

31 MAY 2017

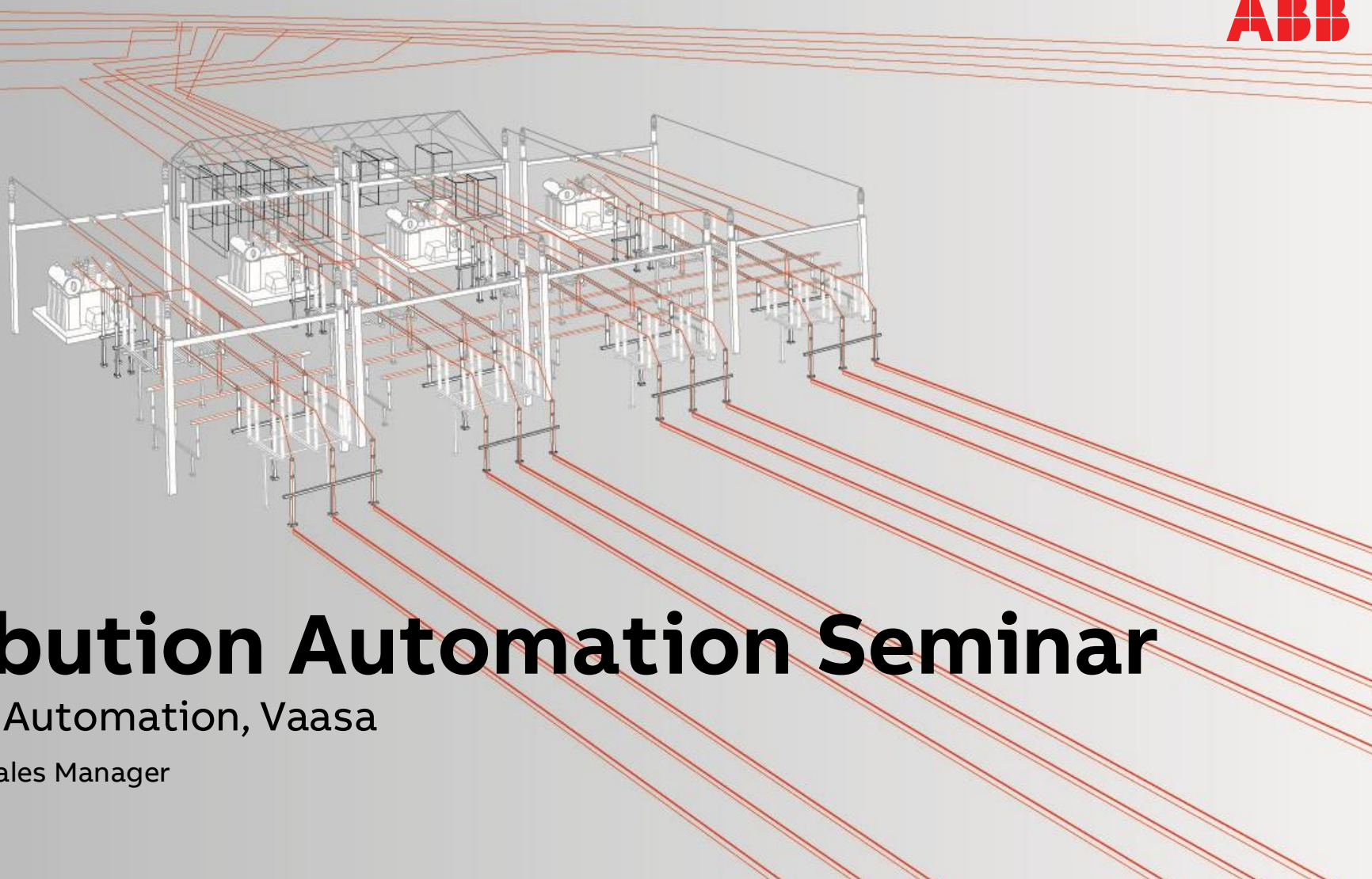
Distribution Automation Seminar

Introduction to the global DA factories

Olav Lundström, Sales Manager

Diane Gross, Product Marketing Manager

Sushil Joshi, Product Marketing Manager



31 MAY 2017

Distribution Automation Seminar

Distribution Automation, Vaasa

Olav Lundström, Sales Manager

Medium Voltage Products – Vaasa, Finland

Welcome to the top of the world

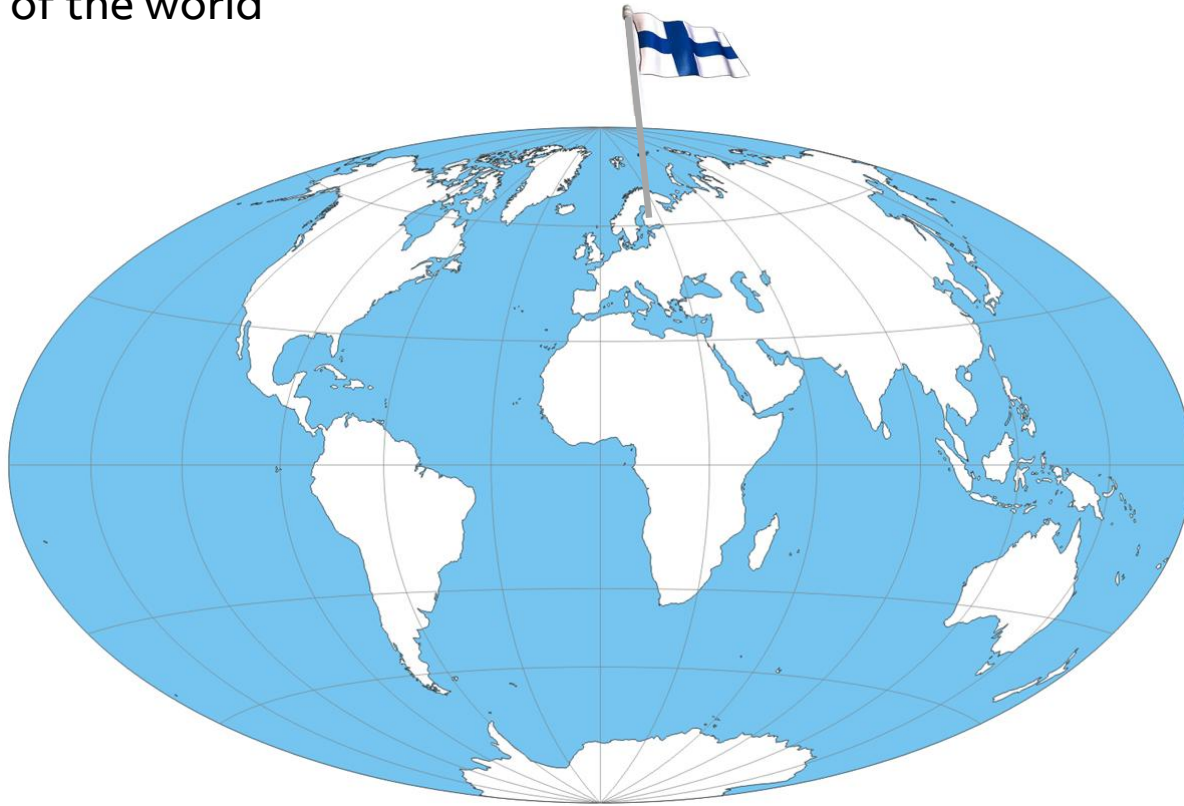


ABB Finland

Key figures



ABB Finland

Responsibilities within divisions

Global product responsibilities of ABB in Finland

Robotics and Motion

- Induction machines, synchronous machines
- Diesel generators
- Wind power generators
- Wind turbine converters
- Low voltage drives
- Low voltage motors, motors for explosive atmospheres (Vaasa)

Electrification Products

- Low voltage switches (Vaasa)
- Products and solutions for automation of power distribution (Vaasa)
- Protective relays for distribution networks (Vaasa)
- High-power solar inverters

Industrial Automation

- Paper machine drives
- Electric installation projects in the process industry (Vaasa)
- Collaborative production management (CPM) systems
- Energy management system CPMplus
- Azipod®
- Energy management system EMMA

Power Grids

- Special transformers (Vaasa)
- MicroSCADA Pro operation and control system (Vaasa)
- MicroSCADA Pro distribution management system (Vaasa)

ABB Finland

Caretaking of personnel

ABB invests in personnel development

Approximately 4% of revenues goes in to new personnel training

Focus areas

- Safety, management and leadership, processes and procedures, expertise and occupational training

