



MVA Power Inc.
Transmission Distribution Substation
and *MORE!*



MVA Puissance Inc
Transmission Distribution Sous-Station et *PLUS!*

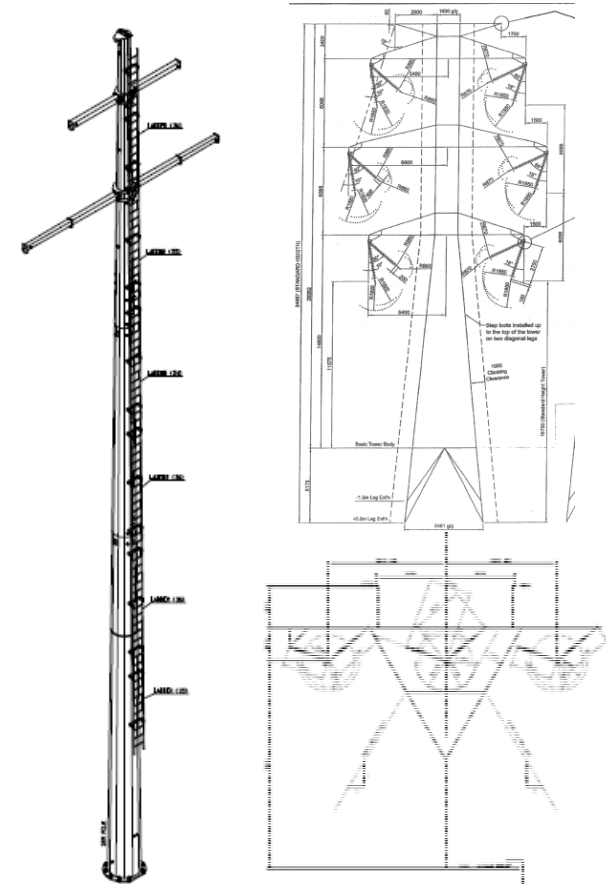
WELCOME/BIENVENUE

Who is MVA Power?

- Founded in 1991 by Marc Hadid P.eng
- Based in Montreal, Quebec and operates all over North America and Internationally.
- MVA operates in 3 Main sectors of the Power Industry
 - Transmission
 - Distribution
 - SubstationAs well as in the communication sector (supply of fiber optic cable and accessories)
- Specialized in
 - The detailed design and manufacturing of T&D and Substation Structures
 - Supply of T&D and Substation Hardware and Materials
 - Supply of HV & MV equipment
- Can provide added value services (optimization, Logistic support, consolidation) that are required for a project to run smoothly on time and on budget.
- Can provide 1 portion of a project or a FULL TURNKEY PACKAGE
- **YOUR ONE STOP SHOP FOR ALL YOUR HV & MV NEEDS!!!**

Transmission, Distribution & Substation

- Structures are designed and selected based on Client's Engineer specification
 - On time
 - On budget
 - Using the latest Design Techniques and design software
 - Assist/Hardware & Insulator String designs & Components
- MVA has a “strategic” alliance with manufacturers all over North America in order to MANUFACTURE/SUPPLY
 - Steel Lattice Towers (Power and Telecom)
 - Steel Tubular Poles (Power and Telecom)
 - Concrete Poles
 - Wood Poles (DF, WRC, RP, YP) Treated or Untreated
 - Substation Structures

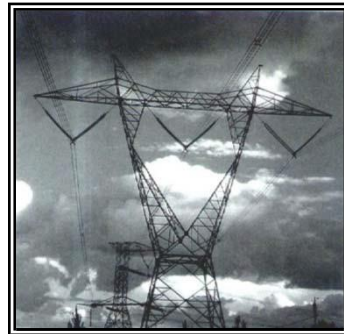
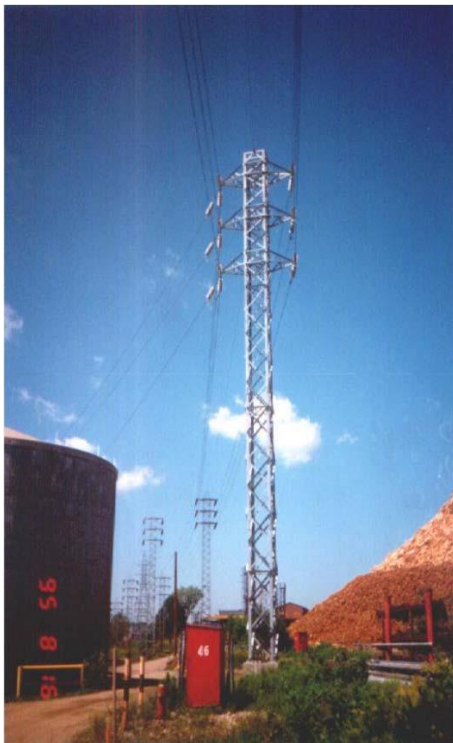


TRANSMISSION & DISTRIBUTION

STEEL LATTICE TOWERS

Power

Telecom



TRANSMISSION & DISTRIBUTION

Steel Tubular Poles

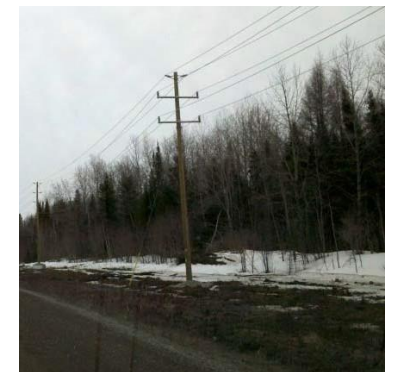
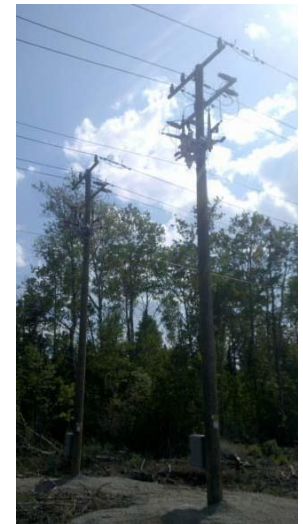


