficiency and carbon footprint optimization.

People development and competence build up is a significant step in ensuring the best usage of various products and solutions delivered for control of various critical applications. ABB, through a comprehensive training portfolio, offers wide ranging standard and customized training modules for all customer needs at all levels.

State-of-the-art training facilities, with right and required number of training kits, managed by experienced and certified trainers, provide a unique opportunity to all customers for targeted and focused competence build-up of their entire workforce for improved availability and reliability of all equipment and systems. Generally, most of the training modules include both class room and hands-on sessions, for enhanced training effectiveness and better learning experience.

Fast growing demand for customized on-site (at customer locations / plants) training modules with mobile training kits, wherever possible, reflects ABB's flexibility and preparedness to meet the special challenges in terms of large pool of operators / engineers to be trained in short time and also on topics of special importance to a particular plant / unit.

ABB's training portfolio goes beyond the conventional product / equipment, by integrating special topics like system integration, technological solutions, process optimization, loop performance monitoring and tuning, IEC 61850 based power management solutions, industry safety solutions, functional safety systems, etc.



Creating value through knowledge sharing

ABB's training programmes are designed and structured as an integral part of customer commitment. Our programmes focus on enhancing skills and developing the competence of our customers' personnel across functions and levels.

With decades of unparalleled domain knowledge and experience, ABB's expert team of internal and external trainers offer well-structured training programmes across a wide range of products and systems.

Through interactive workshops, hands-on training and product demonstrations, we create the ideal environment for our customers to familiarize themselves with various products and system platforms and enhance their skills.

The ABB advantage:

Our training programmes offer the following benefits:

- Help customers stay ahead of the learning curve by sharpening their skills and integrating advances in technological innovation
- Better returns on training investment by maximizing productivity and performance
- Reduced life-cycle costs thereby increasing return-on-investments (ROI) and return-on-assets (ROA)
- Maintaining products and systems at a high level of readiness, so as to minimize downtime and mitigate the need for equipment repair

ABB's training centre provides the ideal infrastructure with:

- Sophisticated learning aids such as, simulations, product cut-outs and multimedia presentations
- Demo-room with operating models
- Practice benches for hands-on training
- Well-equipped classrooms with instant access to ABB group e-learning sites
- Outdoor switchyard with high and medium voltage switchgear, power and distribution transformers and other power technology products



Training centre at Peenya



Training cum demo room at Nelamangala



Training centre at Vadodra

Product training modules

Transformers

Product categories

- Power Transformers (upto 765 KV)
- Distribution Transformers
- Dry-Type and Liquid-filled Type Transformers
- Reactors

Topics covered

- Basics of transformer and reactors - design aspects, insulation, principle, connections (vector groups)
- Transformer selection and application, accessories
- Manufacturing and testing of transformers / reactors
- Life extension and refurbishment of transformers
- Installation, commissioning, maintenance and troubleshooting
- Diagnostics - condition monitoring, oil processing, DGA
- Economic aspects of replacement of transformers
- Modern trends in design / manufacturing

Target audience: End users, system integrators, channel partners, Independent Service Franchise

Duration of training: 3 to 8 days



High Voltage Switchgear (upto 765 KV)

Product categories

- Circuit Breakers
- Instrument Transformers (CT and CVT)
- Disconnectors
- Gas Insulated Switchgear (GIS) and Hybrid Switchgear (PASS)
- Surge Arrestors
- HV/LV Capacitors
- Generator Circuit Breaker (GCB)

Subjects covered

- Theory on working of product, applicable standards and selection parameters
- Operation, construction, components
- SF6 gas properties and gas filling, handling
- Control schemes, manufacturing and testing
- Hands-on practice
- Installation, commissioning, troubleshooting and site maintenance requirements
- Refurbishment, life extension
- Modern trends in design / manufacturing

Target audience: End users, system integrators, channel partners, Independent Service Franchise

Duration of training: 2 to 6 days



Product training modules

Medium Voltage Switchgear

Product categories

- Apparatus - Indoor and Outdoor Circuit Breaker, SF6 Vacuum Breaker, Railway Breaker, Vacuum Interrupters
- Air Insulated Switchgear (AIS)
- Gas Insulated Switchgear (GIS)
- Ring Main Unit (RMU)
- Compact Secondary Substation (CSS)