Recruitment

- Summer trainees, about 1000

Work force in Finland

- 5140 employees in 22 locations by end 2016



ABB Finland

Caretaking of personnel

ABB invests in personnel development

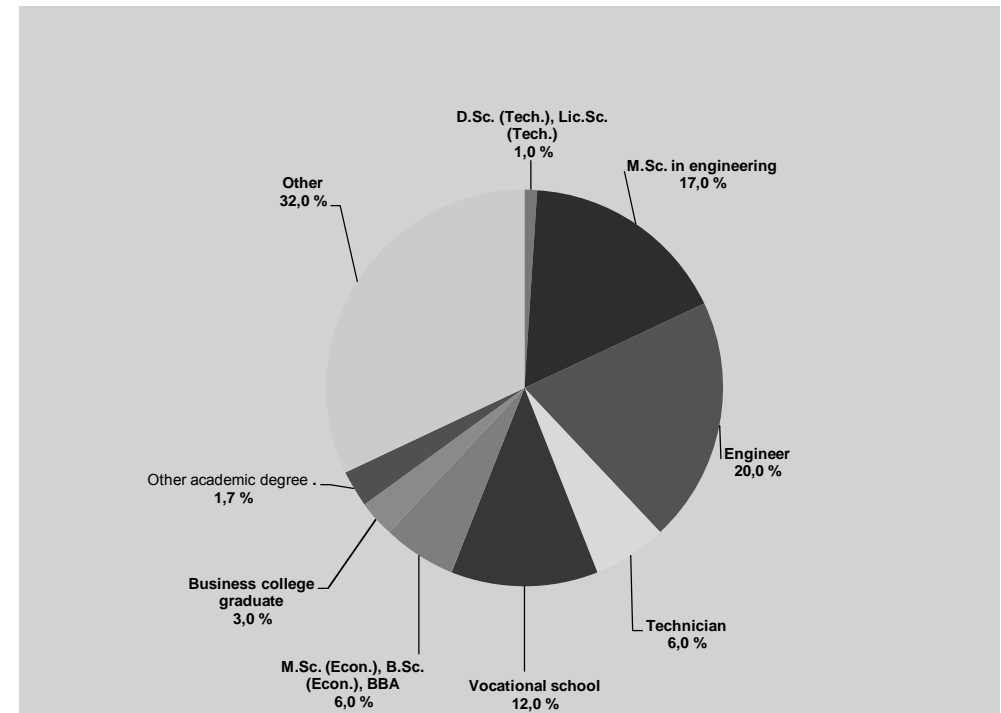
5,140 employees

- 70% white collars and 30 % blue collars
- Men 81,5%, women 18,5%

Technical education background 70% from staff

ABB Finland has 45 expatriates from abroad

About 165 employees with foreign background from over 42 countries



Medium Voltage Products – Vaasa, Finland

Location

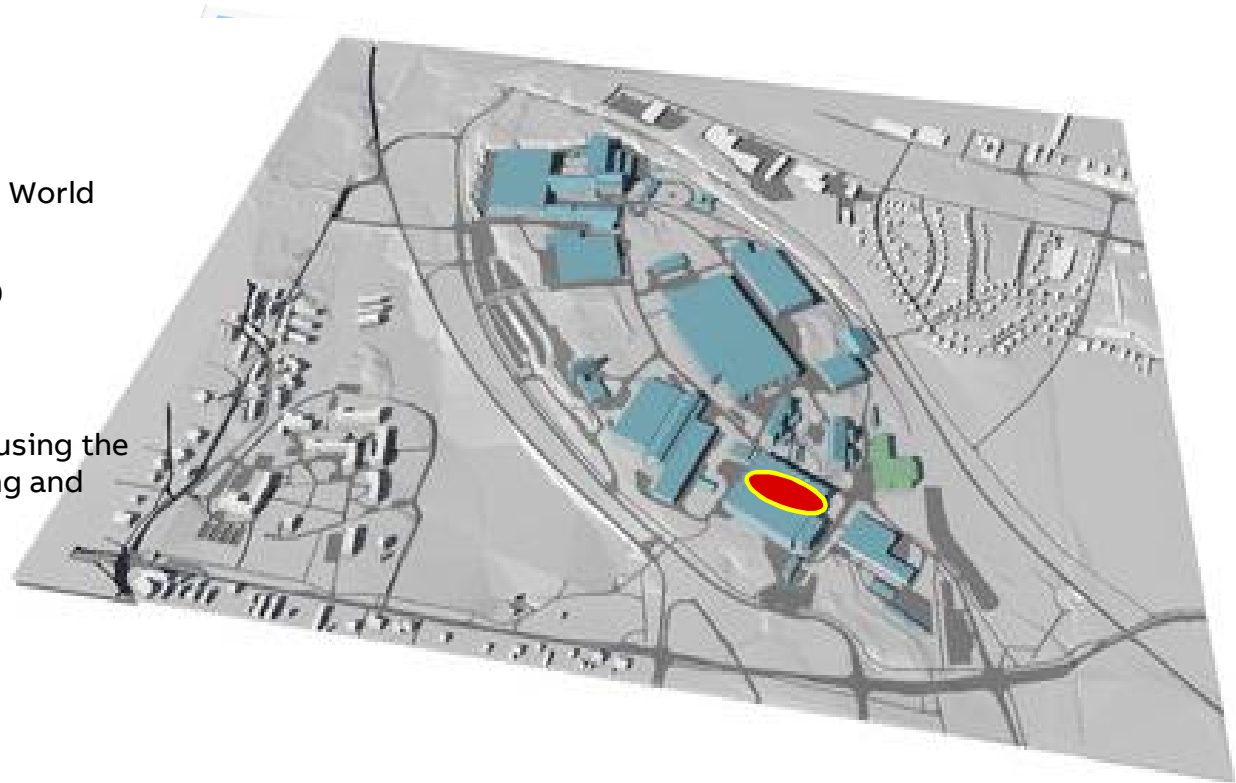
Located in the Strömberg Park area

- Just outside the town centre of Vaasa
- Great connections to Vaasa Airport as well as to the World

First factories in Strömberg Park are built during 1940

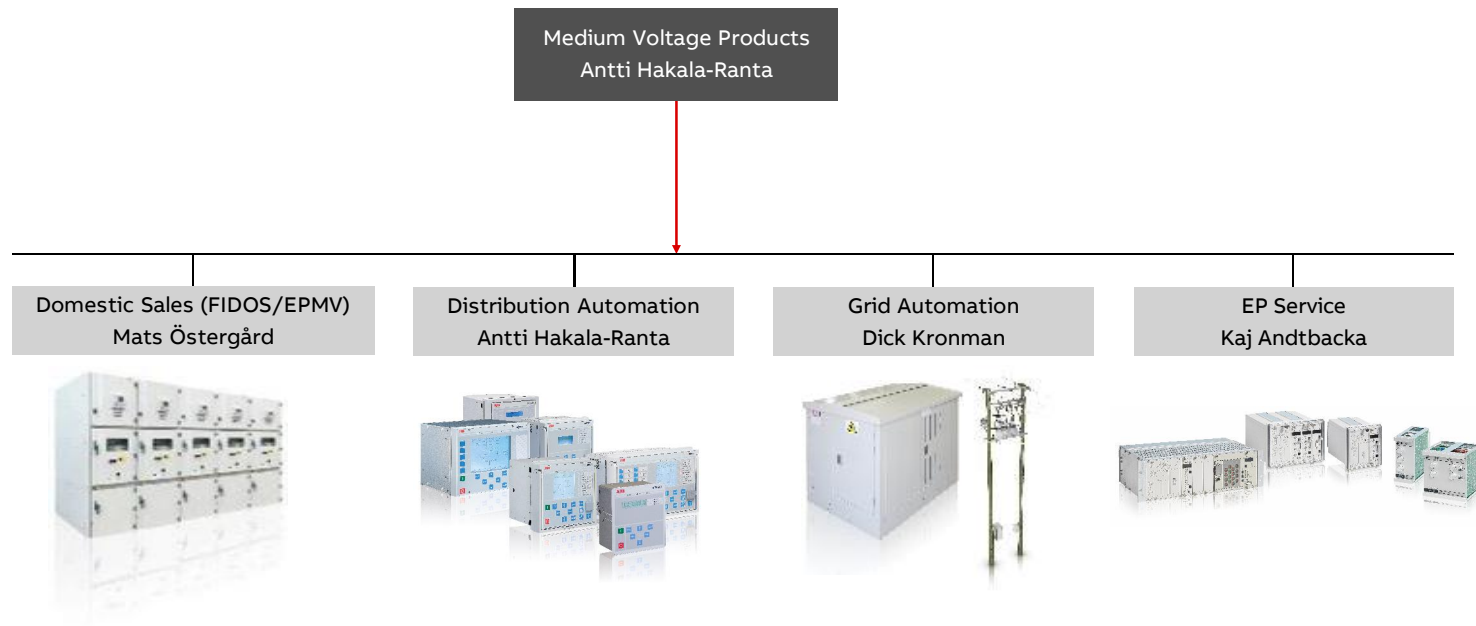
- Relay history in Strömberg Park since 1965

Today is the Distribution Automation (relays) factory using the absolutely latest technology for manufacturing, testing and packing.



Medium Voltage Products, Finland

Company Structure



Medium Voltage Products, Finland

The three product lines

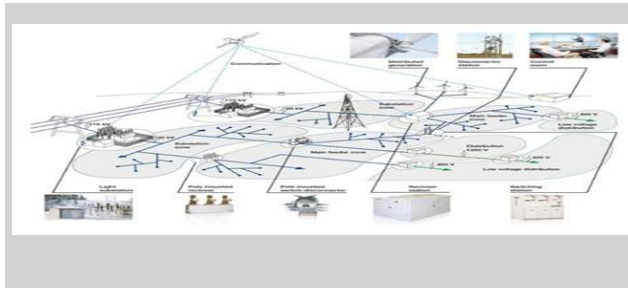
Distribution Automation



Protection & Control products and solutions for the Distribution Automation field

- 610 – 611 – 615 – 620 – 620 series
- Arctic communication solutions
- Grid controller COM600

Grid Automation



Grid Automation products and solutions

- Control cabinets
- Wireless communication solutions
- Fault management solutions
- Reclosers

DA Services



Distribution Automation Service

- Spare parts and Repair
- Maintenance (MEU solutions)
- Relay Retrofit Program (RRP method)
- Production of classic products

Medium Voltage Products – Finland

Proud to be trusted and have the main responsibility

Our role within ABB

Global responsibility (IEC) for research and development, marketing, sales and production

