

Modernisation Solutions for Electrical & Automation

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About us



L&T Electrical & Automation (E&A) is a market leader for electrical distribution, monitoring and control solutions in the low voltage category.

Popular among customers as L&T Switchgear, E&A offers a wide range of low and medium voltage switchgear, motor starters, electrical systems, industrial automation, building electrical solutions, energy management solutions, electrical modernization solutions and metering solutions. It products and solutions cater to key sectors of economy like industries, utilities, infrastructure, building and agriculture.

E&A's manufacturing operations at Navi Mumbai, Ahmednagar, Vadodara, Coimbatore and Mysuru in India adhere to global practices of excellence and receive support from well-equipped in-house design and development centres as well as tooling facilities that contribute to precision in manufacturing.

FIT & RIGHT

FitRight is E&A's portfolio of modernisation solutions that helps you migrate to a new, higher level of safety, reliability and convenience. Our innovative engineering solutions and expert execution capabilities will upgrade your electrical and automation systems to perform at enhanced efficiency and play a vital role in uninterrupted operations and increased productivity. Make the right choice. Use FitRight. Modernisation Solutions

In today's competitive times, each facility needs to safeguard against inconvenient, unwanted breakdowns at the same time also maintain productivity and efficiency of a high order. Another important challenge several Industries face today is replacing old systems which are completing its useful life, with the latest technology. Monitoring the system and investing in the system upgradation and modernisation is absolutely essential to remain competitive in the market. E&A's FitRight solutions can help you prepare a comprehensive modernisation programme for your electrical and automation system helping you plan and implement initiatives to improve your :

Process - improving productivity, quality and reducing cost

Safety - upgrading your installation for enhanced safety and conformance to latest standards

Efficiency - Reduce losses and optimize processes

Reliability - Improve system uptime and eliminate breakdowns

Power quality - Enhance power quality to support a more stable operating environment

E&A's modernization solutions open up a new range of possibilities to extend the life of your installation, improving the utilization of assets and migration to a new environment friendly, efficient and reliable tomorrow.



SCADA based Communication Software for Electrical Systems



SmartComm is designed to minimise the operational costs of your installation by providing an advanced control and management solution. It helps reduce downtime and energy costs, supports capacity planning, improves efficiency and provides a view of the system as a whole.

Salient Features:

- Underlying platform is SCADA based
- Real-time communication for Monitoring, Control & Diagnostics Ethernet as well as Serial Communication
- Support multiple protocols & drivers like Modbus TCP/IP, Modbus RTU, BACNet, IEC61850
- All E&A communicable devices, as well as 3rd party device integration
- Engineering free configuration of the device
- Customised SLD creation based on IEC 617-2-8 symbol library; similar to Legio
- Graphical View or Mimic for easy understanding of operator level users
- Real-time & Historical Trends for user selectable parameters
- Fully customized Reports with user created templates
- Alarms, Alerts for Events and Acknowledgments
- User Management







Home Screen



Graphical SLD

Smart Application with SmartComm:

SmartComm can enhance the operation- and provide savings- for a number of applications

- Integration, Monitoring, Control & Diagnostics
- Energy Management Solutions
- Building Management Solutions
- Power Management Solutions
- Energy & Power Quality Management



SmartComm EMS, a simple yet powerful energy monitoring software with multiple benefits that empowers customers to save money.



Empowers the user to take corrective actions in areas of energy wastage Management of energy for optimal utilisation

Save money by identifying energy guzzlers and taking corrective actions to conserve energy.



Features:

- Glimpse of the plant's entire energy consumption through a Dashboard
- Quick understanding of energy consumption trends: today as compared to yesterday; this month as compared to last month and energy comparisons through a Dashboard
- Easy navigation through the modules
- Excel reports with charts
- All parameters in the device can be monitored through the software
- Multiple combination of devices and parameters for analysis
- Provision to generate multiple report types
- Specific energy consumption report
- Access to features defined by user levels
- E&A meters preconfigured in the software
- Monitor ON,OFF, Trip, Ready to close status of circuit breaker through E&A's UNCO Module.
- Control Circuit Breaker ON & OFF, Provision for Breaker on & Trip Counter, last 20 Trips date & time stamp



Connect Township Energy Meters wirelessly with LoRaWAN Technology

Smartcomm EMS software is now upgraded for Cloud & Web

Power Quality Management

Effects of Harmonics:

Over-Heating of Equipment

Increased losses, Overheating due to flow of high frequency current No Load losses, Neutral overload due to triple-N harmonics, overheating of Cables, Busbar, Switchgear, Transformer.....

