Raychem

Solutions for a brighter world
Raychem RPG (P) Limited was incorporated in 1989 and is a 50:50 joint venture between TE, USA and RPG Enterprises, India. TE Connectivity is a USD13 billion global provider of engineered electronic components for thousands of consumer and industrial products; network solutions and systems for energy and telecommunication markets; and specialty products.

RPG Enterprises, established in 1979, is one of India’s fastest growing business groups with a turnover touching Rs 17,000 crore. With over 15 companies in its fold, the group has a strong presence in Infrastructure, Automotive tyres, IT, Pharmaceuticals, Plantations and Power ancillaries.

The Business

Raychem RPG is involved in technologies; strengthening the infrastructure segment of the economy in the following business segments:

• Energy Products
• Transformers
• Infocom
• Oil & Gas
• Exports

Energy Products Division, a strategic business unit of Raychem RPG views its activities as a solution provider for enabling technology that improves the performance, reliability and economy of electrical network and equipment. The company is committed to providing its customers with sustainable and true end-to-end solutions for Reliable Connections, Asset & Personnel Protection and Theft & Loss Reduction.
Reliable connections

Raychem’s connections system are designed to improve the performance, reliability and economy of electrical network and equipment.

Our wide range of reliable connector systems and technologies are not just considered to be the most advanced technology available in the world, but are also way ahead of the conventional system presently available in India for over-ground and underground applications.

Technologies and applications

- Insulation piercing for over-ground and underground distribution system
- Mechanical connector for underground cables
- AMP Wedge Pressure Technology
- High Voltage Connectors System
- Cable Joints and terminations up to 245kV

Solutions offered

- Power Cable Accessories for almost all types of power cables up to 245kV
- Low/Medium Voltage connection systems
- High Voltage Connector System
- Installation, Maintenance and Audits
Power Cable Accessories

Raychem’s power cable accessories for almost all types of power cables up to 245kV have over 40 years of design life – which has been proven by long-term aging tests and as witnessed in the field. Raychem products are distinguished by their good insulating & sealing characteristics, high mechanical toughness and superior resistance to weathering and chemicals, such as UV radiation and alkaline soils.

All MV, HV and EHV cable accessories include a specially designed stress control mechanism, which controls the electrical stress distribution for enhanced product performance. In terminations, the insulating tubing ensures non-tracking and an erosion resistant surface even at extreme operating conditions.

Features
- Heat Shrink and Cold Applied technologies
- Quick, easy and highly reliable installations
- Solutions for cable constructions
- Environment friendly sealants
- Solutions suitable for different conductors, cross section and techniques

Product Range
- Power Cable Joints & Terminations up to 245kV
- Switchgear & Motor Connection System
- Link Boxes & Sheath Voltage Limiters
- Cable End Caps
- Cable Entry Sealing System
- Cable Sealing Glands
- Cable Repair Kits, Ties and Cleats
- Installation & Spiking Tools
- Fault Passage Indicators
- Tamper Proof Meter Boxes & Connectors
Low/Medium Voltage connection systems

Raychem’s wide range of reliable connectors and accessories for low/medium voltage cable and overhead networks, substations, grounding applications, rail transport and infrastructure cover most applications in an electrical network.

**Features**
- Low Resistance
- High on reliability
- Low on technical losses
- Consistency in connections
- Easy to install and remove without damage
- Withstand severe electrical and mechanical stresses

**Product Range**
- Insulating Piercing Connectors & LV ABC accessories
- Mechanical Connectors with Shear Head Bolts
- Bolted connectors and clamps
- Wedge Connectors & In-line Dis-connectors
- Distribution Boxes with/without Spring Loaded Bushbars
HV connectors system

Raychem RPG has been continuously expanding and manufacturing connectors for grid stations all over India. It supplies a full line of connectors for high voltage cables and overhead networks, substations, grounding applications, rail transport infrastructure, industrial applications and accessories for overhead optical fiber lines.

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<th>Range</th>
<th>Aluminium Connectors 400kV</th>
<th>Aluminium Connectors 800kV</th>
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Raychem’s solutions for Asset & Personnel Protection are known for its high performance standards in electrical distribution networks, power substations, railways and OEM applications.

We provide our customers with polymer based insulation enhancement and protection system ranging from 1.1kV to 800kV. Our range of services include supply, design, installation, maintenance, energy/network audit, as well as complete diagnostics.