TRANSMISSION & DISTRIBUTION

Concrete Poles



Wood Poles



SUBSTATION

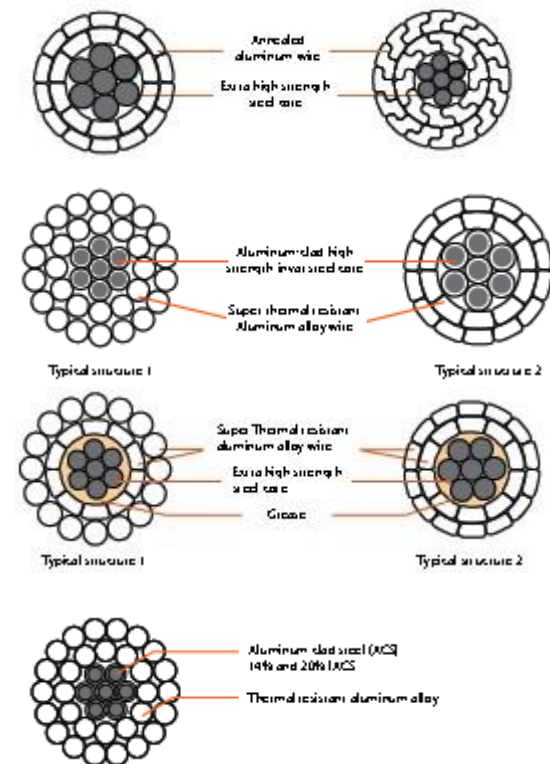
STRUCTURES/PACKAGES



TRANSMISSION & DISTRIBUTION

OVERHEAD CONDUCTOR

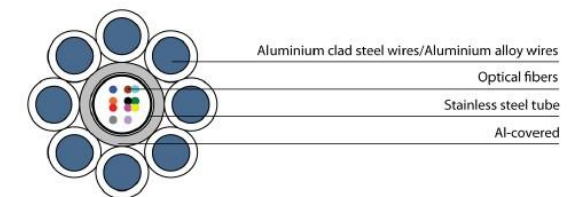
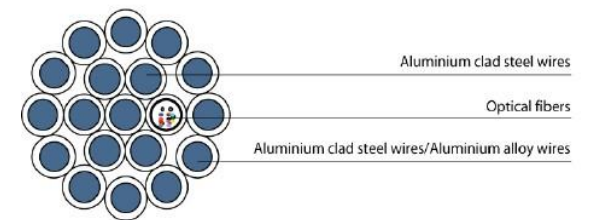
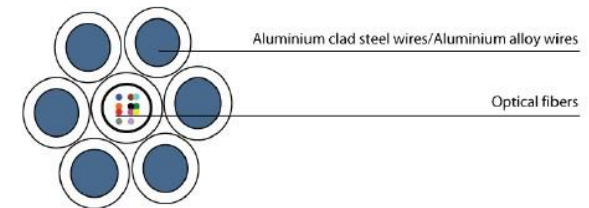
- AAC/ASC, ACSR, ACSR/TW, ACAR, AACSR
- UPRATING CONDUCTORS
ACSS, ACSS/TW, INVAR, GAP type, TACSR/AW
- Class A, B, C, High strength Galfan core etc
- As per ASTM, IEC, CSA
- ISO 9001 & ISO 14001 Certified
- Testing lab
- Supplied all over North America and the WORLD



TRANSMISSION & DISTRIBUTION

OPGW CABLE

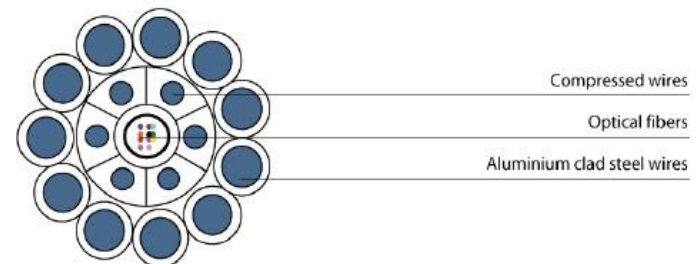
- Central Stainless Steel Tube
 - Small dia, light weight and short circuit capacity
- Stranded Stainless Steel
 - Large cable dia, higher fiber count, high tensile strength and fault current capacity
- Central core, Aluminum covered Stainless Steel tube
 - Better fault current and lightning resistance by increasing aluminum cross section, Small dia
 - Single/double armor layers
 - Good anticorrosion performance
- As per IEEE, ASTM, IEC, CSA
- ISO 9001 & ISO 14001 Certified
- Testing lab
- Supplied all over North America and the WORLD



TRANSMISSION & DISTRIBUTION

OPGW CABLE

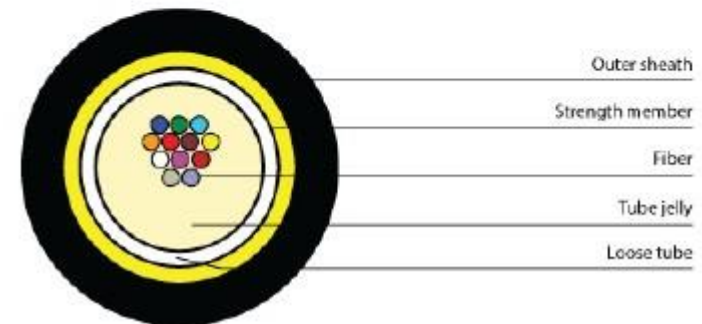
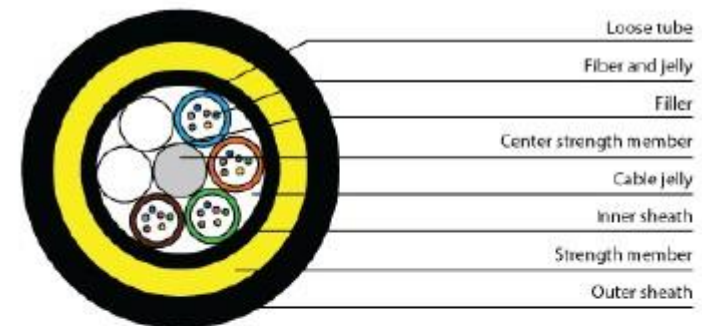
- Aluminum tube
 - Aluminum tube with optical fibers in individually packed loose tubes
 - Good anti-corrosion and Anti lightning performance
 - Material structure is uniform offering good resistance to vibration fatigue
 - Short circuit current has low effect on optical fiber transmission properties
- Lightning Resistant central wire
 - Central layer of ACS compressed into TW shape, increasing fault current capacity but maintaining shape
 - Applied to transmission lines that need small diameter OPGW but high short circuit protection
 - Used in HIGH thunderstorm Areas



TRANSMISSION & DISTRIBUTION

ADSS

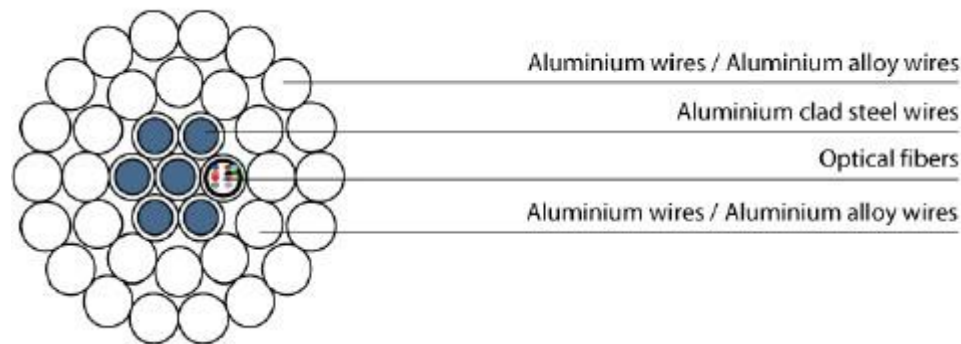
- Stranded layer and Central tube type
- Installed on existing lines up to 220 kV under the phases
- Layer or central tube design
- Aramid yarn used as supporting member (designed based on span length & loading up to 1500m)
- Outer sheath is classified into PE and Tracking resistance PE corresponding to space potential +/- 12 kV
- Max fiber count 312
- Customizable to customers' needs
- Partner with DUPONT



TRANSMISSION & DISTRIBUTION

OPPC CABLE

- Combine Stranded OPGW cable as core with Aluminum conductor
- Replace one phase only
- Designed to mechanically and electrically match adjacent phase properties
- Can match High Temperature resistance which is verified by Temperature Cycling and Short Current Tests
- Applied to MV and HV lines without ground wires (10kV+)
- Offers Telecommunications for MV & MV lines for urban and rural areas
- Providing Optical cables for building distribution and automation stations
- Customizable to customers' needs