Subjects covered

- Design, operation and construction principles
- Inside the breaker - Hands-on practice, demo
- Hands on practice - operating mechanism, SF6 gas filling
- Control schematics and applicable standards
- Manufacturing and testing
- Setting examples and calculations
- Maintenance and troubleshooting
- New developments in MV Switchgear Technology - GIS

Target audience: End users, system integrators, channel partners, Independent Service Franchise

Duration of training: 3 to 5 days



Utility Communication

Product categories

- Power Line Carrier Communication System (PLCC)

Subjects covered

- PLC Terminal Type ETL 4x -8x
- Protection Coupler Type NSD50
- VFT Equipment Type NSK5
- Modular Coupling Device Type MCD80
- Testing of equipments
- Fault tracing

Target audience: EPCs, all utility customers

Duration of training: 10 days



Product training modules

Distribution Automation Products

Product categories

- Distribution Protection - SPACOM series and RED500 series
- Distribution Protection - 605 series and 630 series
- Distribution Protection - 611 and 615 series
- Station Automation - COM600
- Fast Bus Transfer device - SUE 3000
- Load Shedding Controller - PML630

Subjects covered

- Overview of protection principles and application
- Relay functions and features
- Introduction to relay configuration tool along with communication with relay
- Relay engineering and configuration including logic building
- Relay operation - HMI navigation, relay parameterization and fault data upload and analysis, testing and trouble shooting
- Introduction to Fast Bus Transfer device, Load shedding controller PML630 and its Engineering
- Simulation of different modes of transfers
- Establishment of communication between substation IEDs, PML630
- Simulation of different scenarios of Fast and Slow load shedding
- Substation Automation Solutions - Structure and Architecture and introduction to COM600
- Control, protection and monitoring concepts and advantages of IEC61850
- Graphical User Interface, Single Line Diagram, Event List, Alarm List, Trends, Reports

Target audience: End users, system integrators, channel partners, Independent Service Franchise

Duration of training: 3 to 5 days

Substation Automation System

Product categories

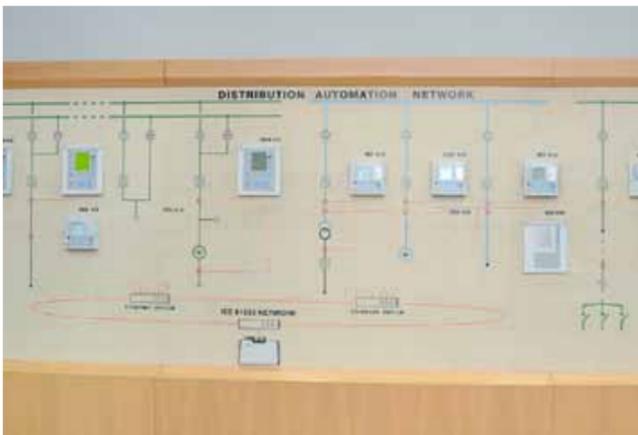
- Line Distance Protection with REL670 and REL650
- Line Differential Protection with RED670
- Transformer Protection with RET670 and RET650
- Busbar Protection with REB670 and REB500
- Generator Protection with REG670
- Bay Controlling with REC670 and REC650
- Substation Automation with MicroSCADA
- RTU560 Gateway Engineering
- Power System Studies and Relay Coordination
- Power System Studies Software - NEPLAN

Subjects covered

- Application
- Function and features
- Configuration and setting example
- Testing of product
- Hardware and software concept
- HMI Program and LDU
- Operation and maintenance
- Relay coordination and grading between overcurrent and short circuit devices
- RTU and MicroSCADA Pro

Target audience: End users, system integrators

Duration of training: 5 to 10 days



Product training modules

Power Generation (Control and Instrumentation)

Product categories

- Power Plant Automation (Optimax)
- Power Plant Training Simulator
- Combustion Instruments - Flame Scanners
- Pro Control 13 with Progress 3 Engineering and Industrial IT HMI
- Symphony Harmony with Power Generation Portal (PGP) HMI and Composer Engineering
- Symphony Melody
- Turbine Protection and Control Solution - TSI, TSA, EHTC, ATRS etc
- Boiler Protection and Control Solution-FSSS, BMS
- Freelance 800F
- EGATROL System for Gas Turbine

