

PRODUCTS & SERVICES

POWER

CG INDIA

Transformers

- Auto Transformers (up to 1200 kV)
- Distribution Transformers
- Energy Efficient Transformers
- Dry Type Transformers (Cast Resin & VPI)
- Locomotive Transformers
- Traction Transformers
- Furnace Transformers
- Rectifier Transformers
- Shunt Reactors (upto 800 kV)
- Generator Transformers (up to 800 kV)
- Systems Transformers
- Phase Shifting Transformers
- Earthing Transformers
- Isolation Transformers

Switchgear

- Current Transformers upto 800 kV
- Capacitive Voltage Transformer upto 1200 kV
- Inductive Voltage Transformers up to 420 kV
- Condenser Bushings upto 800 kV
- Coupling / Grading Capacitors upto 420 kV
- Indoor & Outdoor Vacuum Circuit Breakers up to 36 kV
- Indoor GIS up to 36 kV
- Gas Circuit Breakers upto 800 kV
- Lightning Arresters upto 1200 kV along with allied accessories(Porcelain as well as Polymer Insulators)

- Disconnectors upto 245 kV
- Vacuum Interrupters upto 72.5 kV, 50 kA, 3150A
- LV & MV Vacuum Contactors upto 12 kV, 1000A
- 12 kV Automatic Vacuum Capacitor Switches
- Unitised Substation up to 24 kV
- Numerical Protection Relays
- SF6 Insulated Vacuum Ring Main Units upto 36 kV
- Oil Ring Main Units up to 12 kV
- Gas Insulated Switchgear (GIS) 66-145-245 kV
- Dead Tank Circuit Breaker (DTB) 72.5 kV

Engineering Projects

- Projects on turnkey basis from concept to commissioning:
 - Turnkey Air Insulated Substation upto 765 kV
 - Turnkey Gas Insulated Substation upto 220 kV
 - Control and Automation Projects
 - Engineered Packages
 - Construction Packages for own EHV Equipments

Automation Systems

- Design, Engineering, Manufacturing, Testing and commissioning of Control, Protection and Substation Automation System (SAS) for MV, HV, EHV, and UHV Substations



- Line Distance Protection
- Line Differential Protection
- Transformer Differential Protection
- Distributed Type Bus Bar Protection
- Feeder (Bay) Control & Protection
- Substation Server cum Gateway unit for SAS
- Ethernet Switch for SAS
- GPS time synchronization clock for SAS
- Design, Engineering, Manufacturing, Testing and Commissioning of Analog and Digital Power Line Carrier Communication (PLCC) System for MV, HV, EHV and UHV lines
 - Line Carrier Equipment
 - Line Tele protection Equipment
 - Line Coupling Device
 - Standalone PLCC modem
- Distribution Automation System and AMI / AMR
 - RTU / Protocol Convertors / Gateways
 - FRTU
 - SCADA
 - DMS
 - Smart Meters
 - Data Concentrators
 - Communication Modems
 - Industrial Ethernet Switches
 - Self Healing Networks
 - Smart Grid Solutions
 - Wind SCADA
 - Solar SCADA

CG Power System Service

- Site Services
- Repair & Refurbishment
- Condition Monitoring and Diagnostics of Power Apparatus

CG POWER SYSTEMS BELGIUM NV

Transformers

- Three phase liquid filled Distribution and Small PowerTransformers (up to 30 MVA and 132 kV)
- Single phase transformers for pole- and platform mounting (up to 400 kVA and 36 kV)
- Liquid filled Power Transformers (up to 500 kV)
- Mobile Transformers (up to 230 kV)
- Energy efficient Transformers (as per the EU Eco-design, US DOE regulations and Indian Star program)
- Amorphous Metal Transformers
- Smart Grid Distribution Transformers (up to 4500 kVA and 24 kV)
- Cast Resin Dry Type Transformers (up to 10 MVA and 36 kV)
- Compact SLIM® Transformer (up to 10 MVA and 36 kV)
- Compact Bio-SLIM® Transformers (up to 15 MVA and 36 kV)
- Green City Transformers (up to 30 MVA and 72.5 kV)
- Self-protecting Distribution Transformers (upto 1000 kVA)