Over-Stressing of PFC Capacitors

As capacitors offer low impedance to higher frequencies, large harmonic current results in capacitor damage leading to **overload and premature failure of PFC capacitors**

Interference with Metering & Control System

Metering devices can wrongly estimate non-sinusoidal current and lead to frequent or nontripping of protective Relays and circuit breakers

Benefits of Harmonic Mitigation



Harmonic Mitigation Solutions

Active Harmonic Filters

Hybrid Harmonic Filters are a combination of Active & Detuned filters and serve as a Technically & Economically optimum Solution for Harmonic Mitigation E&A's active harmonic filters will, reduce your THD levels and maintain them within the IEEE/CEA limits. These filters are IGBT-based power converters. This filter injects negative of the harmonic current resulting in practically no harmonic distortion. Phase balancing and power factor correction is also achieved.

Without AHF

With AHF



Unique Detuned Reactors for High Voltage Harmonics

Unique detuned reactors for High voltage Harmonics Operates at safer temperature. It will not overheat due to high V-THD%. Lower Power loss and doesn't make humming noise. Mitigates significant current harmonic amplification & resonance. Avoids capacitor over-loading AHF rating can be optimised.



Detuned Harmonic Filter

Detuned harmonic filters are the series combination of a reactor and power capacitor. These filter offer higher impedance for high frequency harmonics and prevent harmonic resonance and amplification. 7% reactor mitigates 5th harmonic & above

- For industries with drives, converters & other power electronic devices
- 14% reactor mitigates 3rd harmonic & above
- 4% reactor miligates and nam
- For IT industries
- For industries with high single-phase non-linear load



Automatic Power Factor Correction (APFC)

Automatic Power Factor Correction (APFC) panels ensure consistently high power factor under fluctuating load conditions without any manual intervention. In addition, the occurrence of leading power factor is prevented. They continuously sense and monitor the load condition, automatically switch ON and OFF relevant capacitor and protect against any electrical faults in a manner that will ensure safe isolation of the power factor correction equipment.





i one

Power, a non-renewable source of energy is one of the most focused industries today. For systematic power distribution, power needs to be healthy. At every substation level the parameters are checked to determine the condition of power. These parameters go through different stages of checking, rectifying, controlling, etc. which are performed at substation level. To integrate all these functions in a system & to perform simultaneous checks, substation automation systems are brought in concept.

At E&A we have a word for this - 'iONE' - integrated into one.

We are determined in completing a job, right from relay selection, programming, parameterization, logic building to selecting protocols, configuring networks & designing HMIs - it enables us to give you a one stop solution!



iOne solution have the following subsystems:

Integrated Protection, Control and Monitoring System (IPCMS): It integrates electrical control, protection & metering function of switchgear.

- Supervisory control & monitoring of switchgear
- Monitoring of 3rd party systems (UPS, HVAC etc.)
- Interfacing capability for other plant monitoring & control system e.g., DCS, existing SCADA, HMI, etc.
- Alarm, SOE management
- Parameter trending
- Trends & Reporting etc.

Generator Management & Load Sharing System (GMLS)

- Generator control & measurement
- Duty selection
- starting & stopping of Generators
- Spinning reserve management
- Active and Reactive load sharing
- Frequency and power control
- Generator and group synchronisation

Load Shedding System (LSS):

Main generator load shedding system consists of

- Power based fast load shedding
- gradual load shedding
- Frequency based load shedding
- load shedding priority matrix
- Spinning reserve management

LSS is interfaced with GMLS for information and switchgear for load shedding

Electrical Asset Management System (EAMS)

- Online monitoring of critical parameters / machinery health data associated with generator, motors, Transformers, and switchgear
- Integrated Alarm and reporting
- Trending of critical parameters

Fault Monitoring System (FMS)

- Monitoring of critical equipment's such as generators, motors and transformer generally connected to LV / MV / HV switchgear
- Fault / disturbance recording and archiving
- Analysis of pre & post fault data



Why Automation'

- Repetitive Accuracy
- Human Safety
- Productive utilisation of electricity & resources

Process automation is the strategy a business uses to automate processes in order to contain costs. It consists of integrating applications, restructuring labour resources and using software applications throughout the organisation.

E&A's grasp of each industry's specific needs enables it to offer application specific solutions for various industries such as processing, textiles, plastics, ceramics, pharmaceuticals, elevators, oil & gas, power, cement and material-handling.



415V AC Drives



Range:

- 0.1kW to 450kW
- Conformal coating complying to IEC 60721-3-3, Class 3C2

690V AC Drives



Range:

• Finest Range of High Powered AC Drives from 500V To 690V along with widest power range of 200KW to 3000KW

PLC



Range: • Up to 352 local I/O points • Up to 5728 remote I/O points

415V Soft starters



Range: • 23 Models 23 A ~ 1600 A (3 Wire) 11kW ~ 950 kW (@ 415 V AC)

ΗMI



Range:Text Display4' ~ 15' TFT coluor LCD



We support, retrofitting and modernisation of switchboards with our latest switchgear modules, keeping the panel fabrication and other accessories the same.