Global Operations, Customer Support and Training responsibility for DA business

Outdoor Recloser allocation for Europe and Maghreb

Services associated to DA and GA business



Medium Voltage Products – Finland

Distribution Automation Factory

Production



Competence development



Customer Support



Research & Development



Product Management



Marketing and Sales

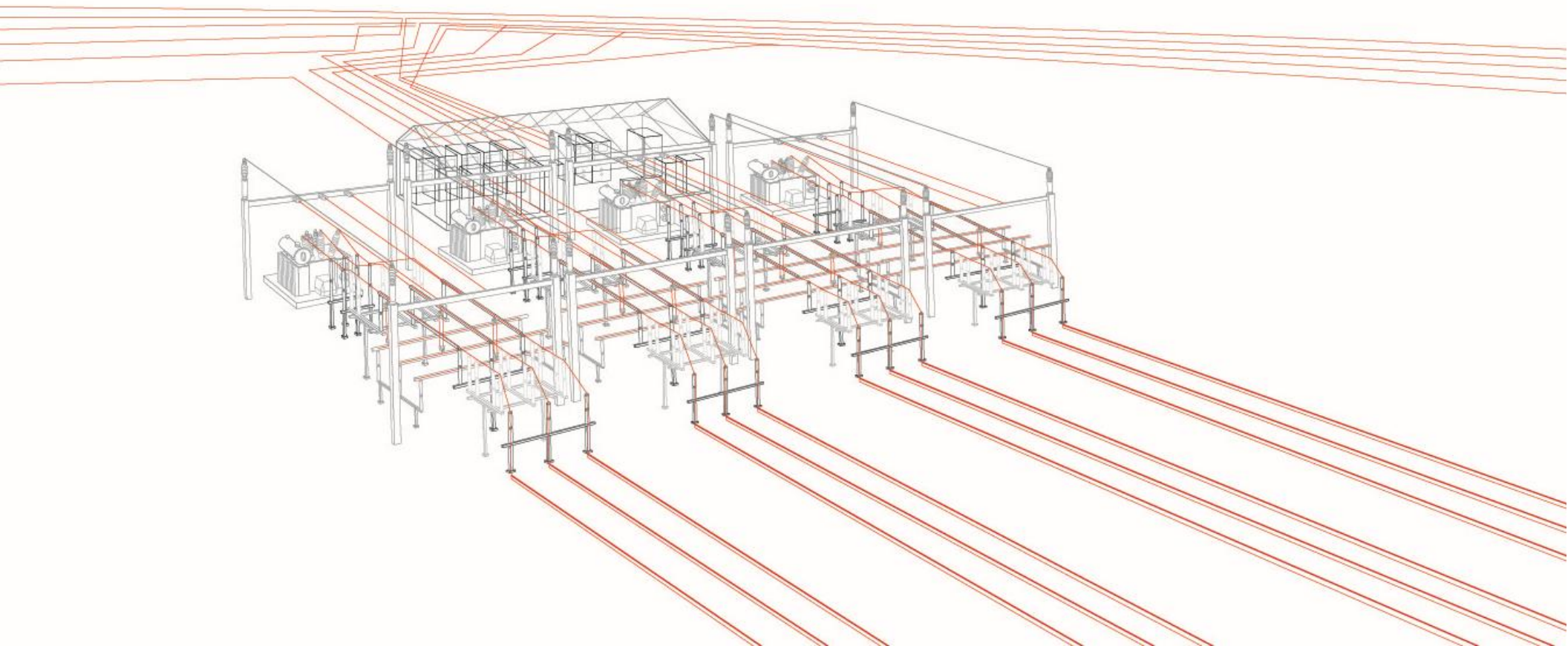


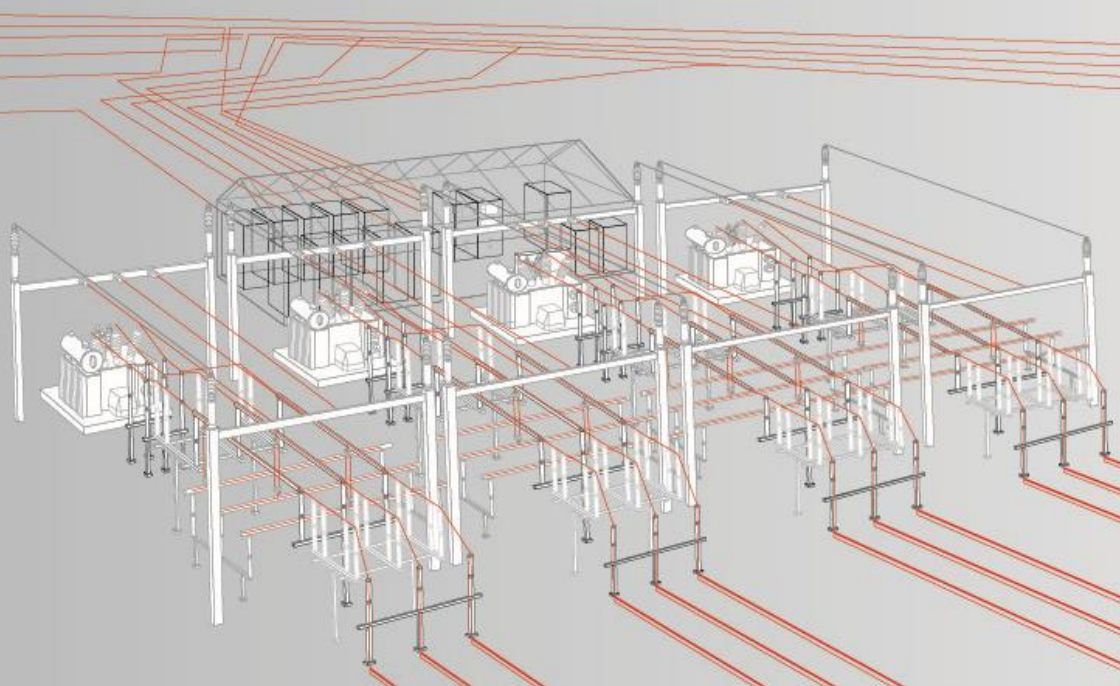
Medium Voltage Products – Factory visit

We are very proud of our factory, and wish you warmly welcome to visit us today in the afternoon.

Enjoy the Tour!







31 MAY 2017

Distribution Automation Seminar

Distribution Automation, Coral Springs

Diane Gross, Product Marketing Manager



EPMV Distribution Automation

Our factory

EPMV Distribution Automation

3401- Coral Springs, FL

Facts

- Part of ABB Electrification Products Medium Voltage
 - Control & Protection Components product group
- Opened in 1978 as Westinghouse Electric Corporation.
 - Moved from New Jersey, where first electromechanical relay was manufactured in 1900.
- Acquired in 1990 by ABB group.
- 1996 – Moved into current 75,000 sq. ft. facility
- 110+ employees.
- R&D located in Lake Mary Florida as part of the EPMV Center of Excellence



EPMV Distribution Automation

3401- Coral Springs, FL

Products and solutions

Products Manufactured in Coral Springs

- Flexitest™ Test Switches
- Relion® 615, 615R, RER620 microprocessor relays
- DPU2000R, MSOC and Micro51 microprocessor relays
- Electromechanical relays
- Solid state relays
- Nuclear Rated solid state and electromechanical relays
- COM600F Distribution Automation Controller

Solutions

- Protection and Control Panels and Racks
- Distribution Automation/Integration solutions
- Retrofit relays - PCMU



EPMV Distribution Automation

3401 - Coral Springs, FL

Production

- More than 3K order lines/month
- Over 120,000 FT test switches shipped per year
- Over 2 million FT test switches shipped
- Over 150,000 ANSI microprocessor relays shipped
- Over 100,000 ANSI solid state relays shipped
- Over 1 million electromechanical relays shipped



EPMV Distribution Automation

3401 - Coral Springs, FL

Standards and certifications

- ISO 9001 (Certified for more than 20 Years)
- ISO 14001 Environmental
- OSHAS 18001 Safety
- IPC A610 and J-Standard
- 10CFR50 Appendix B Program





EPMV Distribution Automation

Portfolio of products and solutions

EPMV Distribution Automation

3401- Coral Springs, FL | Product portfolio overview

Flexitest™ test switches



FT-1 (10 pole, rear connected), FT-1X (10 pole, rear connected and extended, FT-1F (10 pole, front connected), FT-14 (14 pole, rear connected), FT-19R, FT-19RX, FT-19RS, and FT-22RS assemblies for rack and switchboard

Electromechanical relays



EM Relays are still the backbone of present day power systems and can be used for backup and auxiliary protection, even in refurbished or new Commercial and Nuclear installations.

Solid State relays



Extensive product line that protects Feeders, Generators or Motors according to Current, Voltage, Breaker Failure, Current Differential, Frequency, Ground Fault and more in standard and nuclear applications.

Microprocessor MV relays



Protection relays for feeder, motor, transformer, and recloser applications. Including Relion® 605, 615, and 620 series ANSI, REF615R and REA Arc Fault Protection

Distribution Automation solutions



COM600 Distribution Automation Controller

DA Panel and Retrofit Solutions

Retrofit solutions

EPMV DA

Value Proposition

Flexitest

Description

The FT Flexitest™ switch is designed and manufactured to allow quick and easy multi-circuit testing of switchboard relays, meters and instruments by any conventional system.

Features & Benefits

- Simple, safe & reliable
- Visible Disconnect
- Panel and surface mounted
- FT-1, FT19R, FT1F and FT-14 configurations
- Any mix of voltage and current poles



EPMV DA

Value Proposition

Flexitest

Key Differentiators

- The “original” FT test switch manufacturer; over 50 years in the market
- Most complete family of test switches
- Simple, safe & reliable
- Unmatched quality
- Industry leader
- 12 Year Warranty; have never charged for a repair
- Shortest lead time
- Online configurator <http://ft1switch.com/>



EPMV DA

Value Proposition

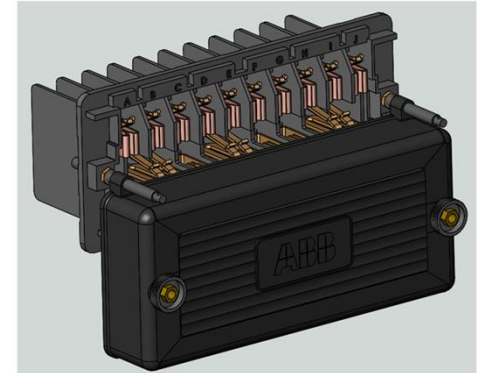
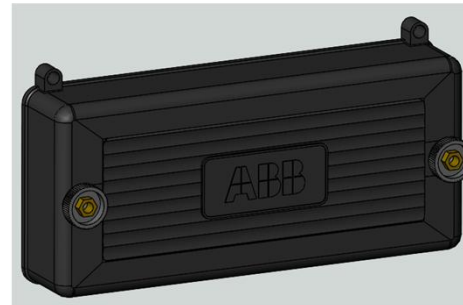
FT Cover Shield - NEW

Feature and Benefits

- Visible Disconnect Cover acts as a safeguard for 'hot' blades, providing a degree of finger safe protection
- Provides a method for securing loose covers
- Allow you to use the separate source test plug while keeping all 'hot' blades isolated (Hanging bosses needed),
- Available in both clear and black covers
- Available for both FT-1 (10-pole) and FT-14 (14-pole) test switches

Key Differentiators

- With the FT cover shield the Flexiest switch is **the first test switch that provides both a visible disconnect and a degree of finger safe protection**



EPMV DA

Value Proposition

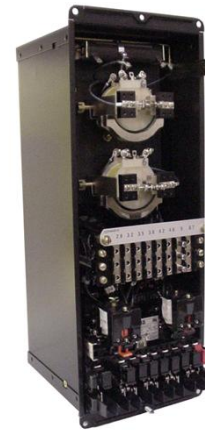
Electromechanical (EM) & Solid State Relays

Description

Electromechanical and Solid State Relays are available for system protection functions for transformers, generators motors, bus feeder, distribution and DC control circuits.

Features & Benefits

- Single purpose devices which maximize simplicity and therefore improve quality.
- E/M relays provide direct replacement for existing sites requiring upgrade.
 - No additional risk caused by design change.
- Best in class protective relays for Commercial, Industrial and Nuclear safety related applications
- EM relays have provided system protection reliability for over 50 years.



EPMV DA

Value Proposition

Electromechanical (EM) & Solid State Relays

Key Differentiators

- MTBF is greater than 200 years when regularly maintained for EM relays
- No external power or cyber security concerns
- Safety related qualification Nuclear power plants
- Supplier with the most comprehensive offering in the market place
- Auxiliary relays; SG, MG6, and AR ratings exceed the requirements from the ANSI C37.90
- 12 year warranty on commercial grade relays
- Industry leader



EPMV DA

Value Proposition

Relion® ANSI

Description

Microprocessor relays for feeder, motor and transformer protection and control. Metering, monitoring and recording solutions: monitor relay, trip circuit, and circuit breaker health, auto email disturbance records, simplified or customized report templates.