- Transformers for hazardous areas like ATEX (up to 30 MVA)
- Auto Transformers
- Neutral grounding Transformers
- Reactors and Neutral Point Reactors
- Traction Transformers (Stationary (trackside) and Locomotive)
- Phase Shifting Transformers
- Converter Transformers
- Generator step-up Transformers
- Compact Unit Substations (up to 2.8 MVA and 36 kV)
- Micro-Substations (up to 315 kVA and 36 kV)
- Primary Unit Substations (IEEE type up to 30 MVA and 138 kV)
- Secondary Unit Substations (IEEE type up to 30 MVA and 34.5 kV)
- Pad mounted Transformers (up to 10 MVA and 36 kV)
- Modular Distribution Transformer (IEEE type up to 10 MVA and 34.5 kV)

CG HOLDINGS BELGIUM NV

Services Division: EMEA

- Installation, Commissioning, Maintenance, Repair & Refurbishment of complete substations, Transformers, On Line Tap Changers, GIS, AIS, of own make and other brands
- Site intervention Services and a Dedicated Repair Shop for Transformers up to 400 kV, all brands, Shell and Core type

- Reverse engineering, refurbishment and repair of On Line Tap Changers in a dedicated repair workshop
- 24 / 7 Operations and Maintenance service for onshore / offshore substations
- Quick delivery of spare parts
- Fast service for refurbishment of Distribution Transformers
- Oil and SF6 treatment
- Condition Based Monitoring
- Asset Assessment and Diagnostics
- Lifetime Extension Programs
- Customer training
- Dedicated Service entities in
 - Belgium (North & South)
 - France (North & South): CG Service Systems France SAS
 - Hungary
 - Kuwait
 - Saudi Arabia
 - United Arab Emirates (Dubai)
 - UK (North & South)

Systems Division

- High Voltage Transmission Systems Engineering and Supervisory services
- Engineering Consultancy for transmission grid operators and Grid compliance analysis
- Turnkey AIS and GIS Transmission Projects up to 765 kV, including:
 - Rural Greenfield Electrification projects
 - Transmission Grid connections and Substations for On- and Offshore wind parks
 - Industrial HV & MV Substation Installations up to 765 kV
 - Modular HV and MV substations up to 220 kV
 - Mobile GIS and AIS Substations and Capacitor Banks up to 220 kV
 - Mobile HV Circuit Breakers up to 220 kV
 - Mobile MV Switchgear up to 220 kV
 - Transmission Line Projects up to 400 kV
 - Submarine cable and underground cable transmission projects up to 220 kV
 - Flexible AC Transmission Systems (FACTS)
- Transmission project asset leasing and renting
- Smart Grid Solutions
- Substation Control and Automation Systems
- Distribution Automation Systems
- Transmission MV and HV SCADA projects
- HV Substation refurbishment projects

CG POWER SYSTEMS IRELAND LTD.

Distribution Transformer Division

- Single phase Distribution Transformers 15 kVA to 200 kVA up to 36 kV
- Three phase Distribution Transformers 25 kVA to 5000 kVA up to 72 kV
- Mini, Micro & PRCS self-protected package substations up to 315 kVA
- Unit substations with or without protection up to 1000 kVA
- MV Distribution System stations complete with MV & LV protection up to 5000 kVA
- Interface Transformers up to 5000 kVA
- Auto Transformers up to 5000 kVA
- Rectifier Transformers
- SLIM® Transformers (up to 36 kV)
- Solar Application Transformers
- House Transformers up to 40 kV
- Three Phase Very Low Loss Transformers
- Refurbishment of Transformers
- Amorphous Core Transformers
- Insulating Liquids: Mineral Oil, Silicon Oil, Synthetic Ester & Natural Ester

CG POWER SOLUTIONS UK LTD

- Provide Project Management, Engineering, Installation, Commissioning and SAP Operations services for Transmission, Distribution, Generation, Renewables, Panel Manufacture and LV Contracting Sectors
- Servicing of Transmission & Distribution Equipment
- Turnkey solutions, from design through to commissioning, for industrial schemes and EPC contracts
- Manufacture of Protection & Control panels

CG ELECTRIC SYSTEMS HUNGARY ZRT

Transformers Division

- High Voltage Power Transformers (up to 800 kV)
- Power Transformers filled with mineral oil (upto 500 MVA)
- Power Transformers filled with biodegradable liquid
- Track side Transformers
- Locomotive Transformers
- Traction Transformers
- Mobile Transformers
- Furnace Transformers
- Rectifier Transformers
- Special Purpose Transformers
- Phase Shifting Transformers