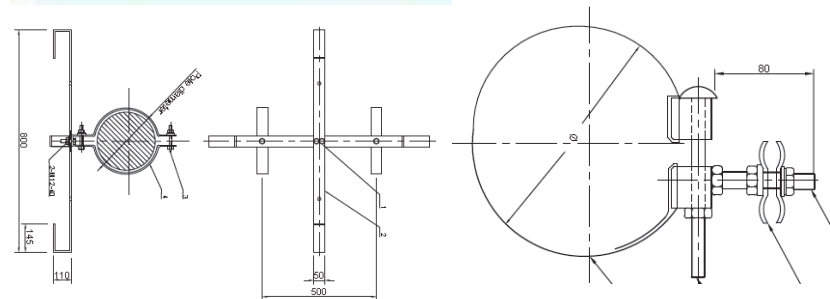


TRANSMISSION & DISTRIBUTION

ACCESSORIES FOR OPGW/ADSS & OPPC



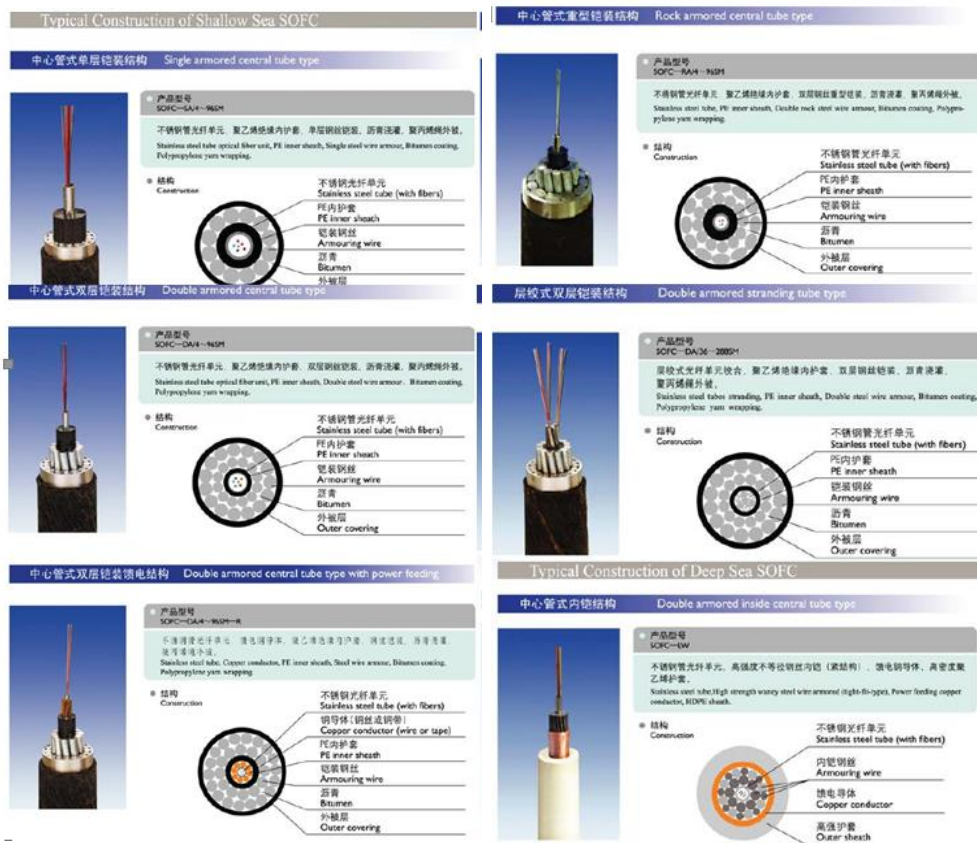
- Splice Box, IP64 rated
- Easier to install than other Manufacturer designs
- Can be mounted on Lattice or Round Pole mounted



TRANSMISSION & DISTRIBUTION

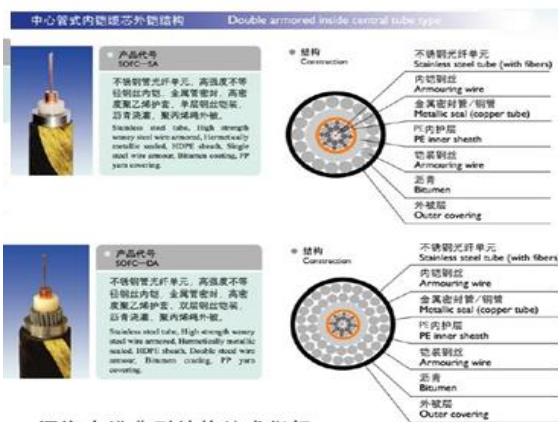
UNDERGROUND & SUBMARINE CABLE

- Underground Power Cable 1kV to 345 kV
- Underground Submarine cable 1kV to 345 kV
- Combination POWER AND FIBER OPTIC CABLE
- Armored unarmored, CUSTOMIZED TO CUSTOMER NEEDS
- Splice and Terminations

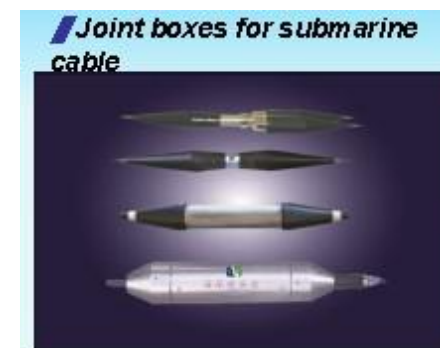


TRANSMISSION & DISTRIBUTION

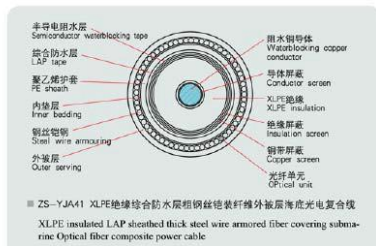
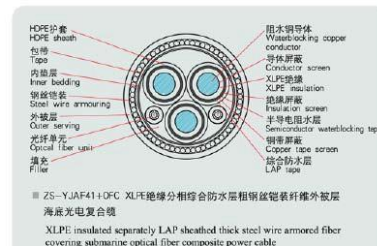
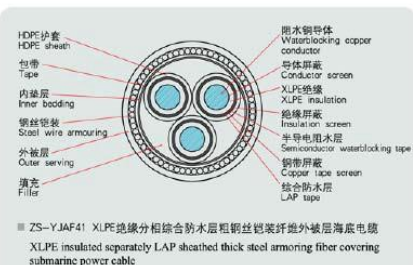
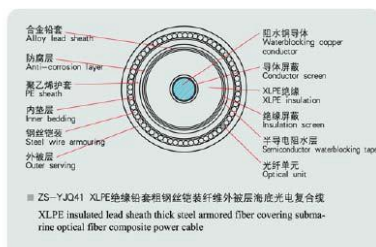
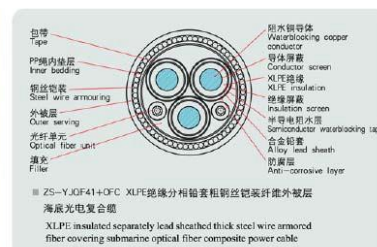
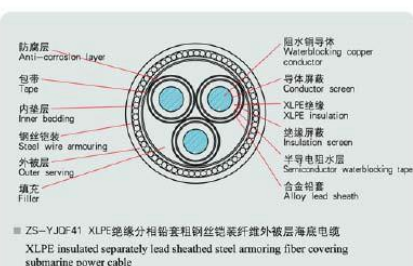
UNDERGROUND & SUBMARINE CABLE



Typical Construction of Submarine Optical Fiber Composite Power Cable



Submarine Optical Fiber Composite Power Cable



TRANSMISSION & DISTRIBUTION

FIBER OPTIC CABLE



- Optical Fiber
- **Fiber optical Cable**
- Mobile system
- Submarine optical fiber cable
- Accessories
- FTTH



Annual capacity

- 12 Million Fiber km

Product

- Duct cable
- Buried cable
- Aerial cable
- Flat Drop cable
- Armored indoor cable
- FTTH cable





TRANSMISSION & DISTRIBUTION

MOBILE/RF CABLE (UL certified)

- ☐ Optical Fiber
- ☐ Fiber optical Cable
- ☒ **Mobile system**
- ☐ Submarine optical fiber cable
- ☐ Accessories
- ☐ FTTX