Subjects covered

- Performance monitoring of products
- Performance simulation
- Installation and configuration features
- Power generation information management (PGIM) for history and analysis
- HMI upgradation
- Operations and engineering including logic building
- Maintenance and troubleshooting

Target audience: End users, channel partners, OEMs, EPCs, System Integrators, Consultants, Energy Auditors

Duration of training: 3 to 5 days



Low Voltage Switchgear

Product categories

- Air Circuit Breaker
- Moulded Case Circuit Breaker
- Soft Starter
- Contactor
- Electronic Products and Relays
- Universal Motor Controller

Subjects covered

- ModBus communication with RS485/Bluetooth
- Maintenance and troubleshooting techniques
- Components, accessories

Target audience: End users, system integrators, channel partners, Independent Service Franchise

Duration of training: 3 to 5 days



Product training modules

Low Voltage Systems

Product categories

- Convention Switchgear - MNS 3.0 and MNS R
- Intelligent Switchgear - MNS iS, MNS 3.0 with M10X, UMC Relay

Subjects covered

- MNS applications
- Functional description of MNS systems
- Erection and service instructions
- Parameterization and tool
- DCS and switchgear communication

Target audience: End users, consultants, OEM'S, EPC'S

Duration of training: 3 to 6 days



Low Voltage Drives

Product categories

- ACS 55 and ACS 150 - Micro Drives
- ACS 355 and ACS 850-04 - Machinery Drives
- ACS 310 and ACS 550 - General Purpose Drives
- ACS 800, ACS 880, DCS 800 - Industrial Drives
- ACH 550 and ACQ 810 - Industry Specific Drives
- ACSM1 - Motion Control Products
- ACS 800 Multi Drives and Regenerative Drives

Subjects covered

- Product technical features and concepts
- Principle of operation
- Product hardware and software description
- Parameters and signal description
- Commissioning and maintenance tool exercises
- Standard operation and maintenance procedures
- Faults and alarms

Target audience: End users, system integrators, energy auditors, Independent Service Franchise

Duration of training: 2 to 5 days



Product training modules

Medium Voltage Drives

Product categories

- ACS 1000 and ACS2000 - General Purpose Drives
- ACS 5000 and ACS 6000 - Special Purpose Drives

Subjects covered

- Drive fundamentals and features
- Principle of operation
- Product hardware and software description
- Parameters and signal description
- Commissioning and maintenance tool exercises
- Standard operation and maintenance procedures
- Faults and alarms

Target audience: End users, system integrators, energy auditors, Independent Service Franchise

Duration of training: 3 to 5 days



Power Electronics

Product categories

- High Current Rectifier - AC 800 PEC, DCR 600 and DCR 800
- Static Excitation System - UNITROL 1000, UNITROL F, UNITROL 5000, UNITROL 6000
- Traction Convertors - BORDLINE

Subjects covered

- Fundamental knowledge and product features
- Principle of operation
- Product hardware and software description
- Parameters and signal description
- Commissioning and maintenance tool exercises
- Standard operation and maintenance procedures
- Faults and alarms

Target audience: End users and system integrators

Duration of training: 3 to 5 days



Product training modules

Control Products (PLC)

- Product categories**
- DigiVis 500 SCADA
 - AC 500 series PLC
 - AC 500 (High Availability)
 - AC 500 eCo PLC
 - CP400 and CP600 HMI
 - AC31 40/50 series PLC (on request only)

- Subjects covered**
- OPC configuration and AE configuration at DigiVis 500 SCADA
 - Centralised and decentralised configuration of PLC
 - HA PLC configuration steps
 - Configuration with Profibus, CS31, Profinet, Modbus RTU, Modbus TCP/IP etc
 - SNTP time synchronization
 - HMI configuration steps, connectivity with PLC

Target audience: End users and system integrators

Duration of training: 3 to 5 days



Motors and Generators

- Product categories**
- Low Voltage Motors
 - High Voltage Induction Motor
 - High Voltage Synchronous Motor
 - DC Motor
 - Traction Motor
 - Wind Generators
 - Energy Efficient Motors
 - Motors for hazardous areas