Switchgear Division

- SF6 Gas Circuit Breakers

- Gas Insulated Switchgear (GIS) up to 300 kV
- Dead Tank Breaker 72.5 kV

Systems Division

- GIS and AIS Substations up to 750 kV
- Industrial and Generation HV & MV Substations Installations up to 765 kV
- Transmission Line Projects up to 400 kV
- Submarine and underground cable transmission projects up to 220 kV
- Transmission project asset leasing and renting
- Transmission MV and HV SCADA projects
- Substation refurbishment projects
- High Voltage Transmission Systems Engineering
- Engineering Consultancy for transmission grid operators

Services Division

- Site erection and maintenance of Power Transformers and Gas Insulated Switchgear

CG POWER SOLUTIONS USA INC

Services

- Engineering and EPC Projects for Transmission & Distribution Systems (5–765 kV)
- Substations
- Flexible AC Transmission Systems (FACTS)
- Harmonic Filters
- Substation Automation
- Protective Relay Systems
- SCADA Systems
- Aerial Lines
- Underground Lines
- Renewable Energy Systems (Wind, Solar, Hydro, Geothermal)

CG POWER SYSTEMS USA

- Distribution Transformers filled with mineral oil, silicone oil, synthetic ester oils and vegetable oil
 - Three-phase pad mounted transformers up to 10 MVA and 34.5 kV
 - Three-phase pole & platform mounted transformers up to 2.5 MVA and 34.5 kV
- Secondary Unit Substation Transformers up to 10 MVA and 34.5 kV
- Station Unit Transformers up to 10 MVA and 69 kV
- Modular Distribution Center Units up to 10 MVA and 34.5 kV
- SLIM® & Bio-SLIM® Transformers up to 5 MVA and 34.5 kV

- WindPAD Transformers up to 5 MVA and 34.5 kV: Designs Optimized for Wind Applications
- SolarPAD Transformers (4, 3 & 2 Winding) upto 5 MVA and 46 kV: Designs Optimized for Solar Applications
- Power Transformers up to 85 MVA and 161kV, with and without LTC
- Generator Step-Up Transformers up to 85 MVA and 161 kV
- Dead Tank Breakers up to 72 kV
- Surge Arresters
- Field Commissioning & Testing Services
- Customer Training Services

Services

- Installation & Relocation
 - New Transformer
 - Existing Transformer Relocation
 - Disposal
 - Commissioning
- Repairs & Refurbishment
 - Cooler Replacement
 - Gasket Replacement / Leak Repair
 - Cleaning & Painting
 - Oil Testing / Replacement
 - On & Off Load Tap Changer Repair / Refurbishment
 - Buchholz Relay Replacement
 - Temperature Indicator Replacement
 - LV and HV Bushings Refurbishment
 - Breather Replacements
- Transformer Enhancement & Improvement
 - Uprating by addition of Fans, Pumps, Radiators, Heat Exchangers
 - Condition Monitoring
 - Cable Box to Separable
 - Connector Replacements
 - Breather Upgrades
 - Pressure Relief Device
 - Conversion & Ducting
 - On Load Tap Changers
- Spares & Equipment
 - WTI & OTI (Various types & manufacturers)
 - Buchholz Relay
 - Radiators
 - Control Cabinets
 - Fans
 - Pumps
 - Bushings
 - Conservator Tanks
 - Oil Level Gauge – Magnetic & Prismatic
- Testing & Advice
 - Commissioning
 - Visual Survey
 - Oil Testing and Recommendations

- Condition Monitoring
- Lifetime Extension Program
- Mobile Substation Refurbishment

PT CG POWER SYSTEMS INDONESIA

Transformers

- 3-phase Power Transformers up to 300 MVA–500kV
- Single phase Transformers up to 250 MVA, 500 kV
- Phase Shifting Transformers
- Mobile Transformers (up to 100 MVA, 220 kV)
- Special Purpose Transformers

Systems Division

- AIS Switchyards up to 500 kV
- GIS Switchyards up to 275 kV
- Refurbishment / Extension of GIS
- Mobile and Compact Substation up to 100 MVA, 220kV
- Mobile Capacitor Banks
- Substation Automation and SCADA projects
- Substation refurbishment projects
- Engineering Consultancy for transmission grid operators

AUTOMATION

INDIA

Products and Solutions for:

- Control and Protection Systems for
 - Distance / Feeder / Line Control and Protection
 - Transformer / Reactor Control and Protection
 - Busbar Protection
 - Bus Tie / Bus Coupler / Transfer Bus coupler Control and Protection
 - Capacitor Bank Control and Protection
 - Motor Protection
- Transformer Voltage Regulator & RTCC
- IEC 61850 based Substation Automation System (SAS) Solutions.
 - IEC 61850 certified IEDs for Power System Control & Protection
 - IEC 61850 Substation Server cum Gateway for local and remote monitoring and control of substation
 - IEC 61850 Certified Ethernet switches
 - GPS clock with NTP server
- Analog / Digital Power Line Carrier Communication (PLCC) System Solutions
 - Coupling Device
 - Carrier Equipment

- Protection Coupler
- PLCC Modem
- Distribution Automation Solutions
 - FRTU for Feeder / RMU / Distribution Transformer Monitoring & Control
 - RTU for T&D Substation Monitoring, data management, protocol conversion, data concentration etc.
 - CG SCADA / HMI Solution with multi protocol support.
- AMI / AMR Systems
 - Digital Multifunction Smart Meters for Industrial, Commercial and Residential Applications
 - Data Concentrator Units with LV supervision.
 - Modems and Routers for AMI / AMR communication
 - Smart Meter Accessories and Cabinets
 - M2M Gateways

Activities and Services

- Control and Protection System Design, Engineering, Testing & Commissioning
- Substation Automation System Design, Engineering, Testing & Commissioning
- Distribution Automation System SCADA and RTU Design, Engineering, Testing & Commissioning
- Power Line Carrier Communication System Design, Engineering, Testing & Commissioning
- Smart Meters AMI / AMR System Design, Engineering, Testing & Commissioning
- Project Management.
- After sales services, training and support to customers

NON INDIA

Substation Automation Systems

- Protection and Control IEDs
 - Line Protection
 - Busbar Protection
 - Transformer Protection
 - Feeder Protection
 - Cap. Bank Protection
 - Bay Control Unit
 - Breaker
 - Single Function Relay
 - Disturbance Recording
- Telecommunications
 - Carrier Systems (Analog & Digital)
 - Teleprotection Systems (Analog & Digital)
 - Line-Matching Units & Accessories Outdoor Indoor
 - Modems

- Networking
- Automation Systems
 - XCELL, Transmission RTU, SAS server, SCS, SCADA, Gateway, Protocol Converter and Data Concentrator
- Software
- Global Engineering Services
 - System engineering
 - IED configuration
 - Communication System
 - System integration
 - Commissioning
 - Training services

DISTRIBUTION AUTOMATION SOLUTIONS

Products

- Smart Meters and Data Concentrators
- Communication Solutions
- MV & LV Grid Automation
- EV charging stations & OEM modules
- Sensors and PLC Couplers for Smart grids

Solutions

- Global AMI Solutions
- LV Supervision systems
- MV Automation Solutions

TRANSIT

- Automation and Supervisory Control for Electric, Transportation & Water Utilities
- Control Room SCADA
- Remote Gateways & RTU's
- Emergency Trip System
- Train Tracking
- Fault Detection

INDUSTRIAL

MV MOTORS & GENERATORS: CG INDIA

- **MV & LV Induction Motor** including safe area, flame proof, increased safety and non sparking industrial duty machines power range upto 12 MW, Polarity upto 24 poles, Voltage up to 13.2 kV and in frame Size 315 to 1120 in horizontal frame & 740 to 2650 frame size in vertical frame, Squirrel Cage and Slip Ring Induction motors in enclosure type TEFC, CACA, CACW, SPDP & TETV.
- **Synchronous Generators from 1 MVA to 25 MVA** in frame size 500 to 1120, upto 13.2 kV in enclosures type CACA,CACW & SPDP
- **Industrial duty DC machines upto 2000 kW**, in frame size from 315 to 710, Voltage

upto 800 V, in enclosures type TEFC,CACA,CACW & SPDP

MV MOTORS: CG HUNGARY

- **MV Slip Ring and Squirrel Cage Induction Motors** power upto 25 MW, Pole number upto 16 in standardised designs and non standard designs in very low speeds, voltage upto 15 kV
- **Synchronous Generators** power from 1 MVA upto 70 MVA, Voltage upto 13.2 kV, in high speed 2pole and very low speed even till 48poles, vertical and horizontal configuration
- **Generator refurbishment and overhauling at site and factory** upto 300 MVA MV Motor refurbishment and overhauling at site and factory Stator and Rotor rewinding, balancing, testing and complete diagnostic at factory and site.