Annual capacity

- ☒ 70,000km

Product

- ☐ RF cable
- ☐ Leaky coaxial cable
- ☐ Control cable
- ☐ Accessories





TRANSMISSION & DISTRIBUTION

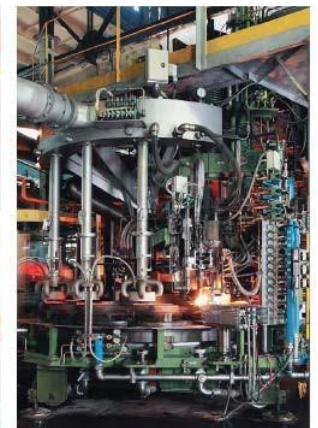
FTTX SYSTEM



TRANSMISSION & DISTRIBUTION

GLASS INSULATORS

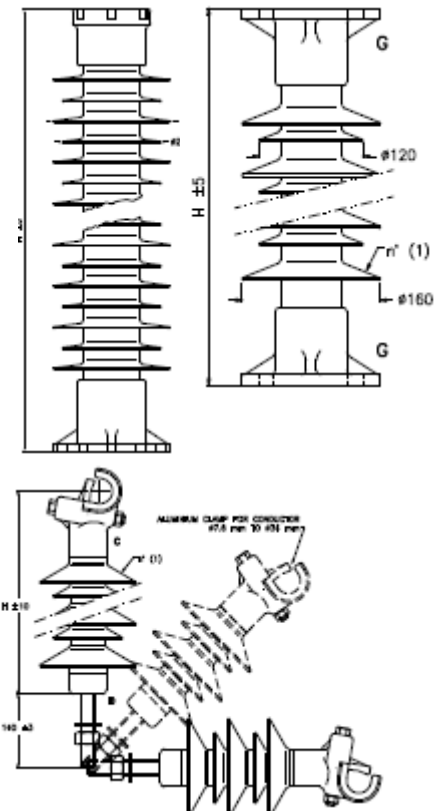
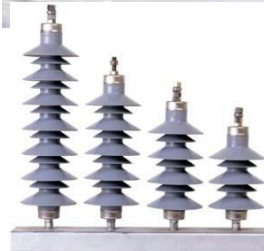
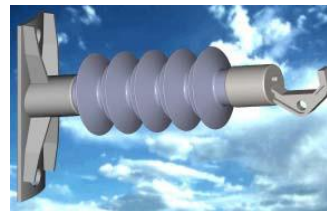
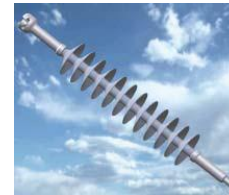
- Making insulators for 50+ years
- ANSI, CSA and IEC compliant
- ANSI & IEC tested
- With and without zinc sleeve
- Many advantages and reliability of Glass over Porcelain and Polymer Especially in the 230kV + range
- Internal test lab as well as international lab associations (KEMA)
- ISO Certified



TRANSMISSION, DISTRIBUTION & SUBSTATION

Polymer Insulators

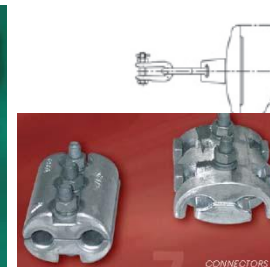
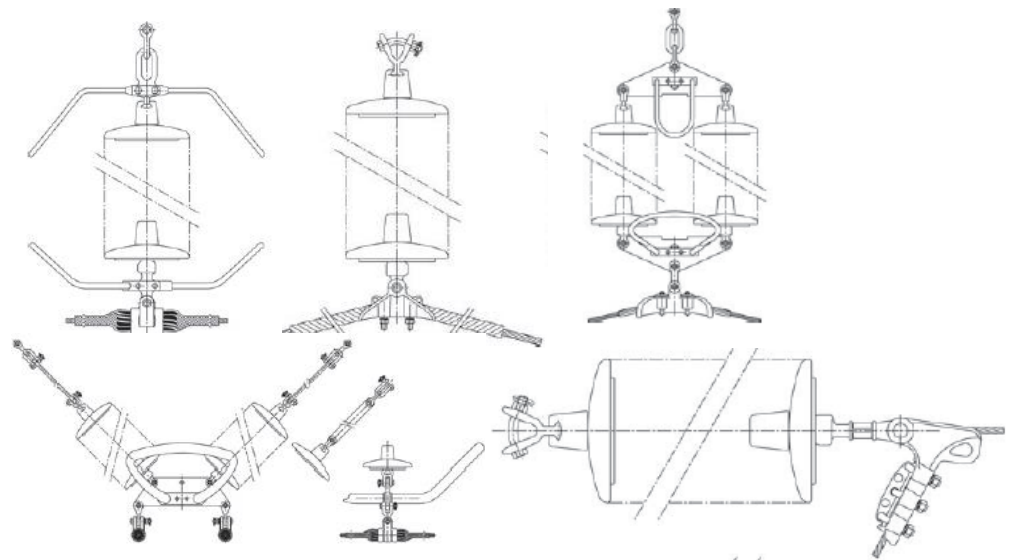
- Making insulators for 50+ years
- ANSI and IEC Rated up to 765 kV
- ANSI & IEC tested
- 5000 hr UV rated/tested
- Many Configurations/designs
 - Deadend/Suspension
 - Pin
 - Station Post
 - Line Post
 - Catenary
 - Surge arresters
- Internal test lab as well as international lab associations (KEMA)
- ISO Certified



TRANSMISSION & DISTRIBUTION

TLINE HARDWARE

- ANSI, CSA, IEC Designs
- Charpy Compliant Hardware
- HI TEMP Compliant Hardware
- Corona Free hardware
- Can assist in design of strings (single, double, triple, quad)
- In house and University Test Lab
- Wide range of products
- ISO Certified, part of CIGRE



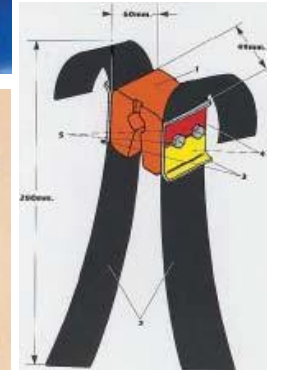
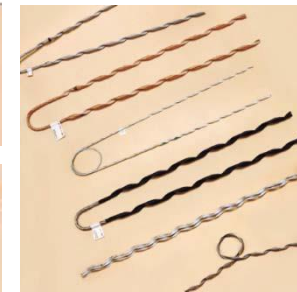
OVERHEAD RAIL

- Light Rail
- Tramway
- Rigid Catenary
-
- Can assist in design of strings
- In house and University Test Lab
- Wide range of products
- ISO Certified, part of CIGRE