- Subjects covered**
- Introduction of theory of electrical machines
 - Mechanical and electrical designs/construction of electrical machines
 - Operational aspects
 - Thermal, electrical, ambient, mechanical stresses affecting a machine
 - Installation and commissioning
 - Methods to eliminate most frequently occurring faults
 - Innovative ways of carrying out preventive and prediction maintenance

Target audience: End users, OEMs, channel partners, energy auditors, independent service franchise

Duration of training: 2 to 3 days



Product training modules

Robotics

- Product categories**
- Small size robot - IRB 120, IRB 1410, IRB 1600, IRB 2600
 - Medium size robot - IRB 4400 and IRB 4600
 - Large size robot - IRB 6600 series and IRB 7600
 - Robot Studio - Simulation and Programming Software
 - Paint robot
 - Arc welding robot

- Subjects covered**
- ABB robot and their types
 - Description of ABB robot components
 - Basic operation and programming of robot
 - Input/Output details and Interfacing with PLC
 - Robot system applications and booting of system
 - Troubleshooting and maintenance features

Target audience: End users, channel partners, system integrators

Duration of training: 3 to 5 days



Control Technology Products

- Product categories**
- Freelance 800F
 - 800xA with AC800 M controller
 - Compact HMI 800

- Subjects covered**
- System overview, system architecture
 - System functions
 - Diagnostic features
 - Basics of process control
 - Configuration and commissioning
 - Safety and redundancy concepts
 - General troubleshooting tips

Target audience: End users, channel partners, EPC's, OEM's, system integrators, consultants

Duration of training: 3 to 5 days



Product training modules

Measurement Products

- Product categories**
- Infra Red Analysers
 - Para Magnetic Analysers
 - Thermal Conductivity Analyser
 - Continuous Gas Analyser (CGA)
 - Gas Chromatograph
 - Natural Gas Chromatograph (NGC)
 - Fourier Transform Infra Red Analyser (FTIA)
 - Liquid Analyser & SWAS (Steam & Water Analysis System)
 - Flow Meter

- Subjects covered**
- Working principle of product
 - Construction and features of product
 - Components of product
 - Sample conditioning systems and various parameters of sample conditioning
 - Erection and commissioning guidelines
 - Maintenance and troubleshooting

Target audience: End users, channel partners, system integrators

Duration of training: 3 days



Turbochargers

- Product categories**
- Industry specific turbochargers ranging from 500KW to 80MW
- Subjects covered**
- ABB turbocharging global and local service network
 - Safe operation and maintenance of turbochargers
 - Dynamic balancing
 - Troubleshooting and failure analysis
 - SIKO - safety design concept
 - Latest development in turbocharger

Target audience: End users

Duration of training: Half day



Industry specific training modules

Process Industries

- Categories**
- Primary Metals
 - Hot Flat Rolling
 - Cold Rolling Mills
 - Processing Lines
 - Profile Mills
 - Tube Mills
 - Cement Mills
 - Paper Machines
 - Paper Winders
- Subjects covered**
- Drive Selections/Application Engineering
 - Technology controls like AGC, RGC, AFC, Coil Eccentricity compensation, Tandem Mill controls, Rolling Mill Mathematical Models
 - Level2 Systems

Target audience: End users

Duration of training: 2 to 3 days



Process Automation Control

- Categories**
- Configuration and operation of 800xA with AC800M Controller
 - Configuration and operation of 800xA with AC450 Controller
 - Engineering of a complete control project running in AC800M Controller
 - ACM, CPM and KM
- Subjects covered**
- System 800xA architecture
 - Engineering workplace/plant explorer
 - Controller hardware
 - Controller communication and database management
 - Applications with FBD and ST
 - Graphics display
 - Alarms, events and trends
 - Back up and restore

Target audience: End users, OEMs and system integrators

Duration of training: 3 to 5 days



Domain specific training modules

Process Automation - Productivity and Optimization Suites

Categories

- Energy Manager
- Scheduling Systems
- Knowledge Manager
- cpmPlus OEE

Subjects covered

- Energy Monitoring, Load Planning and Optimization
- Melt Shop and Hot Strip Mill Schedule Optimization
- OEE Concepts and Tracking