Features & Benefits

- DNP 3.0, Modbus, & IEC 61850
- **Large matrix display & 11 user-programmable LEDs as a standard**
- Digital inputs with programmable thresholds
- Six setting groups – store multiple protection settings
- Type tested to global standards – includes ANSI, IEC and UL
- Front Ethernet port for relay configuration
- User programmable CT inputs for 1A or 5A – no variants
- **Up to 3-winding transformer protection with RET620**
- Configurable single-line diagram – view protection onscreen
- Circuit break monitoring – increase circuit breaker lifetime



EPMV DA

Value Proposition

Relion ANSI

Key Differentiators

- More standard features means simplified engineering, lower costs and reduced risks
- The powerful options available in the Relion product family provide a system solution; not just a protective relay
- Relion's native language is GOOSE (<10 ms delivery)
- **GOOSE vs MIRRORED BITS®**
 - **Communicate peer-to-many and many-to-peer with GOOSE vs. peer-to-peer only with MIRRORED BITS**
 - **Allows 256+ simultaneous signals vs. a max of 16**
 - **Only GOOSE is brand independent for true device interoperability within the substation network**
- Communicate with DNP 3.0 / Modbus to SCADA while simultaneously GOOSE messaging between relays
- Achieve superior protection using Relion relays at incoming and outgoing feeders with GOOSE messaging
- Make substantial reductions in hard-wiring needs
- No more proprietary cables, ABB uses off-the-shelf Ethernet
- IEC 61850 allows standardized data management and true interoperability
- WebHMI for easy settings or the PCM600 software tool for more complex relay applications and logic



EPMV DA

Value Proposition

COM600F

Description

The Distribution Automation Controller, COM600F, is a versatile component in utility and industrial distribution station automation solutions. The COM600F is an affordable and flexible device that reduces operational costs and ensures efficiency of the substation network and operations.

Features & Benefits

- Performs the combined roles of a user interface (web-based HMI), a communication gateway and an automation platform in a single physical unit
- Sub-plate mount and rack mount options
- Data historian provides a common point for data recording, alarms, performance monitoring, etc.
- Compact, robust design with no moving parts and well suited for harsh environments
- Fault Detection Isolation and Restoration (FDIR) allows multipath restoration, limits size of impacted zone, and speeds restoration of power
 - Includes applications such as self-healing networks and automation transfer schemes
- Communication gateway – support for 3rd party and legacy relays using open protocols, integrating them with IEC 61850



Arctic Wireless Communication Devices - ARG600

Status U.S. , CA & MX

U.S.

FCC and AT&T certifications granted.

Having issues still with Verizon testing:

- Software patch was done by R&D FI and the LTE signal is fixed for Verizon units.
- Other issues surfaced during testing. R&D FI is involved to fix these issues.
- New targeted date for VZ: 6.30..2017 could be earlier.
- R&D FI and Tropos are working to implement the ARG600 in ABB Wireless Superos software. Target date: Q2, 2017.

CA

ISED (CA regulatory) certification contract signed from both sides: ABB and AT&T. Target date to start testing on 5.30.2017.

- This is a collaboration with ABB CA as well to split the cost of the certification.
- CA units for testing received from ABB FISUB shipped to the test lab.
- ARG600 has been tested already in Rogers network in early 2016.

MX

IFT Certification granted and valid until 9.2017. This is for all ARG600 families MX units (4G/LTE ARG600A1290NA)



EPMV DA

Value Proposition

Protection, Control and Automation Solutions

- Pre-engineered replacement solutions for old ABB products
- Pre-configured matching unit (PCMU); Form-fit and wire-alike
- Pre-configured wire harness with or without adapter plate
- One-stop shop for P&C and automation solutions
- Full configured solutions
 - ATS Schemes
 - Relay settings
 - Special applications
- Can integrate electromechanical, solid state and microprocessor technology
- Can provide pre-wired or bare bones panels
- Can integrate SCADA and Communications
- P&C and Automation Racks



EPMV Distribution Automation

3401- Coral Springs, FL

Retrofit Relays

PCMU (Pre-configured Matching Unit)

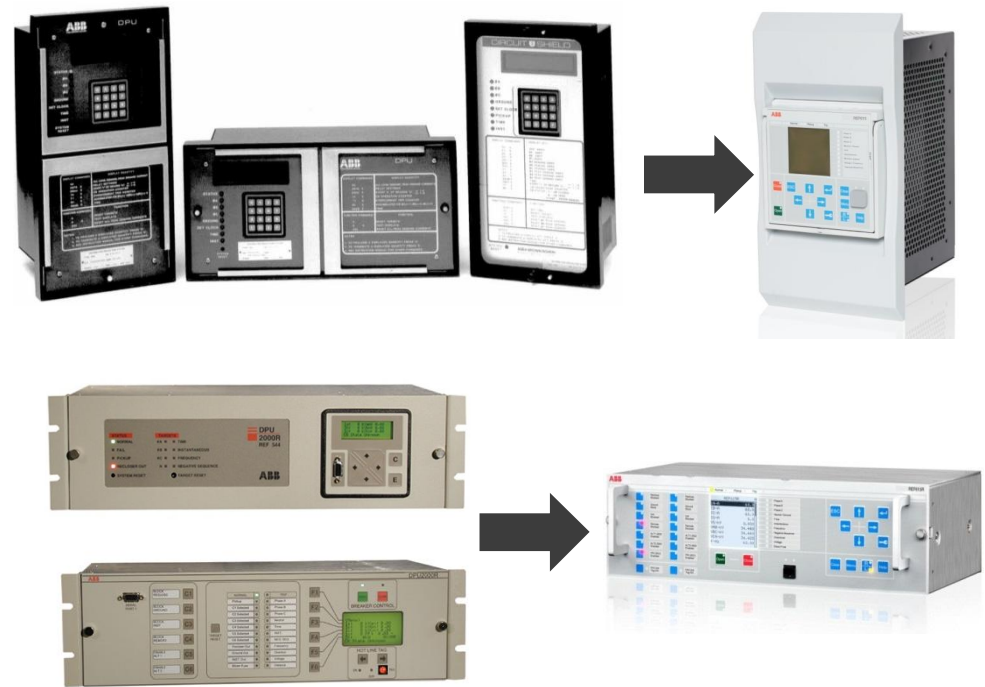
- Pre-assembled, pre-wired and tested wire-alike and form-fit solution for retrofitting obsolete ABB DPU, DPU2000 and MSOC legacy relays
- Includes advanced protection, control and communication technology available in the Relion family

REF615R

- 19 inch rack mount relay suitable for direct replacement of the DPU2000R relay
 - Wire-alike
 - Not 100% SCADA-alike, some integration work may be required
 - Part of the Relion ANSI portfolio

Benefits of retrofit relays:

- Increase efficiency
- Reduce down time
- Reduce operational costs
- Increase productivity



EPMV DA

Value Proposition

TCC300 - NEW

Description

The TCC300 digital tapchanger controller is dedicated for metering, monitoring, and operational control of step-voltage load tap changers.

Features & Benefits

- **Adapter panels to retrofit popular industry tapchanger controls**
- USB 1.1 Communications Port for quick field-updatable programming.
- Smart Reverse Power detection/operation with VT configuration for source and load sides
- Transformer paralleling by circulating current, Master/Follower (peer to peer) circuitry, or Δ VAR® methods
- Demand metering/Data Logging with Date/Time Stamp (Single/Three-Phase)
- **Smart Flash SD Card/Local Wireless Bluetooth capability**



EPMV DA

Value Proposition

TCC300 - NEW

Key Differentiators

- Harmonic Analysis Enhancement
- **Embedded Cybersecurity**
- SD card: For settings, firmware upgrade, etc. without the need of a laptop
- -40 to 80 Degree Celsius operating temperature range
- Can parallel more up to 16 transformers using peer-to-peer
- 64 samples per cycle, capable of monitor up to the 31st harmonic current and voltage
- Bluetooth communications
- **Small footprint ideal to be installed at the transformer**