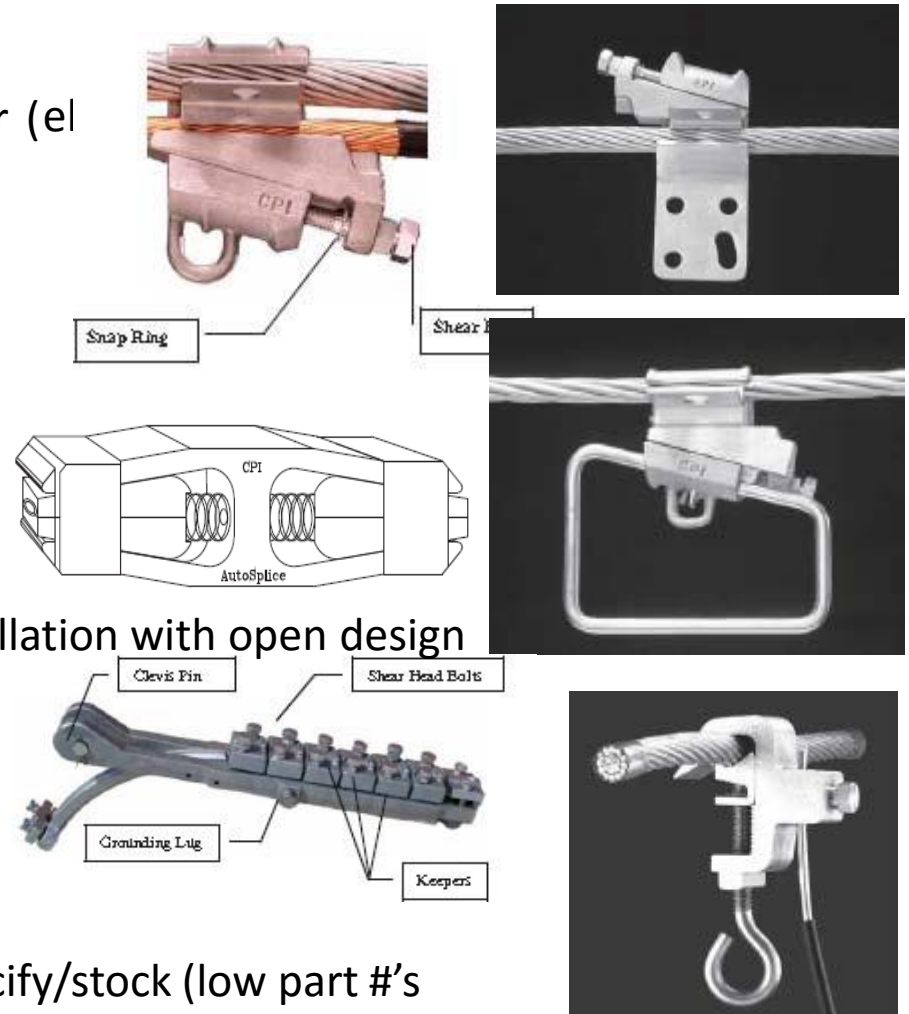
TRANSMISSION & DISTRIBUTION

- Stockbridge Dampers
 - OH
 - OPGW
 - ADSS
- Spacer Dampers (double, triple, quad)
- Preformed
 - Armor rods
 - Dead ends (guy, alum, copper)
 - Insulator Ties
- OPGW/ADSS Hardware
- Conductor warning lights
- Tower beacon
- Bird Protection
- Vibration measuring equipment
- HI TEMP Compliant Hardware
- In house and University Test Lab
- ISO Certified



TRANSMISSION & DISTRIBUTION

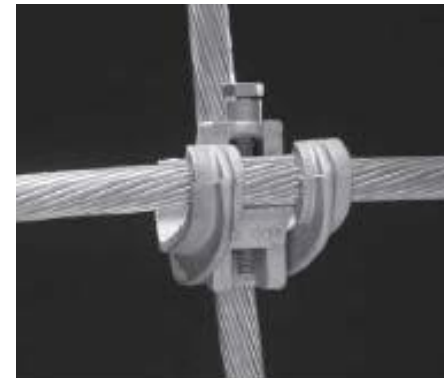
- Tap Connectors using shear bolt
 - eliminates wear on conductor
 - Runs at a lower temp than conductor (eliminates burn)
 - Easier/faster to Install Remove
 - No Special tools required
 - Reusable
 - Available in Tap, Pad, Stirrup, Hotline
 - Aluminum and copper versions
- Auto Splice
 - More reliable /efficient
 - Eliminates corrosion and improper installation with open design
 - Reusable
- OPGW bolted deadend (shear bolt design)
 - Rated to 45000 lbs
 - High resistance to lightning and short circuit
- ISO Certified
- Made in USA, quick lead times, easier to specify/stock (low part #'s with wide ranges)



TRANSMISSION & DISTRIBUTION

GROUNDING PRODUCTS

- Ground Grid Connectors using shear bolt
 - #4 – 500MCM wire range and up to ¾" ground rod
 - Copper/Bronze Alloy connector
 - eliminates wear/damage on conductor
 - Easier/faster to Install Remove
 - No Special tools/molds required
 - Environmentally Safe
 - No weather restrictions on use
 - Constant connection due to C-spring and shear bolt
 - Reusable
- ISO Certified
- Made in USA, quick lead times
- easier to specify/stock (low part #'s with wide ranges)



RAIL

- Rail Connectors using shear bolt
 - Ground connector
 - Third Rail
 - Spring Clamp for C A B Signal Cable

The rail is not subjected to warping by excessive heat or weakened by drilling.

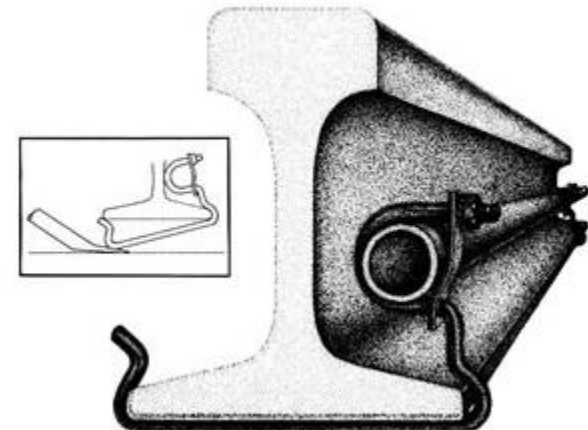
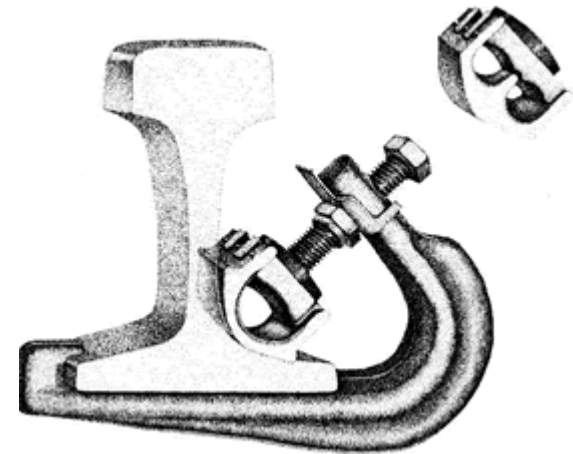
Labor saving: installation time of 1/6 man hours and no follow-up maintenance required.

Fewer rail connections required because of the large conductor capacity - up to two 750MCM cables.

A sound electrical connection may be effected in all weather conditions.

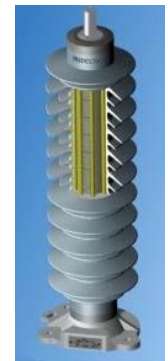
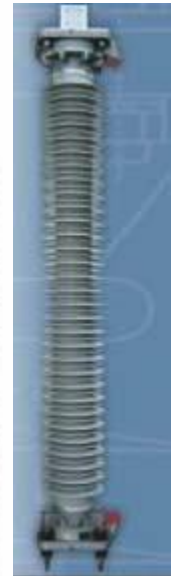
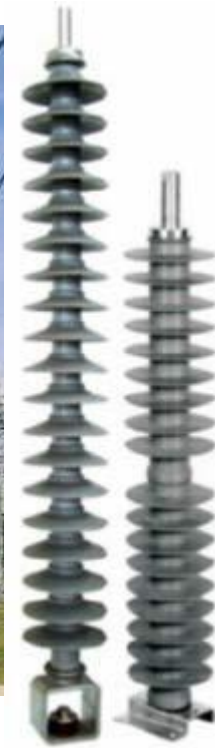
Connectors are removable and 100% reusable.