LT MOTORS (INDIA)

- AC Motors, Frame 63 to 400 (0.18 kW to 450 kW)
- TEFC Motors available in Squirrel cage & Slipring constructions, suitable for Safe Area & Hazardous Area
- AC Motors Apex Series, Frame 80 to 355LX (0.75 to 250 kW) IE 2 Efficiency and Frame 80 to 132M (0.75 to 7.5 kW) IE 3 Efficiency
- AC Motor NEMA Range 56 to 504 (0.75 to 150kW) EPACT & OWP
- AC Motor Kibosh Series, Frame 80 to 200L (0.37 KW to 30 KW)
- DC Motors Frame 100 to 315 (2.2 kW to 550 kW)
- Alternators Brushless Series Frame 132 to 400 (5 kVA to 1010 kVA)
- Alternator Ustad Series: Slipring Alternators from 5 kVA to 82.5 kVA

FHP MOTORS

- NEMA B42, B48 Frame: 30 to 370W, 2 / 4 / 6 / 8 Pole Sheet Metal Body Motors
- M50 Frame (NEMA B56): 187 to 2250W, 2 / 4 Pole Sheet Metal Body Motors
- 100S Frame: 1100 to 2250W, 4 Pole Sheet Metal Body Motors
- IEC 80–132 Frame: 370 to 3750W, 4 Pole CI Body Single Phase Motors
- Flame Proof Enclosure: 370 to 750W, 4 Pole Motors
- IEC 63–112 Frame: 187 to 2250W, 2 / 4 Pole Aluminum Body Single Phase Motors

- Open Construction / Customized frames: 20 to 750W, 2 / 4 / 6 Pole Motors for Domestic Appliance

INDUSTRIAL DRIVES AND AUTOMATION

- LV Drives Systems upto 3 MW, Voltage upto 690 VAC
- LV Softstarters upto 1.6 MW, upto 690 V
- DC Drives System upto 5400 kW, Voltage upto 1000 VDC
- Shaft Power Monitors
- Rotating Heat Exchanger Drives with Switched Reluctance Motors
- CG is into solution business for Sector wise application specific solutions & projects, including Inverter Duty Transformer, Variable Frequency Drives, Switchgear Panels and Rotating Machines as complete package

RAIL TRANSPORTATION AND TRACTION

Propulsion Equipments

- AC & DC Traction motors for AC Locos, Diesel Locos, EMUs & DEMUs
- Traction Alternators for Diesel Locos & DEMUs
- Electrical Traction Controls for Diesel Electric, Tower Car and Multiple Units

Traction Electronics

- Auxillary Converters — GTO
- Power Converters — GTO
- Control Electronics
- 180 kVA Static Inverter
- 3X130 KVA IGBT based Auxillary Converter
- IGBT based Power Converter

Railway Signalling

- Signalling Relays
- Point Machines
- Data Logger
- BLDC Fan
- Integrated Power Supply System
- 25 KVA Underslung Inverter EMX Motor B15

STAMPING AND LAMINATION

- 0.5 mm, 0.65 mm thick lamination from 65mm (2.6 inches) to 1300mm (51 inches) diameter in CRNGO and CRCA material in all grades & coatings for guaranteed watt loss & permeability as per customer requirement
- High speed up to 425 mm diameter with additional features like air gap cutting, auto stacked stators and stacked & skew rotors
- Notching operation up to 1300 mm (51 inches) diameter by single point notching

(3operations in one stage, like OD, Slot & ID) and skip notching operation

- Notching operation with programmable tooling on Schular machines Scroll line for better RM utilization
- Compound blanking and segmental lamination blanking up to 1050 mm diameter / width
- Continuous Heat treatment line for laminations up to 450 mm diameter for improving watts / kg & permeability
- Pack building operation with riveting, cleating & welding operation for skew stators
- Electrical lamination: ST& RT for LT Motors, 80 to 500 fr
- Circular & Segmental Electrical Laminations for HT Motors
- Punching & pack building (TIG welding) for Alternators
- Die cast Rotors for Motors
- Segmental lamination for Hydro, Turbo & Wind Mill Alternators
- Auto Stitch & Auto Skewed packs for fan