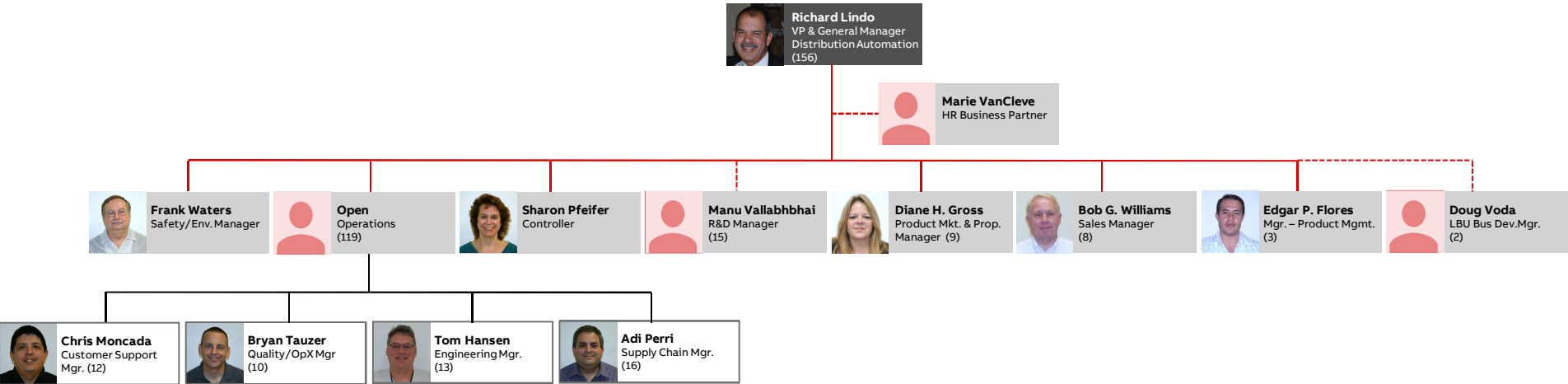


EPMV Distribution Automation

Organizational structure

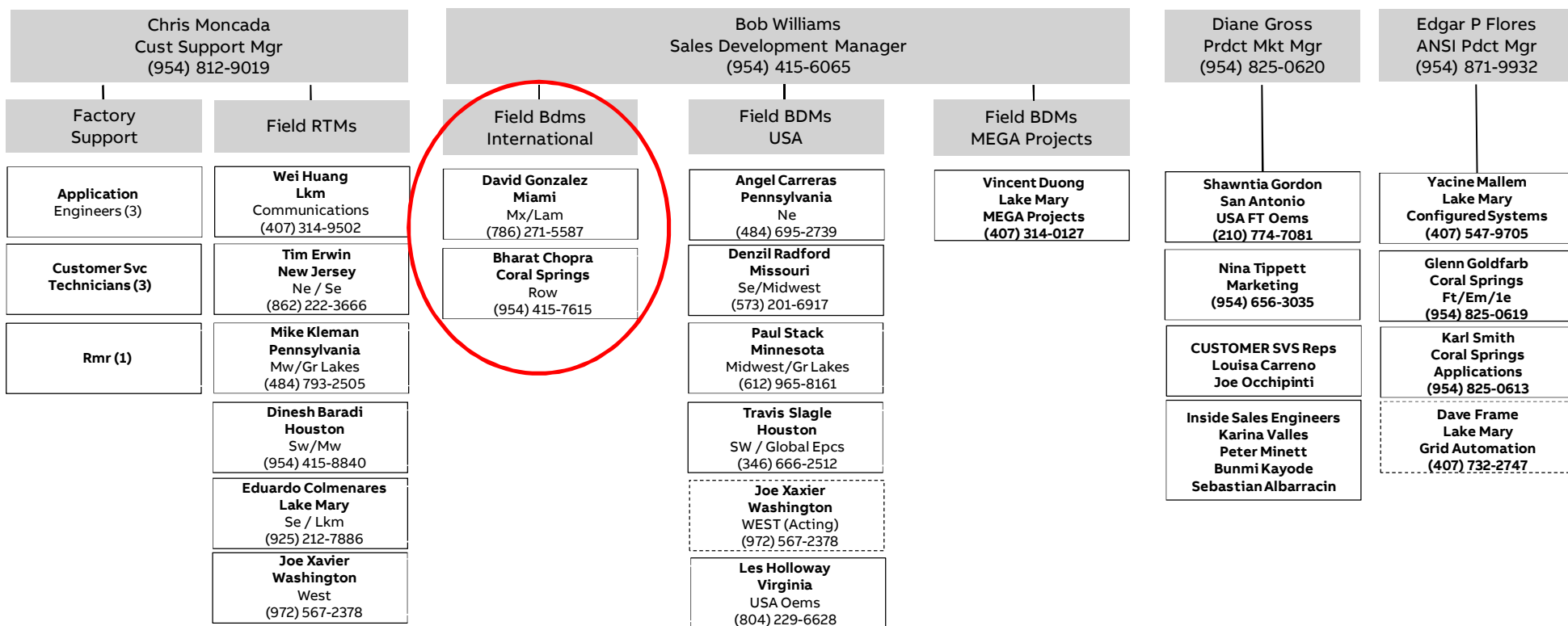
EPMV Distribution Automation

3401- Coral Springs, FL – Organizational Chart



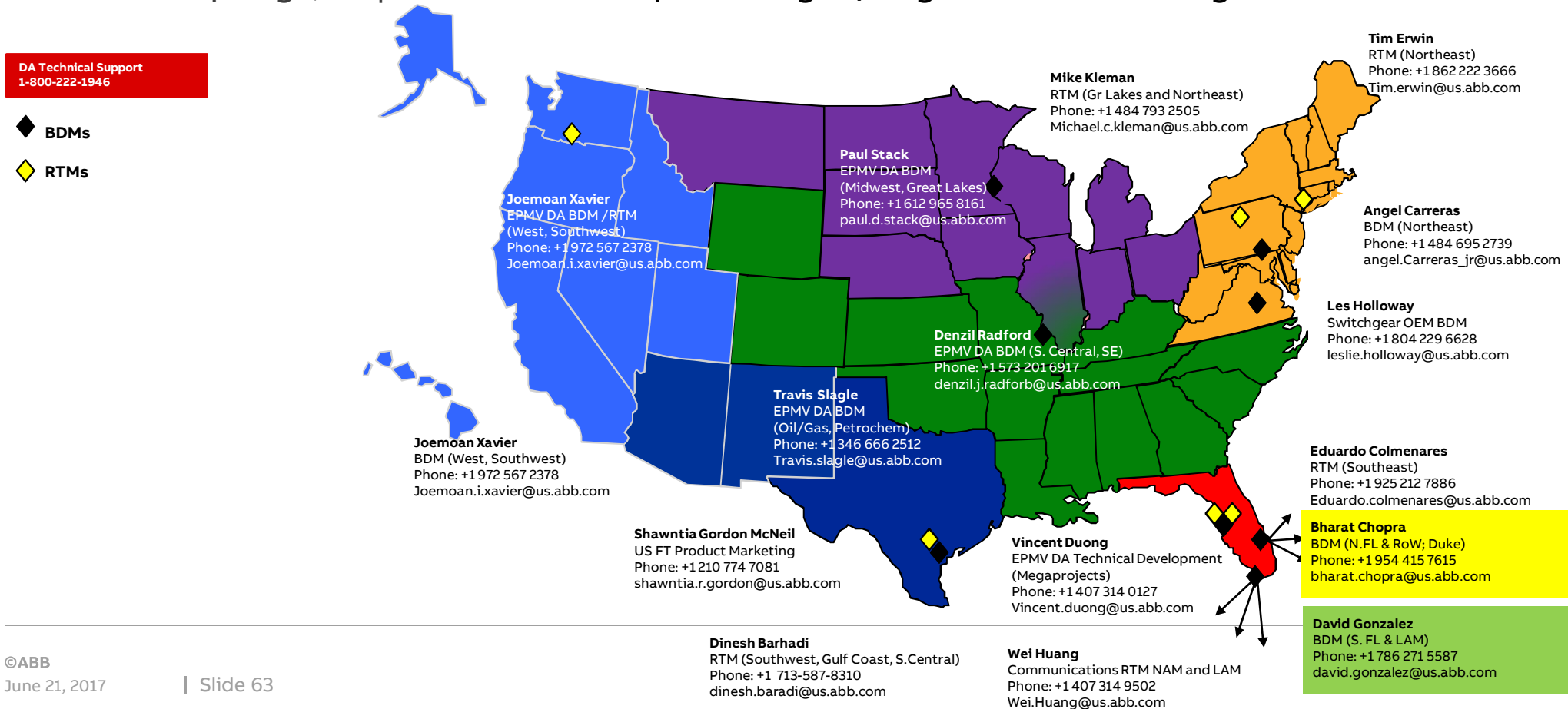
EPMV Distribution Automation

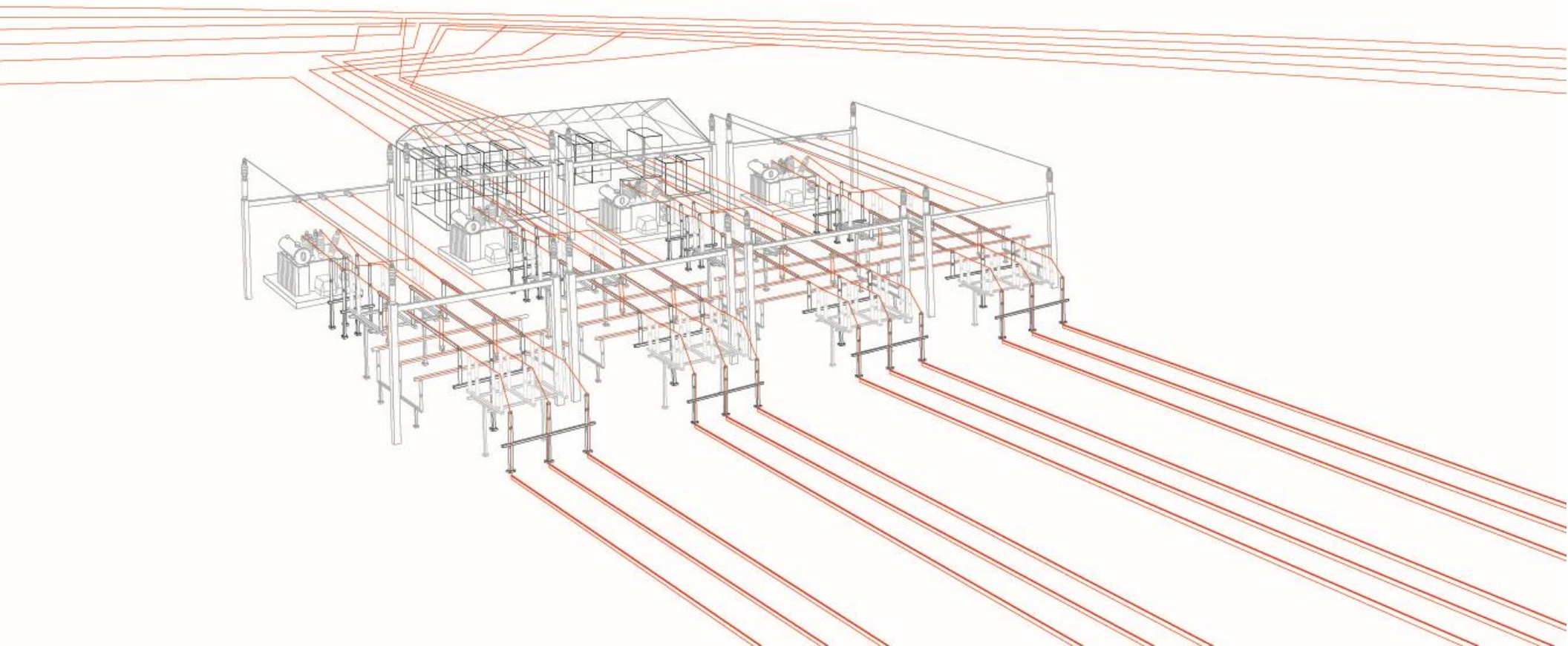
3401- Coral Springs, FL | KEY Business Development & Marketing Resources

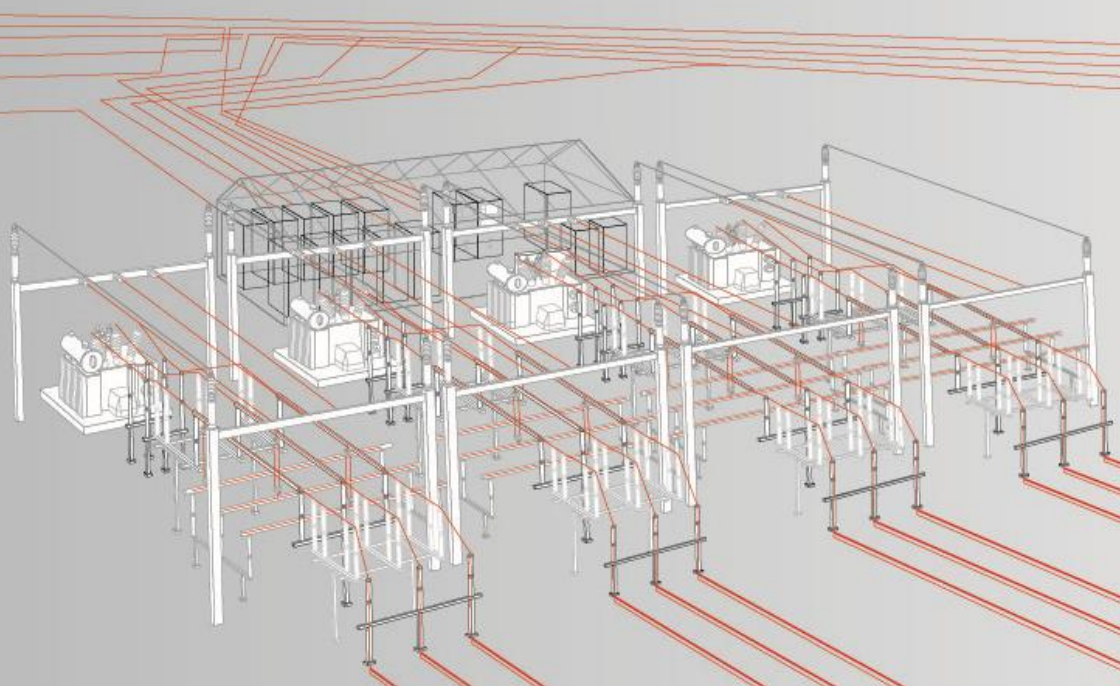


EPMV Distribution Automation

3401- Coral Springs, FL | Business Development Mgrs./Regional Technical Mgrs.