Design verified Aluminium & Copper bus bar based power distribution solution

The new Ti & Enersys range of panels, is a power distribution solution from E&A, available with Aluminium and Copper busbar options. These are design verified solutions complying with latest IEC-61439 standard & offers unique blend of Quality, safety & Standardisation.

Offering these solutions through E&A's authorized franchisee network gives the added edge of cost Competitiveness and localised support for all future needs.

Moreover, these systems feature a fully compartmentalised design, with an option of aluminium or copper busbars- ensuring quicker delivery and easier installation

CDV - Complete Design Verified assembly as per IEC 61439 part 1-2 Internal arc complied as per IEC 61641 Seismic zone complied as per IS 1893 IK 10 certified as per IEC 62262



T



Available upto 5000A in both Al & Cu Busbar Double deck Busbar Design to ensure energy savings over conventional systems Short circuit withstand upto 100kA for 1 Sec



ENERSYS

Available upto 3200A in Al & 4000A in Cu Busbar Trusted Bus system to ensure unmatched safety Short circuit withstand upto 70kA for 1 Sec



Sub Main Distribution Board (SMDB)

Replace Conventional Switchboard with Intelligent Switchboard



Advantages of Intelligent Switchboard over Conventional Switchboard

Conventional Switchboard

- Separate equipment for each protection
- Separate protection and metering Cts
- Space constraints, less number of modules per panel
- RIO required to send all status signal to PLC/Control room
- Reliability reduces as number of components increases in panel

Intelligent Switchboard

- Single protection equipment for each type of feeder
- Communicable relays/controller for reduced hardwiring of status signal
- Simple Integration, Easy troubleshooting
- Less aux contacts, aux devices allows more feeders per panel
- Overall size and cost reduction

Sandwich Busbar Trunking System



Current Rating: 250A to 5000A (Aluminium)

- Rated Insulation voltage : 1100V
- Maintenance-free block set joints
- Enclosure : GI or Aluminium
- Robust, safe & reliable solution:
 - Class-F insulation with RoHS compliance
- Ingress protection up to IP66
- Certified for Seismic Zone-V
- Tested for fire rating, flame propagation & fire resistance in building penetration
- Minimum transmission loss as compared to cables & excellent short circuit rating upto 100kA

MV Switchgear & Switchboard

One to one Retrofit Solutions of Old MOCB with E&A Make VCB's

- In one to one retrofit solutions, the new circuit breaker is re-engineered
- The horizontal travel distance of the breaker truck is matched with that of the old breaker
- The isolating power, main contacts & auxiliary contacts of the Circuit breaker are matched
- with those of the old breaker
- Retrofit can be taken up at convenient, short, preplanned shutdowns

Features :

- Range : 3.3kV to 36kV, 630A to 3150A
- Short Time Rating : 26.3kA, 40kA & 50kA for 3 sec. Endurance class : M2 & E2
- Compliance with IEC 62271-100 and 62271-200
- Fully Compartmentalised Panel, Partition class PM
- Horizontal isolation, horizontal draw-out and floor-mounted Trolley type VCB Built in anti pumping
- Internal Arc tested Panel (AFLR) up to 50kA
- Readily extendable indoor type (IP4X) Panel Loss of Service Continuity category LSC2B
- Cubicles designed to meet temperature rise limits without the need for forced ventilation





Cassette Type

Floor Rolled Trolly



400A to 6300A (Copper)





FIT / RIGHT

Benefits:

- Life extension of your switchgear
- No re-cabling
- Minimum downtime
- No change in foundation
- Speedy execution-Time Saving
- Technology up-gradation

- Phased execution
- Easy availability of spares
- Cost optimisation / Minimised retrofitting cost
- Continuity in plant operations
- No re-routing of power
- Maximum Safety
- Enhanced reliability





The unique E&A Pre-engineered OMEGA Retrofit Solution allows you to switch to the modern, compact E&A OMEGA ACB with ease. Not only do you upgrade your protection levels without making any major modifications, you also enjoy a range of other advantages.

U Power to Omega Retrofit



FRAME 1 - 400 - 2000A FRAME 2 - 400 - 3200A FRAME 3 - 400 - 5000A Upgrade U Power ACB with latest U-power OMEGA Series without any busbar Modification

Switchgear for Harsh Environment





C-POWER breakers and FN S-D-F with corrosion protection have been designed for use in sulphurrich environments. These include petroleum refineries, paper mills, water treatment plants, chemical, synthetic fibre plants sugar plants, distilleries, Cement Plants among others. All these installations have issues related to the presence of SO₂ (Sulphur Dioxide), H_2S (Hydrogen Sulphide) and No₂ (Nitrogen Dioxide).