Solutions Offered
- Protection against frequent tripping on account of flashovers due to inadequate electrical clearances
- Protection from large bird and animal contact induced flashovers on transmission lines
- Protection from damage because of over voltage on account of faults and other external factors
- Protection against all climatic conditions
- Comprehensive personnel protective equipment

Products Range
- Insulation Enhancement System - Raysulate
- Polymeric Insulators
- Hollowcore Bushings
- Operating Rods
- Surge Arrester
- Personnel Protective Equipment – Elecsafe
Safety and reliability of high voltage equipments is vital and Raychem RPG is committed to pioneer improvements in performance of these equipments. Frequent tripping on account of phase-to-phase or phase-to-earth flashovers due to inadequate electrical clearances considerably reduces the reliability and life of these equipments. This can now be avoided through Raysulate.

Raysulate range of products have unmatched field performance. Raysulate products come in the form of Heat Shrink Tubes, Tapes, Sheets and pre-formed shapes to enhance insulation of live points of any shape and voltage grade.

Product Range

- Heat Shrinkable Insulation Tubing
- Heat Shrinkable & Cold Applied High Voltage Insulating Tapes
- Heat Shrinkable High Voltage Insulating Sheets
- Rigid Red Barrier Boards
- Cold Applied MV & LV Shrouds for Insulating Live Parts of Switchgear & Outdoor Grid Components
- Creepage Extenders for Enhancing Creepage of Insulators
- Medium & Low Voltage Line Covers

All the products are made of special formulations for electrical use and are UV stable & weather resistant.
Polymeric Insulators

Raychem’s competence in material science is fundamental to its ability to design polymeric insulators that meet application requirements even for severe environments. Raychem RPG, having about three decades of experience, has worked closely with customers to optimise the design and installation of its products in some of the most challenging environments of the world.

Product Range

- Suspension & Tension Insulators up to 72.5 kV
- Station Post Insulators up to 52 kV
- Line Post Insulators up to 42 kV
- Hollowcore Insulators
- Railway Insulators
Operating Rods

Raychem’s Operating Rods are hollow or solid insulation parts made of fiber-reinforced epoxy resins with metal connection fittings. They can withstand extreme mechanical and electrical loads and are suitable for integration in high voltage equipments where high insulation strength combined with high mechanical strength and low weight is an asset. Operating Rods are used for voltage levels ranging from 50 kV to 800 kV. They are available in various diameters.

Applications

- Bushings for transformers, walls and dead tank breakers
- Grading capacitors, chamber and support insulators for life tank breaker
- Current and voltage transformers in oil and SF6
- Cable terminations
- Surge arresters

Hollowcore bushings

Raychem’s range of Hollowcore Bushings is made of glass-fiber reinforced resin tube with silicone rubber housing. The superior material properties are especially adapted for high voltage applications in outdoor service.
Surge Arrester

Raychem offers an extensive range of polymeric and porcelain surge arresters for distribution and transmission networks that are in service around the world and are protecting installations in all climatic conditions.

Our Surge Arresters for voltage power distribution systems upto 800 kV are designed to reliably protect your valuable assets from over voltage. They withstand severe outdoor exposure over long operating lifetime and help maintain service reliability in both overhead and underground installations.

**Low Voltage**
Provides protection for LV overhead lines, consumer in-house supplies, distribution transformers and other appliances.

**Medium Voltage**
For indoor and outdoor applications, for protection of overhead lines, DC locomotives, switchgear applications and motor protection.

**High Voltage**
For protection of transmission systems up to 800 kV

**Surge Monitoring Systems**
Accurately and reliably detect and measure current impulses, leakage current.
Elecsafe is a complete range of personnel protective equipment that comply with set standards and regulations. Elecsafe offers a comprehensive safety solution to electrical operators from the hazards of their job.

Elecsafe - Personnel Protective equipment

Product Range
- Helmets
- Arc face shield
- Insulated gloves
- Insulating mats
- Di-electric shoes
- Full body harness
- Arc flash clothing
- Eye wear protection
- Electrical safety training
- Safety Audit and risk assessment
Today in India, over 27% of the total electrical energy is lost because of Aggregate Technical and Commercial (AT&C) losses making a woeful comparison with global standards. If the losses are not kept in check, it is estimated to cost over Rs. 40,000 crores to Indian distribution utilities. The technical losses are mainly because of the type of conductors used, transformer capacity, and other equipments used for transmission and distribution of electricity. The Commercial losses are caused mainly due to meter tampering, power theft and collection inefficiency. Raychem understands the problem and offers unique solutions which help Indian utilities to bring down the losses significantly.