31 MAY 2017

Distribution Automation Seminar

Distribution automation, Vadodara

Sushil Joshi, Product Marketing Manager

Where we are

Republic of India



Flag



Emblem

Republic of India is a country in South Asia.

It is the 7th Largest country by area 3.29 million sqkm (29 states & 7 union territories) the second-most populous country with over 1.3 billion people, and the most populous democracy in the world.

Capital City: New Delhi (North India)

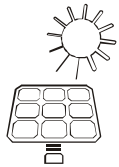
Official Languages: Hindi, English apart from other widely spoken 22 other regional languages

Currency: Indian Rupee

Time Zone: UTC+5:30

Writing the future in India

Leading technology and innovation for sustainable growth



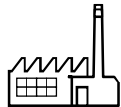
50%

of solar power generated in India
passes through ABB equipment



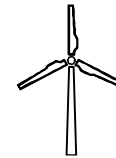
52%

of diesel locomotives run on
ABB Turbos



50%

of cement plants commissioned
in the last 5 years run on ABB's
control system DCS



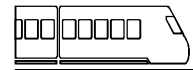
Largest

manufacturer of wind converters
in India



60%

of India's oil production
monitored by ABB solutions

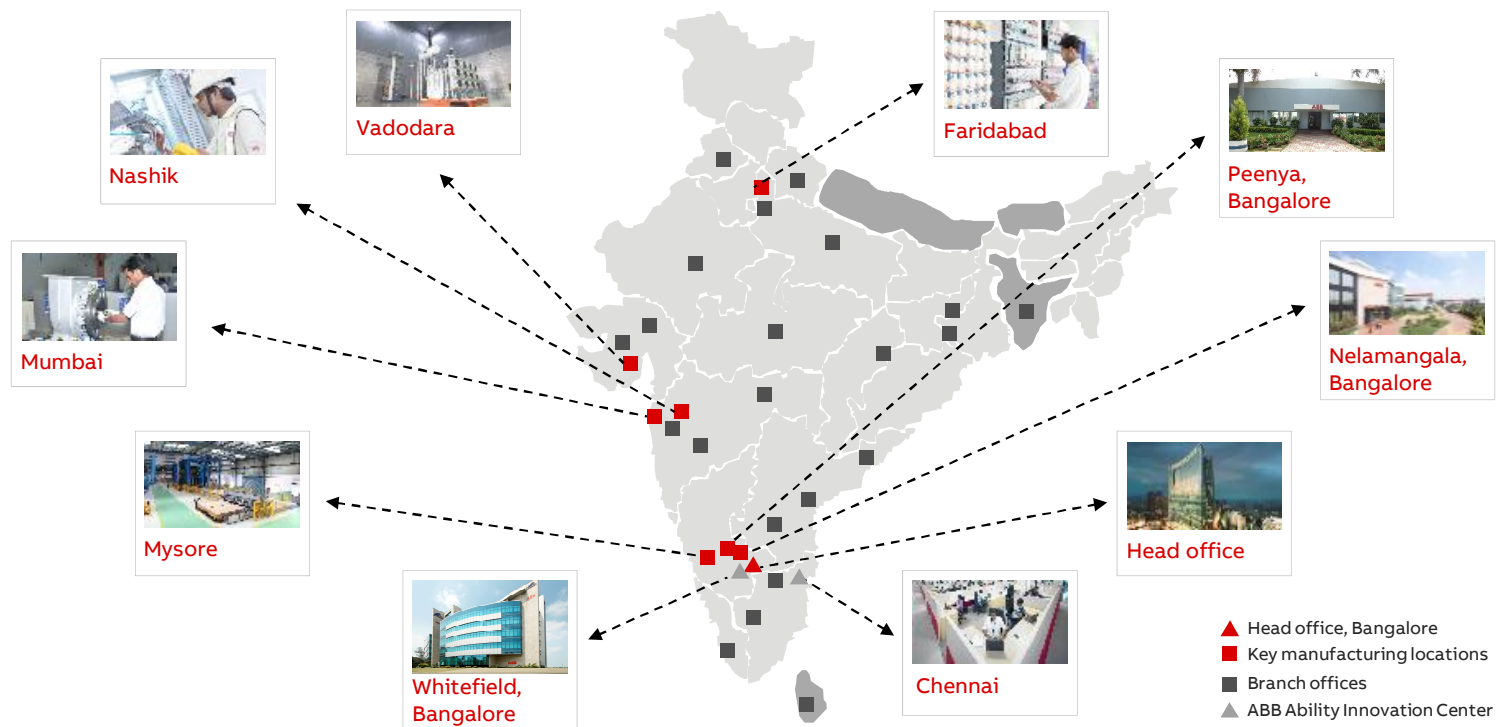


30%

of Rajdhani & Shatabdi trains run
on ABB traction transformers

Strong local presence across the subcontinent

10 manufacturing locations, 22 branch offices



Distribution Automation, India

Shaping a reliable power distribution for over thirty eight years

Now



- Market leader in India with Wide Product portfolio from Electromechanical relays to High end terminals along with standard as well customized DA solutions offerings.
- **Global Focused Feeder Factory** for Relion 605 series of relays & IEC Electromechanical and static relays.
- Regional DA Solutions Center for SAS & IMEA Regions

Then



- We have started our operation in India in the year 1979 with manufacturing of EM/Static relays, Microprocessor based relays like RAMDE, RACID, Generator Protection system type GSX-2 & GSX – 5e

Making your power distribution more reliable since 1979

Distribution Automation: the market leader in India



Distribution Automation, India

World Class Factory Facility

Manufacturing, Testing and Training Facility



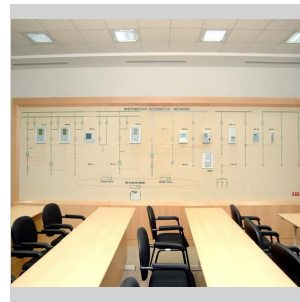
Fully equipped most modern workshop organized around the cellular manufacturing concept.



Manufacturing & testing of numerical relays in ESD protected area.



Fully automated test station for testing and calibration of Relion® 605, 611, 615, 620 series relays



Full fledged training facility in line with ABB automation university philosophy.

Distribution Automation, India

Product & Solutions offering to our valued customers from Vadodara Factory

Relion®605, GFFF



Relion®611, RFFF



Relion®615, RFFF



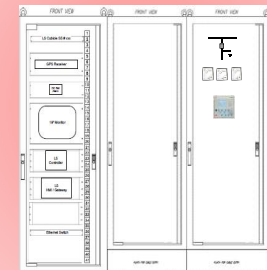
Relion®620, RFFF



IEC EM/Static Relays, GFFF

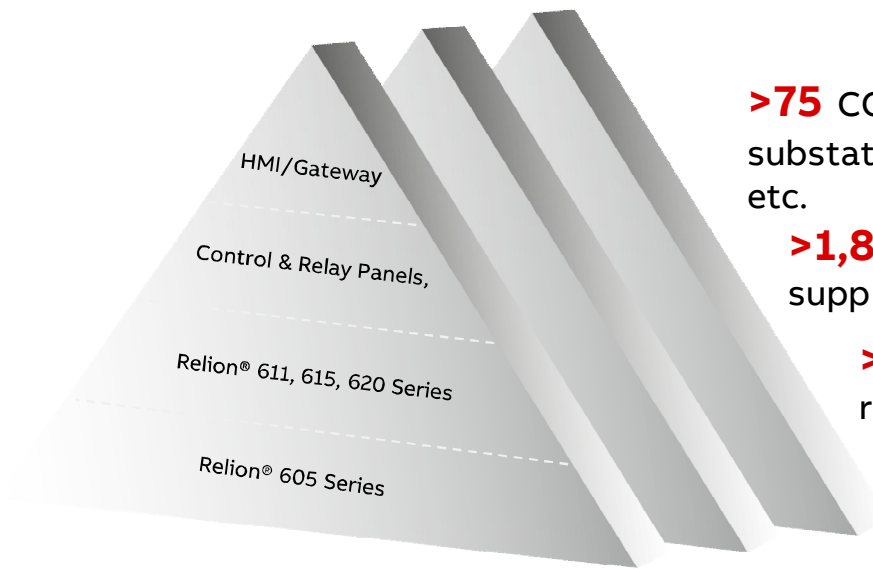


DA Solutions, SAS & IMEA Regions



Distribution Automation, India

Complete Basket of Products & Solutions



>75 COM600 based Solutions supplied for applications like substation Automation, secondary distribution, feeder automation etc.

>1,800+ customized/ engineered MV Control & Relay Panel supplied in last 5 years

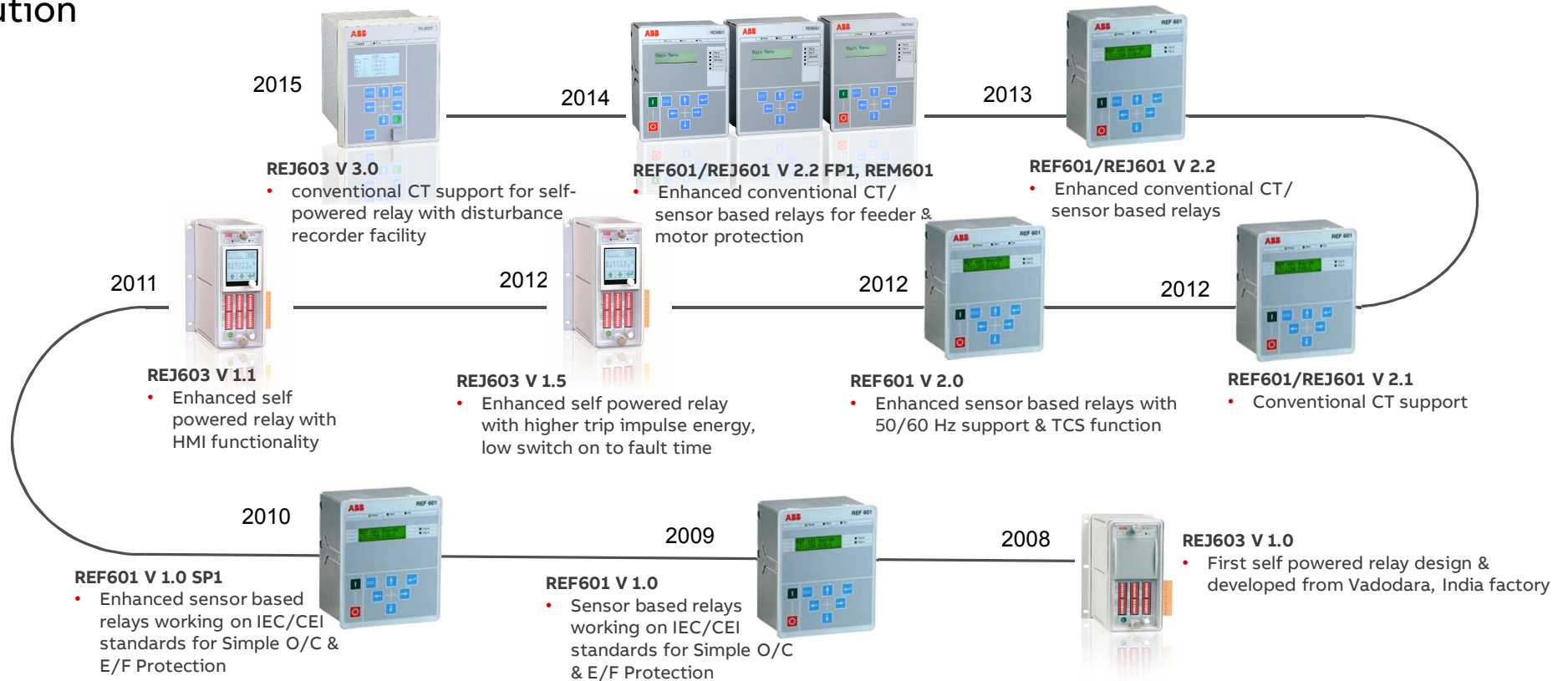
>63,000+ Relion 611, 615 & 620 series relays offering reliable protection, control & monitoring of Indian MV network