Target audience: End users

Duration of training: 2 to 3 days



Training modules at a glance

Product Category	Training Location							Contact Person	E-Mail Id	Office Landline Number	Mobile Number
	Bangalore (Peenya)	Bangalore (Nelamangala)	Bangalore (Rajaji Nagar)	Vadodara (Maneja)	Nashik (Satpur)	Mumbai (Andheri)	Faridabad (Mathura Road)				
Transformer				●				Dilip Shah	dilip.shah@in.abb.com	0265 2604448	9724334124
High Voltage Switchgear				●				Dilip Shah	dilip.shah@in.abb.com	0265 2604448	9724334124
Medium Voltage Switchgear				●	●			M Sukumar	m.sukumar@in.abb.com	0253 2201245	9890700419
Utility Communication						●		Manali Rane	manali.rane@in.abb.com	022 66717210	9820677004
Distribution Automation Products				●				Dilip Shah	dilip.shah@in.abb.com	0265 2604448	9724334124
Substation Automation System	●							Prakash Rao T	prakashrao.t@in.abb.com	080 22949650	9972583890
Power Generation (Control & Instrumentation)	●							Anjali Desai	anjali.desai@in.abb.com	080 22949648	9901493472
Low Voltage Switchgear		●						Prakash Gangoli	prakash.gangoli@in.abb.com	080 22948927	9901490984
Low Voltage Systems		●						Manish Haswani	manish.haswani@in.abb.com	080 22946878	9945120595
Low Voltage Drives	●							Srivatsa Ramamurthy	srivatsa.ramamurthy@in.abb.com	080 22946508	9901491120
Medium Voltage Drives	●	●						Srivatsa Ramamurthy	srivatsa.ramamurthy@in.abb.com	080 22946508	9901491120
Power Electronics		●						Srivatsa Ramamurthy	srivatsa.ramamurthy@in.abb.com	080 22946508	9901491120
PLC (Control & Automation)	●							Srivatsa Ramamurthy	srivatsa.ramamurthy@in.abb.com	080 22946508	9901491120
Motors & Generators	●			●		●	●	Srivatsa Ramamurthy	srivatsa.ramamurthy@in.abb.com	080 22946508	9901491120
Robotics	●							Ravikumar Singadi	ravikumar.singadi@in.abb.com	080 22948352	9901491151
Distributed Control System	●							Supratic Sarkar	supratic.sarkar@in.abb.com	080 22949650	9972583890
Measurement Products	●		●				●	Balesh Kumar	balesh.kumar@in.abb.com	0129 2448376	9810350764
Turbochargers	●			●				Keyurkumar Patel	keyurkumar.patel@in.abb.com	0265 2604413	7600053390
Process Automation			●					Rajeshwari Shenoy	rajeshwari.shenoy@in.abb.com	080 22946302	9916985219
Process Automation Control	●							Rajeshwari Shenoy	rajeshwari.shenoy@in.abb.com	080 22946302	9916985219
Process Automation - Productivity and Optimization Suites			●					Rajeshwari Shenoy	rajeshwari.shenoy@in.abb.com	080 22946302	9916985219
Training location details	ABB Limited Plot No. 5 & 6, 2nd Phase, Peenya Industrial Area Bangalore-560058	ABB Limited Survey No 88/3,88/4, Basavana Halli, Kasaba Hobli, Nelamangala, Bangalore-562123	ABB Limited 5th Floor, KSIIDC IT/BT Park, Rajaji Nagar Industrial Estate, Bangalore-560010	ABB Limited Power Technologies Training Centre, Maneja, Vadodara-390013	ABB Limited Plot No 79, Street 17, MIDC Estate, Satpur, Nashik-422007	ABB Limited 22-A, Shah Industrial Estate, Off. Veera Desai Road, Andheri (West), Mumbai-400053	ABB Limited 32 Industrial Area, NIT, Faridabad-121001				
											

For all training requirements, please contact us via:

Email: training@in.abb.com

Toll free number: 1800 420 0707

Website: www.abb.com/service

Contact us

ABB Limited

2nd Floor, East Wing
Khanija Bhavan
49, Race Course Road
Bangalore - 560001
Tel: +91 80 2294 9150
Fax: +91 80 2294 9148
Email: training@in.abb.com

www.abb.com/service