Retrofit of ACB Releases



Old releases can be upgraded to the latest series (Microprocessor based) to get added advantages of better protections, reliability and automation.

Retrofit of Feeder Protection Relays in LV & MV Systems



nX Series

- MC31AnX 51, 51N
- MC61AnX 51, 51N, 50, 50N
- MC61CnX 51, 51N, 50, 50N + Communication facility

nX Series offer you numerical type 3 phase over current & Earth Fault Relay. Its microcontroller based design enables you to choose from various field selectable IDMT & definite curves.

Retrofit of Motor Protection Relays in LV & MV Systems



For Fast & accurate tripping with fault indication & Additional protection against Earth fault, Phase reversal, locked rotor, Current unbalance & Under current.



Arc Flash Protection Relay

What is Arc Flash'

- Arcing fault is the fault between two phases or a phase and neutral or ground with air as conductor
- Rapid release of energy during arcing faults results in an arc flash

Fault could result out of a temporary bridging (rodents, falling tools, falling hardware) or insulation breakdown.

Effects of Arc Flash:

- Damage to Vision
- Severe Burns
- Lacerations
- Hearing Loss
- Broken Bones
- Internal Organ Damage
- Brain Injury



Reliable solution for arc flash protection PGR-8800



Features:

- Fastest trip time
- Optical sensors with sensor check
- Surface or DIN-rail mounting
- Redundant trip path
- Over current detection
- Plug and play configuration software
- Reaction time < 1ms using IGBT trip contact
- No door cut-out Easy to fit in existing panels
- Supports point and fiber optic sensors
- 6 external sensors + 1 local sensor
- Adjustable light sensitivity (9 to 25 klux)
- Power supply : 110-240 V AC/DC (50/60 Hz)
- 24 Vdc backup battery and low voltage DC supply (14-48 V)
- Facility to link 4 units in larger systems
- Supports MODBUS RTU protocol
- PC interface via USB
- 1000 event logs
- CE certified



We offer our customers a comprehensive range of end to end solutions right from design to commissioning. Additionally, we foster the wellness of installations through retrofit solutions, genuine spares and timely service support.

Our solutions are backed by robust engineering architected by our expert team of engineers. Our biggest strength is providing complete solutions tailormade to our customers' needs by integrating varied components from field devices to the management dashboard covering Electricals, Instrumentation, Drives, Automation, SCADA, Telecom and IT.

System Study

To promote healthiness of your entire system and ensure that your switchgear is not affected by unforeseen breaking downs, our team of dedicated engineers proactively undertake complete analysis of your systems, carry out feasibility studies by collecting site requirements & system details and identify products or switchgear assemblies to be replaced. Besides annual audit, our system study also anticipates future requirements and thus help in budget planning.



Safety audit helps in identifying hotspots in the switchgear assemblies, fault levels and covers full panel inspection. This is imperative since continuous operation of switchgear for many years, lowers efficiency and causes equipment malfunction. This could result in unplanned failure leading to serious injury and major damage.

Our experienced team evaluates the healthiness of your switchgear by providing detailed assessment reports and recommendations. Such safety audit reports will help you to decide on further plans for improving your system's safety and reliability.



L&T Electrical & Automation's trained application & product experts offer comprehensive after sales support for managing assets right through its life cycle. The systems served vary from simple Switchgear to Drives, Automation, large electrical, Control & Instrumentation installations in Power, Infrastructure, Oil & Gas, Cement, Port and other industrial segments. The services offered result in improvement in the plant availability and productivity thereby maximising asset sweating. Our services which commence at project implementation stage continue till the end of the life cycle and beyond, through optimised migration plans.

Get the Switchgear Training Edge!

Aimed at maximizing productivity, conserving energy, minimizing costs and enhancing safety, our Electrical & Automation training programmes have benefitted Lakh of professionals over the last three decades. These training programmes are highly beneficial as they provide right exposure an impart knowledge on selection, installation, maintenance and testing of Electrical & Automation Products.

Options to connect on Digital platform, At Training Centre or on-site Programs

So gain the advantage and go the extra mile with:

- Multiple courses on contemporary topics
- Brand Agnostic Trainings
- Training Centers in Pune, Lucknow, Coonoor, Vadodara, Delhi & Kolkata
- Blend of theory and practical experience

The typical training programmes cover:

- Low Voltage & Medium Voltage Switchgear
- Switchboard Electrical Design
- AC Drives & Building Management Solutions
- Protective Relays & Earthing
- Power Quality Solutions

For more information about the Training Calendar and programmes please contact the relevant Switchgear Training Centre or Customer Interaction Centre:

Switchgear Training Centre



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Product improvement is a continuous process. For the latest information and special application, please contact any of our offices listed here. Product photographs shown for representative purpose only.



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