>91,000+ Relion 605 series relays protecting MV primary & secondary network world wide

>20% of DA India's sales from DA Solutions

Relion® 605 Relays

Evolution



Relion® 605 Relays

REF601/REJ601/REM601 relays

REF601

- Feeder protection relay **with** breaker control
- Available in CT/Sensor Variants
- Supports one breaker control with 8 different HMI languages and 4 different standards
- UL Certifications for ANSI market

REJ601

- Feeder protection relay **without** breaker control
- Available with only CT support variants
- Supports 8 different HMI languages and 4 different standards
- UL Certifications for ANSI market

REM601

- Motor protection relay **with/without** breaker control which is order code selectable
- Available with CT/Sensor support variants for IEC/CN/CEI standards. ANSI with only CT
- Supports 8 different HMI languages and 4 different standards with UL Certifications for ANSI market



Relion® 605 Relays

REF601/REJ601/REM601 relays – Customer Values

Simplicity

1

601 relays are known as simple to handle and ready to use basic protection relays since being preconfigured relay with minimum parameters to set. This helps in daily maintenance activities and commissioning time for the switchgear

Easy to Commission

2

By using built in test facility, commissioning activities can be speeds up by test function for protection functions, binary output and communication features.

Reliability

3

Extensive self-supervision of the relay hardware and software which ensure reliability of protection device and hence power distribution network

Add-on Com. Card at Site

4

Optional add-on card for remote communication facility. Communication facility can be adopted at site which means you can upgrade your 601 relays from non-communicable to communicable at site by inserting remote communication card. The communication module provides communication over 2 wire, RS485 port on MODBUS RTU/IEC 60870-5-103 protocol.

Relion® 605 Relays

REF601/REJ601/REM601 relays – Customer Values

**Less
Inventory**

5

601 relays are having universal power supply range from 24-265 V AC / DC with 50 Hz/60 Hz support. This helps in maintaining less inventory for this basic protection relays. Main advantage for OEMs.

**Short Mean
Time to Repair**

6

601 relays are having removable CT connector with built in automatic CT shorting arrangements and press fit mechanism for installation of relay in switchgear. These features helps towards shorter mean time to repair in case of any emergency situation at the site.

Relion® 605 Relays

REJ603 relays

REJ603 V 1.5

- Self-powered feeder protection relay with special CT requirement for phase faults. **This version of relay does not support conventional CTs i.e. 1 Amp or 5 Amp**
- Easy parameter settings with DIP switches and fine settings by battery powered touch screen based HMI
- Relay has one capacitor discharge voltage impulse output suitable for low energy trip coils with pulse energy 100 mJ

REJ603 V 3.0

- Self-powered feeder protection relay which can work with conventional 1 Amp or 5 Amp CTs. **CT Secondary rating is order code selectable.**
- Thermal overload protection for optimum usage
- 250 events with date and time stamping and disturbance recorder with non-volatile memory
- one optional Binary Input when opts for optional BI, relay can work either on CT power or auxiliary supply or USB Powering



Relion® 605 Relays

REJ603 relays – Customer Values

Simplicity	1	REJ603 relays are known as simple to handle and ready to use self powered relays being pre-configured relay with minimum parameters to set. This helps in daily maintenance activities and less commissioning time for the switchgear.
Hand Reset Flag	2	Built in flag for trip indication. Trip indication possible even in relay de-energized condition
Reliability	3	Extensive self-supervision of the relay hardware and software which ensure reliability of protection device and hence power distribution network
Front Communication port - only in REJ603 V 3.0	4	REJ603 V3.0 relay is having battery free design by powering up relay with front USB port which eliminates the requirement of battery replacement/maintenance. Front communication port also facilitate easy retrieval of disturbance recorder data through front USB port

Distribution Automation, India

DA Solutions



Distribution Automation, India

Customer we serve – Home Market

Solutions across the nations



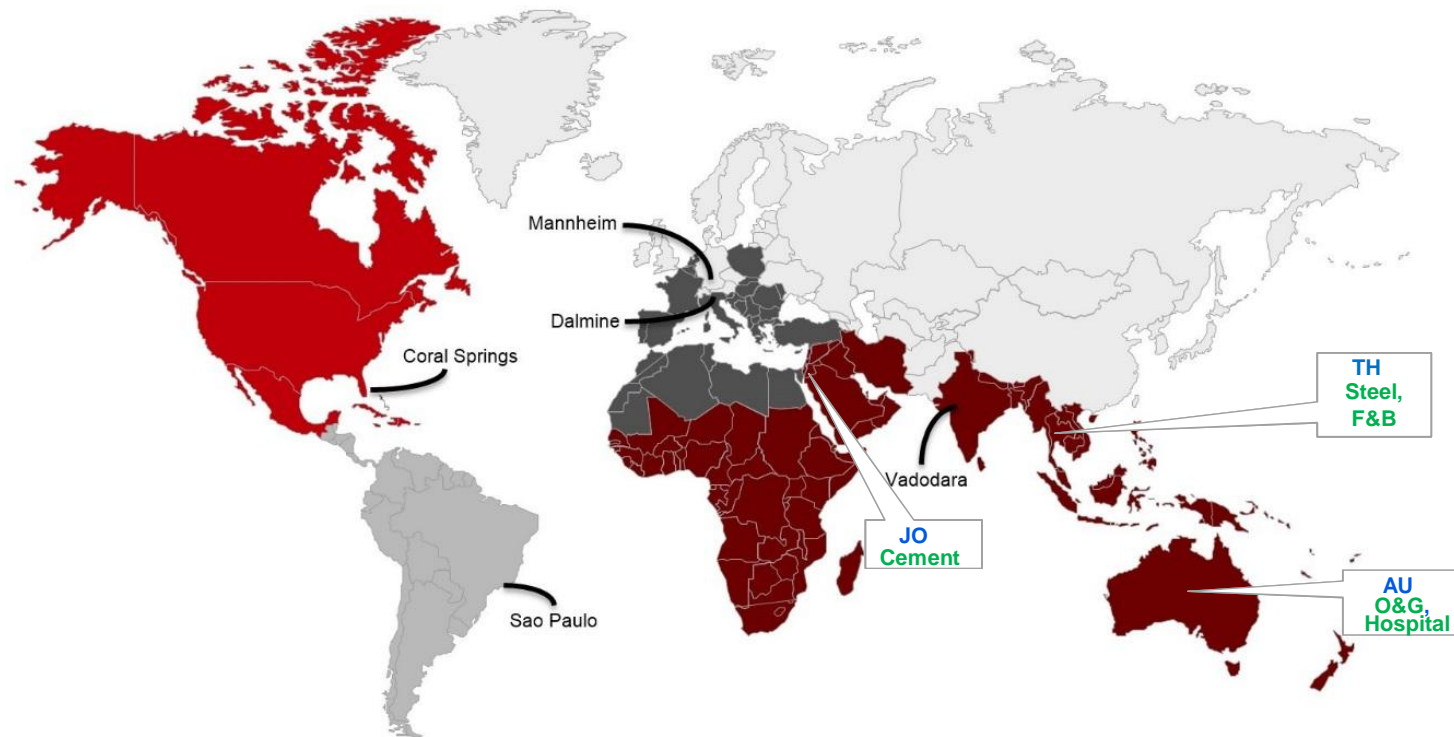
Important Clients

- UPPTCL (UT)
- WBSEDCL (UT)
- OPTCL (UT)
- HMEL (IN)
- Adani (IN)
- Reliance (IN)
- SAIL RSP (IN)
- Bajaj Auto (IN)
- BHEL (OEM)
- Triveni (OEM)
- L&T ECC (EPC)

Strong Presence across the nation

Distribution Automation, India

Customer we serve - Regions



SAS

Compact Power Management
COM600S Remote
Monitoring/Control

MEA

Auto Synchronization Panel,
Remote Interface Panel

Distribution Automation, India

DA Solutions – You will find them...

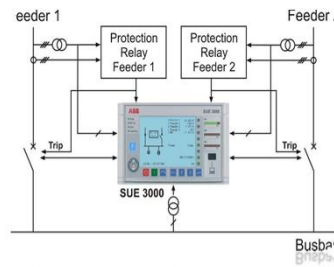
Power							Industry														Transport & Infrastructure															
Power Generation			T & D				Oil and Gas				Process Industry				Discrete and hybrid Industry																					
Wind	Solar	Conventional Generation	Transmission >170KV	Sub-Transmission	Distribution	Other	Offshore	Onshore	Midstream	Refining / Petrochemicals	Chemicals	Water & Wastewater	Mining & Minerals	Cement & Glass	Aluminum	Other Metals	Pulp & Paper	Food & Beverage		Pharmaceuticals	3C & Semiconductor	Automotive	Other End-user Machinery	Other Industries	Data Centers	Land transport Infrastructure	Other Transportation and Infrastructure	e-Vehicle Charging	Marine Vessels	Marine Terminals / Cranes	Rail Infrastructure	Rail Rolling Stock	Residential Buildings	Commercial Buildings	Industrial Buildings	Other Buildings

Conventional Generation

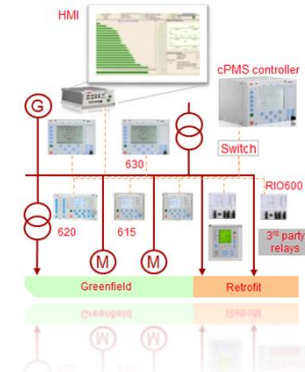
Generator Protection / Auto Synchronization



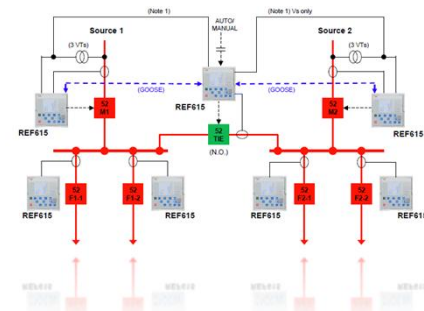
High Speed Transfer solutions for Motor Bus



Compact Load-shedding Solution



Pre-configured Auto-changeover (ATS) Solutions



Gateway for DCS/Process Servers



Distribution Automation, India

Solutions – You will find them...