- ISO Certified
- Made in USA, quick lead times
- easier to specify/stock (low part #'s with wide ranges)



TRANSMISSION, DISTRIBUTION & SUBSTATION SURGE ARRESTERS

- Transmission, Distribution and Substation class Arresters op to 800 kV
 - HV Polymer
 - Wrap design
 - Cage design
 - Tube design
 - HV Porcelain (design 0,I,II)
 - MV Polymer
 - DC Arresters
 - polymer and Porcelain up to 4.8kV)
- Polymer and Porcelain designs
- Based on IEC standards, equivalent to ANSI/CSA
- AREVA Parafoudres part of Tri-Delta
- Over 100 years of innovation (since 1889)



SUBSTATION

Subx Connectors

- Copper/Bronze , Bi-Metallic and Aluminum Connectors
- Corona-Free and non-Corona Free Connectors (up to 500 kV)
- Bolted, Welded & Compression Type
- Grounding connectors
- VERY WIDE range of designs/possibilities to provide efficient/minimize # of connectors
- Quick lead times
- ISO certified, Internal and university Test labs



SUBSTATION

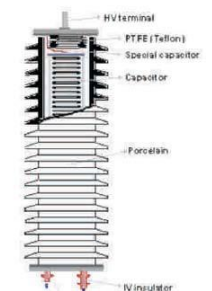
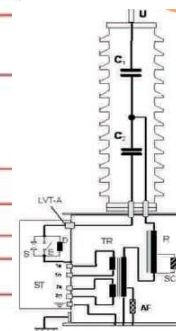
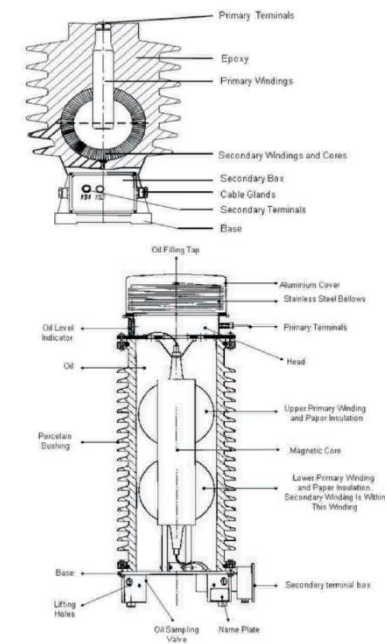
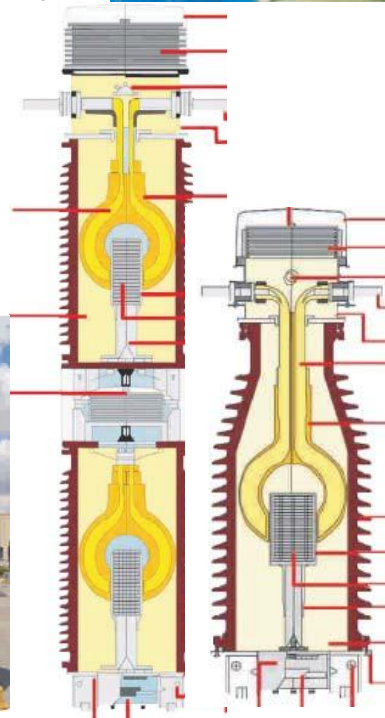
Subx Connectors



SUBSTATION

INSTRUMENT TRANSFORMERS

- Manufacturing since 1969
- Up to 500 kV
- Rated for use up to -50 deg C
- Porcelain (brown or grey) housed oil insulated instrument Transformers (Polymer in Development)
- Dry type (indoor/outdoor) available for MV/LV
- CT – Current Transformer
- CVT – Capacitive Voltage transformer
- IVT – Inductive Voltage Transformer
- ISO certified, Internal and university Test labs



SUBSTATION POWER TRANSFORMERS

- Large Power Oil Filled Transformer
 - Up to 550 kV
 - Up to 10-800MVA or 3 phase
 - Up to 10-300MVA for single phase



SUBSTATION

LARGE TRANSFORMERS

- Large Power Oil Filled Transformer
 - Generator Step Up
 - Station Auxilary
 - Station Start-Up
 - Substation Transformer Feeder
 - Voltage Regulators Induction
 - Furnace Transformers Rectifier
 - Transformers
- Mobile substation up to 230 kV 45MVA
- Core type (30-200MVA or 3 p, 30-125MVA 1P)
- Shell Type (3ph 1000MVA 600MVA test, 1P 511MVA 350MVA test up to 525kV 1675BIL)
- Transformer Repair
- GE, Westinghouse & ABB Factory



DISTRIBUTION / OEM

– Heat/Cold Shrink Insulation & Terminations

- Heat Shrink tubing
- Heat shrink & cold Shrink Terminations and splice kits up to 35 kV



DISTRIBUTION/DOT

ENCLOSURES



- 100% POLYMER CONCRETE MODULAR DESIGN (non dissimilar material)
- 100% INSULATING MATERIAL (Eliminate stray voltage due to improper grounding), Non corrosive, UV resistant, Fire resistant, moisture resistant, resistant to temperature fluctuations (freeze/thaw, Chemical Resistant
- **Lightweight, easy to install yet stronger than concrete (90% lighter)!**
- ANSI/SCETE 77 compliant UP TO TIER 22–22500lbs design load (Box & Cover)
- **UL Certified** (see catalog for details)
- Box Sizes (Rectangular, Round, straight/flared wall) from 6"x8"x6" to 48"x96"x48" deep (Stackable to height required)
- Box Min TIER 15 load (Most are TIER 22)
- Terminators, knockouts, cable racks, dividers, terminations available
- Interchangeable covers (between any tier), different cover options (metering lids, vents, cable openings, LOGOS ...)
- Transformer/Switchgear/Telecom cabinet/Electrical Equipment Base Pads/Box PADS (Up to 93x93x36") – different configurations available, fits most sizes of electrical equipment (see catalog for details)
- Underground distribution Switchgear Enclosure
- Traffic signal/Battery backup Cabinet Base
- Median Barrier enclosure (Made Specifically for Jersey and
- **INDUSTRY TESTED AND APPROVED FOR 40 YEARS**
- **MOST SIZES IN STOCK!!**

Wind Power / Distribution

– Transformer pads



- Lightweight, EASY TO INSTALL and RUGGED!
- Fire resistant, low moisture absorption, UV resistant, Chemical Resistant
- Polymer Concrete Equipment support Pads (Various sizes and options to fit any equipment size)
- Transformer & switchgear box pads (cover available)- Fiberglass reinforced Composite (FRC)
- FRC Transformer Box Pads with Tower Tunnel (Made for the Wind power industry!)
- FRC Ground Sleeves
- FRC Heavy duty Secondary Pedestals
- FRC Heavy Duty Cable loop Storage unit
- FRC HILL HOLDER

Wind Power / Distribution

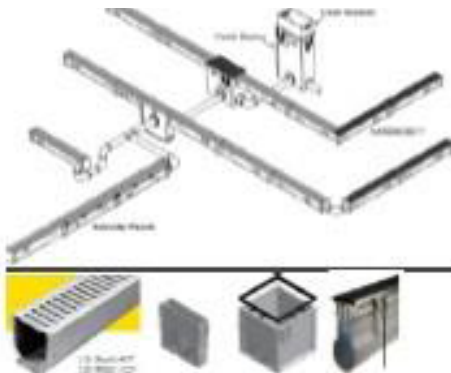
ABOVE GRADE ENCLOSURE



- Rust Proof, UV resistant, chemical resistant, ROBUST Fiberglass design
- Modular above grade Fiberglass enclosure up to 4.6x15x7 feet to protect equipment (transformers, generators, switchgear...) from the elements & tampering
- Complete Walk in enclosures for generator Control
- Primary Voltage Sectionalizing cabinets
 - single phase and 3-Phase constructions available
 - Gas Spring cover support
 - Stainless Steel Parking stands, Copper grounding lug, junctions, load break elbows
 - UP TO 35 kV 600Amp 6 Way junction design
- Transformer Deferral cabinet
- Underground feed through Pedestals
- Secondary Pedestals (high back option available) – Fiberglass and Plastic (HDPE)
- Pole Line Hardware and Bracket arms
- Standoff and support brackets for conduits (multiple conduit option available)
- Gain brace for wood crossarms
- Mounting bracket for pole top Transmission insulators
- Fuse link Storage Cans

DOT/Commercial/Industrial/Residential

– Polymer concrete Trench Drain



- Polymer concrete or fiberglass presloped trench drain system
- UP TO 3000 GPM liquid flow rate!
- Chemically resistant, resistant to heavy loads, resists cracking
- Completely modular design
- Precast (no need to cast in place or use heavy machinery)
- LIGHTWEIGHT, EASY TO INSTALL!
- Can be used for any drainage application (road, plant, airport, park, garage ...)
- Many Plastic, steel, galvanized steel, stainless steel grating options available