The solutions offered

- Replacing bare conductor with LV ABC & accessories
- Solutions for anti-theft system in overhead networks – Distribution Boxes
- Anti-theft tamper proof meter units
- Low loss Wedge Connectors
- Under Ground Multi Transit System (UGMTS)
- Medium Voltage Cover Conductor (MVCC)
- Connectors for LV coaxial cables
LV ABC

LV-Aerial Bundled Conductor System is an effective solution offered by Raychem which prevents theft by direct tapping, the most basic method of stealing electricity.

Raychem was one of the first to pioneer the connection, anchoring and suspension of low-voltage insulated overhead systems. Our continuous efforts in research and development have led to state of the art product lines, meeting the demands of modern network design, operation and maintenance. Our piercing connector service lines can be connected to live lines with maximum safety to linemen.

The major advantages of LV ABC are

- Total elimination of faults on LT lines
- Improved reliability
- Avoidance of theft by direct tapping
- Avoidance of overloading of Distribution transformers

Applications

- Distribution Networks (ABC or similar)
- Taps using insulated or anti-theft cables
- Areas with high level of energy loss
- Street lighting connections

Distribution Boxes

Solutions for Anti-theft system in overhead networks –

Distribution Boxes are installed where multiple tapping on low voltage distribution network is required, the boxes are assembled on the pole using metal straps or bolts and are easily fed from secondary line.

Advantages

- Distribution Boxes minimize unauthorised consumer access at the connection point
- The boxes give a well-organised appearance to the connection point and improve service quality
- Enhances organisation and provide the ability to balance taps from the branch connections when using coaxial or anti-theft cables
- Simplifies wire connections for improved reliability, hot points are eliminated and energy losses are minimised
- The modular system allows Distribution Boxes to be equipped with the correct number and type of busbars for each individual application
Raychem has an innovative solution to encompass energy meter, to prevent tampering on low voltage distribution networks and the non-reversible plug-in type LT connector, to make it completely theft free and tamper proof.

**Key Features**
- Tamper proof during transportation & installation
- None of the tamper-sensitive parts are left unprotected
- Permanent irreversible locking system
- Compatible to all makes of energy meters
- Flame retardant & weather resistant
- Easy installation

**Low loss Wedge Connectors**
Raychem Wedge Utility Connectors are designed around an engineering principle which we call ‘Wedge Pressure Technology’.

Wedge Pressure Technology has formed the basis for a complete family of connectors that outperforms other convectional connector technologies, resulting in ‘lowest life cycle cost’. Wedge Connectors (Boltless Connectors) overcome the physical and electrical limitations of traditional compression or bolted connectors, resulting in low technical losses and efficient, consistent current flow.

The Wedge Connectors provide the most cost-effective solutions to a wide range of power connections and grounding challenges.

**Features**
- Designed specially to manage the peak power transmission temperature up to 250 degrees.
- Provides an efficient electrical connection for any type of power conductor combination
- Withstands severe electrical and mechanical stresses
- Easy installation without damage to conductors
- Easy removal of connector without damaging the conductors and is re-usable
Under Ground Multi Transit System (UGMTS)

Under Ground Multi Transit System (UGMTS) is a patented product of Raychem, developed for connecting and switching adjacent sections. Besides preventing power theft it has other advantages like-

- It can be installed similar to RMU’s
- It helps in immediate restoration of power
- Ensures Safety and foster good aesthetic surrounding
- Fuse protection possible (optional)
- Bus Coupler arrangement possible
- Zero floor space above ground

Medium Voltage Covered Conductors (MVCC)

Raychem’s Medium Voltage Covered Conductors provide the effective solutions to prevent the revenue loss due to theft by direct tapping, tree faults and other problems associated with bare overhead conductors.

Raychem’s covered conductors have been tested across two conductors of 22kV for upto 300 hrs, after which the test was discontinued. This has proved the reliability and effectiveness of MVCC in preventing the system failure on account of transient faults created in system due to falling trees or branches.
Installation, Maintenance and Energy/Network Audits

Raychem RPG provides one stop, multi-disciplinary solutions to the power industry all over India.
Range of Services

- Cable route selection and thermal surveys
- Cable structure and support system designs
- Grounding and sheath bonding designs
- EHV cable installation
- LV ABC installations
- Installation of cable joints and terminations
- Cable spiking and hipot testing
- Contract maintenance (cable network services)
- Customized insulation solutions
- Audits and consultancy of cable networks with utilities and industries
- Thermo-scanning
- Failure analysis
- Training programmes for engineers and jointers
Regional Offices:

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