Power						Industry														Transport & Infrastructure																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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Distribution

Protection Panel Solutions



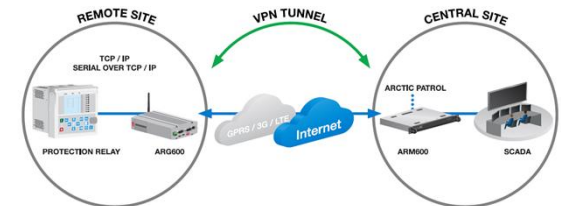
- Transformer Protection Feeder
- Line Feeders
- Capacitor feeders

HMI/ Gateway Panel for Nodal Control Center (NCC)



- Un-manned S/S Monitoring
- Local HMI for Operators
- NCC connectivity over IEC 101/104

Arctic Wireless Solution for In-door, Out-door Swgr. applications



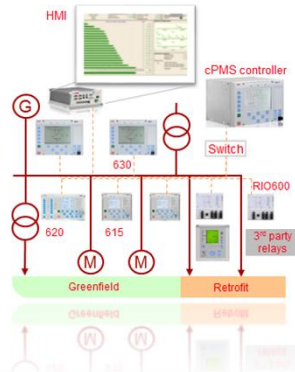
Distribution Automation, India

Solutions – You will find them...

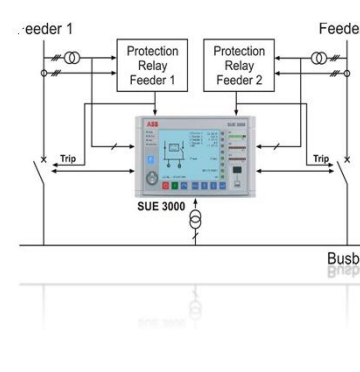
Power							Industry															Transport & Infrastructure														
Power Generation			T & D				Oil and Gas				Process Industry				Discrete and hybrid Industry																					
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Refining/Petrochemicals

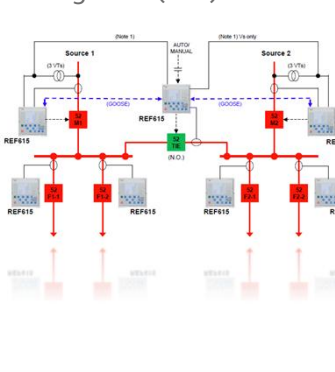
Compact Load-shedding Solution



High Speed Transfer solutions for Motor Bus



Pre-configured Auto-changeover (ATS) Solutions



Other Important Schemes

Reverse Blocking using GOOSE, Networking Support for Communication / GOOSE

ABB Products


HST, cPMS & Relion® engineering

Distribution Automation, India

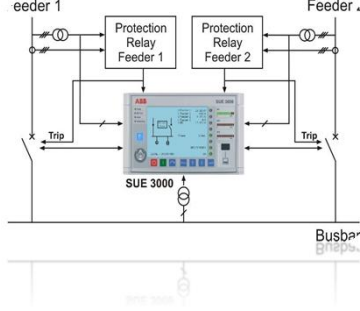
Solutions – You will find them...

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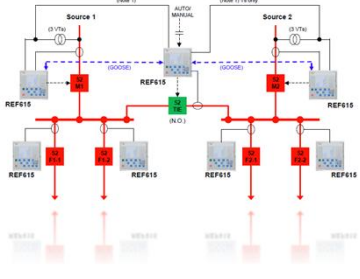
Mining & Minerals



High Speed Transfer solutions for Motor Bus



Pre-configured Auto-changeover (ATS) Solutions



Success Story

High Speed Fast Transfer ,
Relion® Relays with IEC 61850

ABB Products


HST, Relion® Relays



Distribution Automation, India

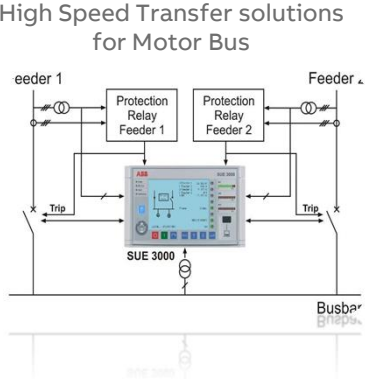
Solutions – You will find them...

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Other Metals

High Speed Transfer solutions for Motor Bus



Protection Panel Solutions



Success Story

Bhushan Steel , Rourkela Steel Plant, High Speed Transfer device

ABB Products

Control Panels with Relion®, Fast Bus Transfer Panel

Distribution Automation, India

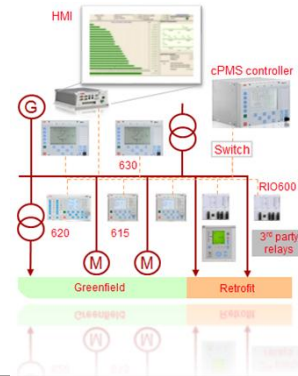
Solutions – You will find them...

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Food & Beverage



Compact Load-shedding Solution



Success Story

Ajinomoto Group, Thailand

ABB Products

Air-insulated switchgear
UniGear ZS1, Load-shedding controller PML630, Relion® 615 series protection and control relays, Remote I/O Unit RIO600, MicroSCADA Pro control system

Distribution Automation, India

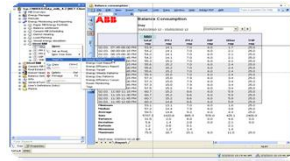
Solutions – You will find them...

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Automotive

Substation HMI

Reports



Success Story

Bajaj Auto, Aurangabad

ABB Products

Relion® Relays, COM600S with HMI & Historian for Reports

Distribution Automation, India

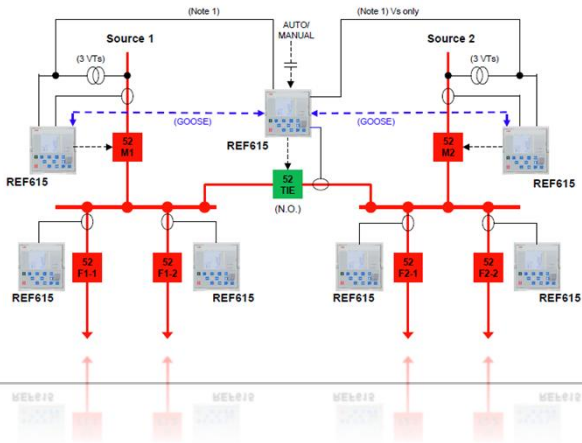
Solutions – You will find them...

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Data Centers



ATS Scheme using Relion® over IEC 61850



Success Story

Reliance Industries Limited – IDC
(Nagpur & Jamnagar) – “ Data
Center for Reliance JIO

ABB Products

Relion® Relays for MV & LV
SWGR



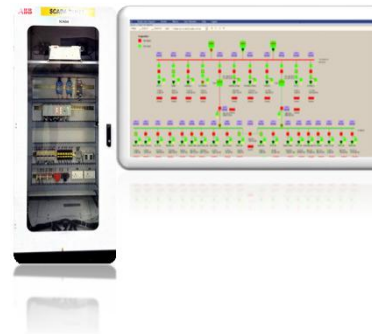
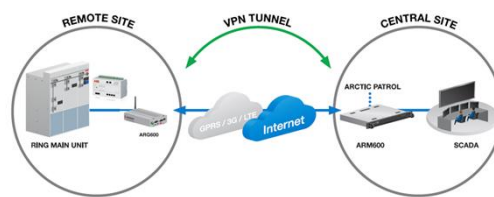
Distribution Automation, India

Solutions – You will find them...

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Rail Infrastructure

HMI along with Arctic Wireless Solution



Success Story

Logix a/c South Central Railways, Hyderabad

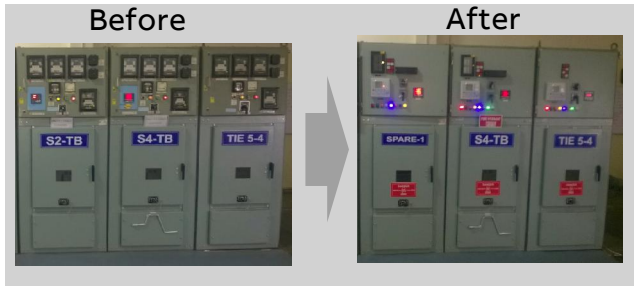
ABB Products

Relion® Relays for MV
Switchgear, RTU for RMU's,
Arctic & COM600S

Distribution Automation, India

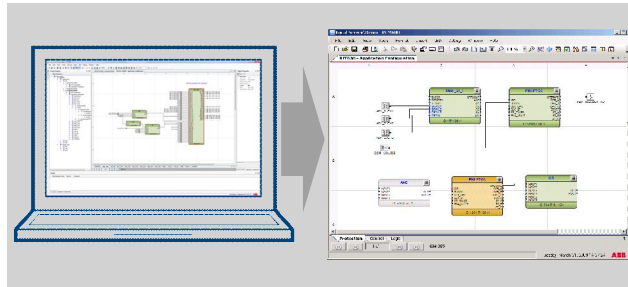
Solutions – In all segments...

Relay Retrofit



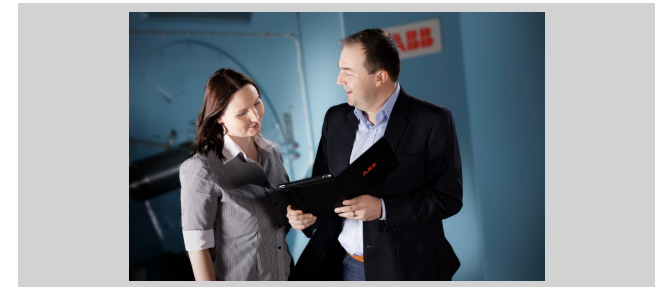
- Retrofitting of own and 3rd party protection relays to modern Relion® product family relays

Engineering Scheme's



- PCM600 based engineering for Relion® devices for GOOSE
- Auto-bus transfer schemes, Reverse Blocking scheme

Training



- Relion® Handling Tool PCM600
- Operational/ Maintenance Training for DA products/solutions
- Consultation over IEC 61850 networking / designing

To share ABB competencies and knowledge with you