DOT/Commercial/Industrial/Reisidential

– ROAD PLATES, SHORING SYSTEM & TRENCH COVERS



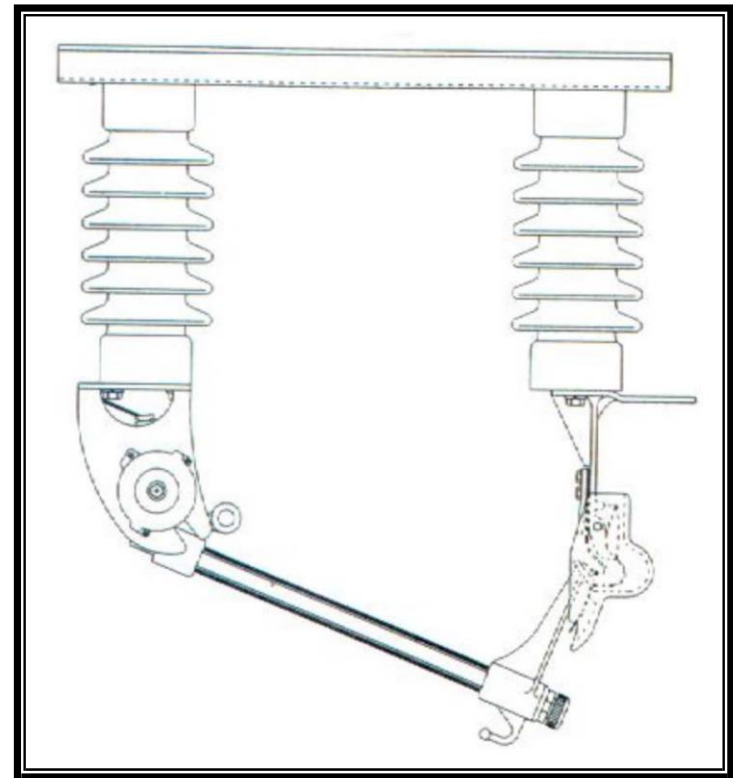
- Lightweight Heavy duty locking manhole covers
- Lightweight CUSTOM trench covers
- Lightweight ROAD PLATES & SHORING SYSTEM (Exceeds OSHA Requirements for shoring - TYPE C soil)
 - Modular design
 - Can fit in a truck
 - No heavy trucks to lift and position
 - Road plates can be used in shoring system
- Polymer composite design (completely electrically neutral)
- Light weight (eliminate back strain)
- STRONG!!! (Up to 22500 lbs design load)
- UV & Temperature resistant

PRODUCTS

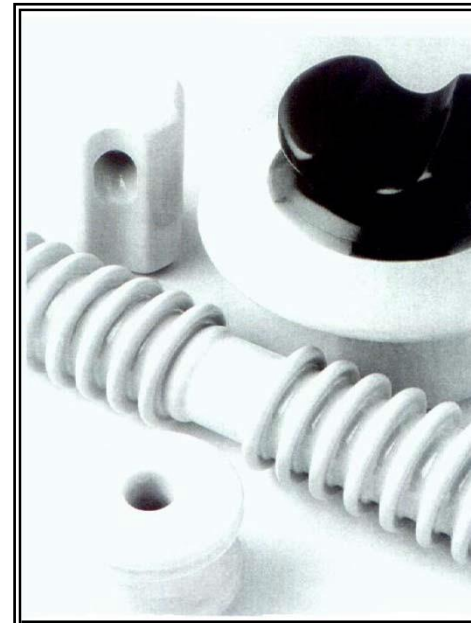
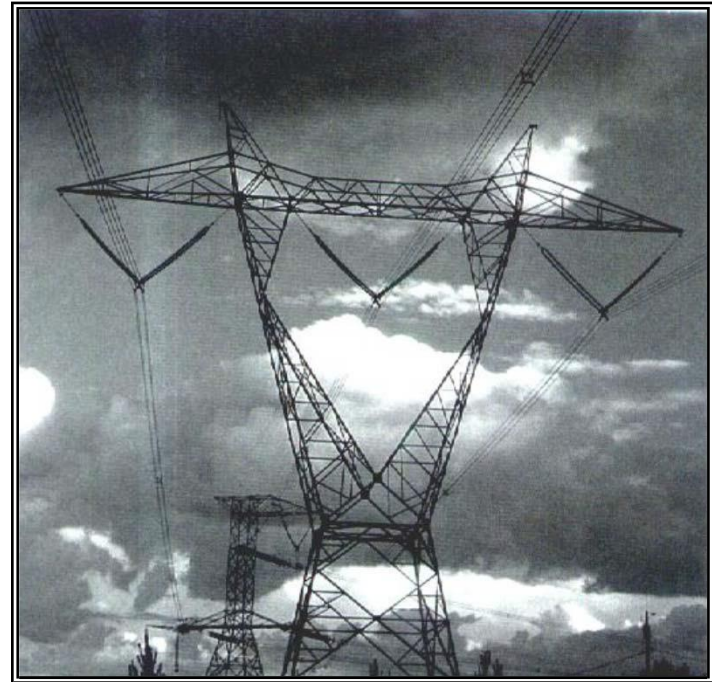
Substations

Transmission Lines & Distribution Lines

- *Medium & High Voltage Substation Packages*
- *Accessories & Hardware for Substations*
- *Air Core Current Limiting Reactors*
- *Batteries, Chargers & UPS*
- *Bus Duct, Cable Bus & Cable Trays*
- *Cables, Aluminum & Copper*
- *Conductor & Guy Wires*
- *Cables and Terminations, High Voltage*
- *Fiber Optic Cables & Accessories*
- *Energy Monitoring*
- *Indicators*



- ***KWH Meters***
- ***Capacitors & Capacitors Banks***
- ***Control Panels***
- ***Poles & Anchors, Cross Arms, Fiberglass & Wood***
- ***Disconnect & Load Break Switches***
- ***Electrical Connectors***
- ***Flex Braids***
- ***Ground Rods & Inspection Boxes***
- ***Ground Rods, Cables & Materials***
- ***High Voltage Tesing Equipment***
- ***Indoor Station Equipment & Auxiliaries***
- ***Instruments***
- ***Insulators***
- ***Lightning / Surge Arrestors & counters***
- ***Line Traps***
- ***Photo Cells & Street Lightning***
- ***MCCB***



- ***Heat Shrink Tubing and Tape***
- ***Prefab Trenches & Boxes***
- ***Protection Relays and SCADA***
- ***Reactors, Resistors & Line Traps***
- ***Reclosers***
- ***Pylons***
- ***Service Platforms, Steel & Aluminum***
- ***Solar Energy Systems***
- ***Supports, Steel & Aluminum***
- ***Switchgear***
- ***Telecommunication Towers***
- ***Tower Structures***
- ***Transformers, Distribution***
- ***Transformers, Instrument***
- ***Transformers, Padmount***
- ***Transformers, Dry Type***
- ***Transmission Line Hardware***
- ***Trolley Systems & Accessories***



We also supply spare parts, accessories and components that are hard to find. Contact us for your needs.

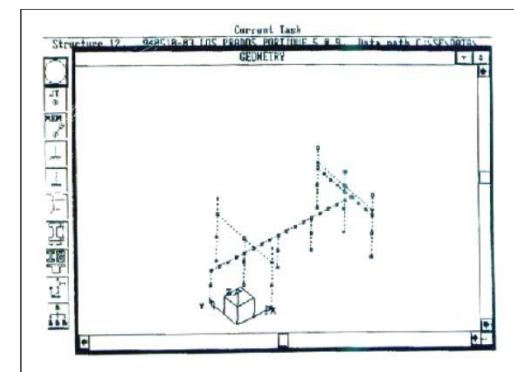
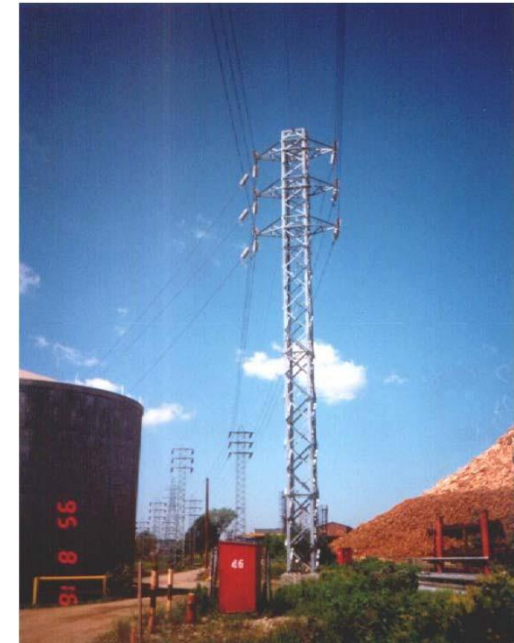
SERVICES

Substations

Transmission Lines & Distribution Lines

MVA Power uses the latest techniques and computer software to detail design and manufacturing. This enables MVA to design, supply and deliver on time and within budget the projects and orders. Below is a list of services that are available within the context of a project :

- Foundation Shop Drawings
- Structural Shop Drawings
- Field Technical Services
- Field Supervision
- Ground Grid Studie & Calculations
- Bus Bar Calculations
- Layout Details & Bill of Materials
- Budget Pricing
- Telecom Network Schemes
- Span Calculations
- Used Materials
- Power Factor Correction Systems
- Voltage Regulation Systems
- Network Rehabilitation
- Street Lighting
- Rural Electrification
- Renewable Energy Systems
- Cable Thermal & Dynamic Loading



MOBILE SUBSTATIONS 24 - 13.8 KV, 5000 KVA
JAMAICA PUBLIC SERVICE CO.





CANADIAN PROJECTS

This is a short list of Major projects we have completed in the past 3 years:

McCully Phase 2 Field Development project - 138kV Substation

Detail Design, Manufacture & Supply Package

Pulp Mill – Williams Lake, BC

69kV Substation Package

BCTC (BC Transmission Corp) – 69kV Clayburn Substation – Structural Steel (HSS)

UPC Wind Farm - 230kV Brown Hill Substation / 115kV Lent Hill Substation – Structural Steel (Tubular , HSS & TRX Platforms)

MB (Manitoba) Hydro – Red River Crossing Deadend Towers

SUNCOR Energy Inc - Supply of 12 & 15MVA Power TRXs & NGRs

BCTC (BC Transmission Corp) – Dokie Wind Farm Terminal Substation – Structural Steel (HSS) & Materials

Fabrication, Manufacture & Supply of 260kV Major Dead End Incoming Tower & structural SubX

Steel, 260kV Substation Material (including: Busswork, SubX connectors, grounding equipment, cables, etc...)

BCTC (BC Transmission Corp) – Upper Harrison Terminal Substation -

Fabrication, Manufacture & Supply of 260kV Major Dead End Incoming Tower & structural SubX Steel

Bear Mountain Wind Farm Project - ZigZag Padmount Transformer & NGR

BCTC (BC Transmission Corp) – 230Kv Bear Mountain Wind Farm Terminal Substation – Structural Steel (HSS)

Fabrication, Manufacture & Supply of 230kV Major Dead End Incoming Tower & structural SubX steel

BCTC (BC Transmission Corp) – Tie-In 138Kv Substation – Structural Steel (HSS)

Fabrication, Manufacture & Supply of 138kV Major Dead End Incoming Tower & structural SubX Steel

PowerStream (Markham Hydro) - 230Kv Switchyard - Markham TS#4 – Structural Steel (HSS) & Tapered Tubular Lightning Masts.

Fabrication, Manufacture & Supply of 230kV Major Dead End Incoming Tower & structural SubX steel with Tapered Tubular Lightning Masts

ExxonMobil (Imperial Oil Ltd – ESSO (Canada)) – Kearl Oil Sands Project - Telecom Tower

Detailed Design, Fabrication, Manufacture & Supply of 90m Self-Supporting Tower & Mounting equipment for telecom hardware. 240 kV Transmission line Supply of 70 240 kV tubular transmission line towers

City of Red Deer – Design and manufacture of concrete switchgear base pads

City of Medicine Hat – Design and Supply of Cable bus system



INTERNATIONAL PROJECTS

Some export projects we have participated through CIDA, the World Bank and other trading companies, consultants or direct to customers include :

DOMINICAN REPUBLIC

4 Substations 110 kV and 69 kV Rural Electrification Project



INDIA

Kerala State : Power Factor Compensation on 16 Substations 132 kV and 69 kV



JAMAICA

120 kV to 69 kV Substations



MEXICO

400 kV Transmission Lines - Towers & Hardware



PAKISTAN

Interconnection and Stability Improvement Feasibility Study



SENEGAL-M 'BUR

Rural Electrification Project



TRINIDAD

Equipment for 69 kV Substation



ZIMBABWE

Interconnection, Design, Supply and Procurement Management



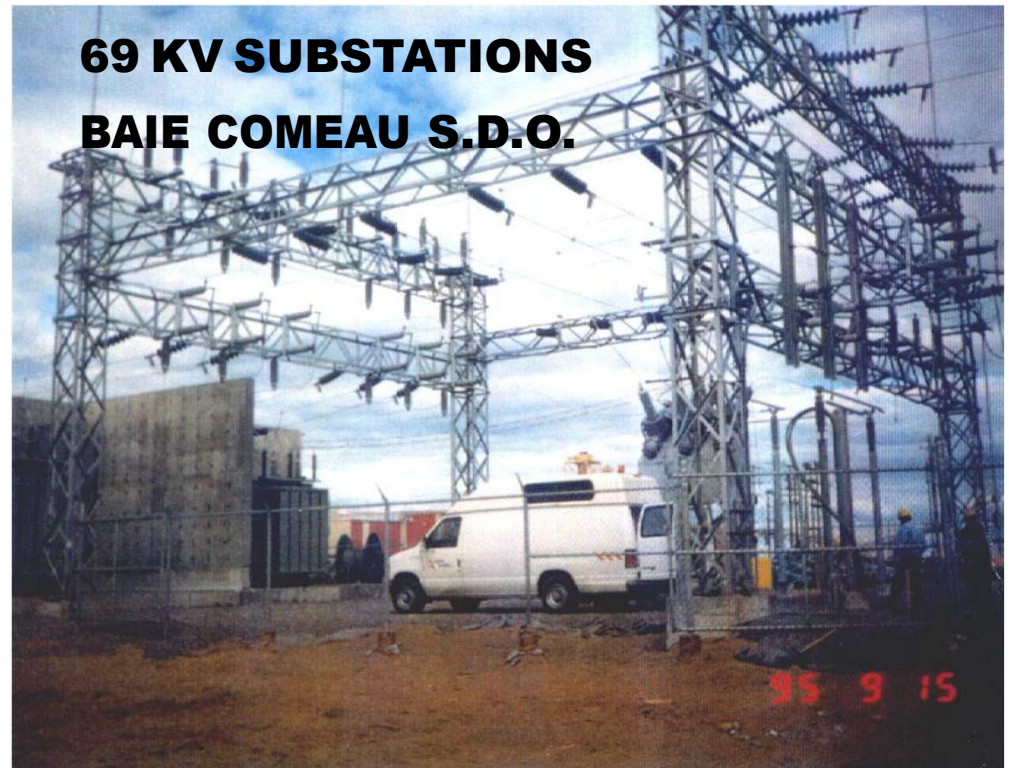
ALGERIA

400kV Incoming Tower Lines, Substation Structures (Lattice), Conductor & Hardware (fittings, connectors, etc.) equipment for a thermal power plant



Specialities

- Medium & High Voltage Substation Packages
- Electrical Apparatus
- Line Hardware & Insulators
- Protection & Control
- Energy Management
- Energy Generation & Accessories
- Telecommunication Components





Don't forget to visit us at
www.MVAPOWER.com
and add us to your
supplier bidding list
for current and future projects

