

# **Our Products**

- Electrical Equipments**
- Substations**
- Tunnel Lighting**
- Grout Batching Plants**
- Tunnel Lining Equipment**
- Tunnel Locomotives**
- Fire Alarm Systems**
- Testing Services**



***SG Electrical Equipment Suppliers & Manufacturing Pte Ltd***



# Compact Substation Types

## Containerized Substations



### Containerized Substations

- The containerized substation systems are manufactured in 20ft or 40ft arrangements depending on the customer requirements.
- The containerized substations are normally constructed that they can be easily installed on any construction site with a medium voltage as the container has a medium voltage section, transformer section, and a low voltage section.
- The containerized substation systems can be configured to supply systems up to 4mva power distribution for construction sites.
- These containerized substations are also to the required international standards or to the local authority requirements in the country they will be used.

### Compact Tunnel Substations (CTS or MTS)

- The substations systems are designed to operate in a confined space area such as tunnels or other mining applications such as NATM systems and they are rated to IP65 when they required to operate in these conditions.
- The "CTS" systems are designed loads from 250kva to 3000kva to even be installed in tunnels and on TBMs backup systems for the LV distribution of power or for STS systems in tunnels to supply power to the system for the slurry transport pumps.
- They can also be used to supply power to surface equipment or conveyor belt systems with the medium voltage reticulation distributed through the RMU system which makes the system flexible to use at any time.
- The "MTS" systems are used where the loads to operated will be normally from 100KVA to 500KVA in very small tunnels for pipe jacking machines, smaller diameter TBM tunnels and cross passage works during the construction with the power distribution from MV/LV or LV/LV depending on the loads or the customers' power requirements

## Compact Tunnel Substations



**22-11KV step down  
system up to 3MVA**

# Medium Voltage Switchgear



## GIS Switchgear ranges from 6.6KV up to 36KV



The medium voltage switchgear we can supply our customers can be stand-alone or in containerized systems from 3.3KV to 36KV systems. This medium voltage switchgear will also be fitted with the required protection devices as required by the customers to meet their standards or the local authority specifications below are some of the types of medium voltage switchgear we supply.

### GIS Primary Switchgear

- Ratings up to 36kV and 1250A ratings
- Vacuum circuit breaker design.
- Sealed for life gas-insulated system.
- Internal Arc Classification (IAC) AFL(R) 1s.
- SF6-insulated metal-enclosed.
- Motor charged spring.
- Front access cable terminations.
- Electrical and mechanical interlocking with padlock facilities.

### GIS Ring Main Units

- Up to 36 kV and 630A ratings.
- Compact, extensible, and modular range.
- Freestanding and transformer mounted units.
- Easy integration with the SCADA network.
- IP54 protection for indoor and IP68 for outdoor applications.
- SF6 Insulated - Side and rear cable access.
- A fully interlocked mechanism with padlocking facilities.
- Motorization for remote control.
- Electronic relays or time limit fuse (TLF) options for the protection.
- Front access cable terminations.
- Electrical and mechanical interlocking.
- Time limit fuse (TLF) and relay protection.

Standards – (IEC62271-200, IEC62271-100, IEC 62271 – 102, IEC 62271 – 103, IEC 62271 – 105, IEC 62271 – 200, IEC 62271 – 206, IEC 62271 – 1, IEC 61243 – 5.etc)





## Power Transformers

**Transformer ranges we support  
Low -Medium - High Voltage**



*We are a distributor for Thai Trafo Transformers which are manufactured to international standards or type-tested when required for different permanent infrastructure power distribution when needed and below is some general information of transformers we can supply to our customers for their applications.*

### **Oil Cooled Transformers**

- Installation Outdoor or Indoor.
- Cooling Systems Oil-immersed self-cooled or oil-immersed forced-air cooled.
- Three-phase or single-phase.
- No more than 5 taps for a tap range within  $\pm 5\%$  of rated voltage.
- Hermetically sealed tank type.
- Oil Types are Mineral, Silicone oil, FR3 Oil.
- 100KVA - 500MVA up to 420KV

### **Cast Resin Dry Type Transformers**

- Up to 25 MVA and with a maximum voltage rating of 36 kV.
- Rated power can be increased %40 by cooling fans.
- The partial discharge parameter that specifies the transformer lifetime is  $<5$  pC in our dry-type transformers.
- LV winding is made of aluminum or copper coils according to the customer request.
- High voltage windings are made of flat or round aluminum or copper wire with F or H Class insulation material.
- The core is made of the highest quality, cold-rolled grain-oriented silicon steel.

**Standards** – (IEC 60076-11, IEEE C57.12.01, BS EN 50541-1, CSA-C9, IEC-60076, BS-171, ANSI C-57, JEC-204, JEC-2410, JEC-2200, etc)



**Resin cast insulated  
power transformers  
with or without  
enclosures**

**ELTAS**

Transformatör Sanayi ve Ticaret A.Ş.

# ***SG Backfill Grout Batching Plants***



## ***Two-Component Backfill Grout Plant System***

*SG has developed the two-component Grout Backfill Groutplant system for the tunneling industry to supply grout to the TBM's in the tunnels when they need to do grouting behind the precast segments during excavation time. The system is an open type system where the mixing systems can be placed directly underneath the silos with a very short screw conveyor to transfer the material to the weighing hopper of the mixing system. The mixing system is a conical type of mixing of the components where the searing of the bentonite and the cement can happen with a product with no balls in the mixture. The bentonite is a premixture also as it is prepared in advance to ensure that it can dehydrate to give a product that is of better quality before it will be used. The system can also be interphase with the TBM side to control the supply of material only when needed during the tunneling excavation.*

## ***Technical Data:***

***Control: Auto/Manual***

***Voltage Requirement: 415v***

***Type: Open / Containerised***

***Capacity: 8m<sup>3</sup>/Hr – 18m<sup>3</sup>/Hr***

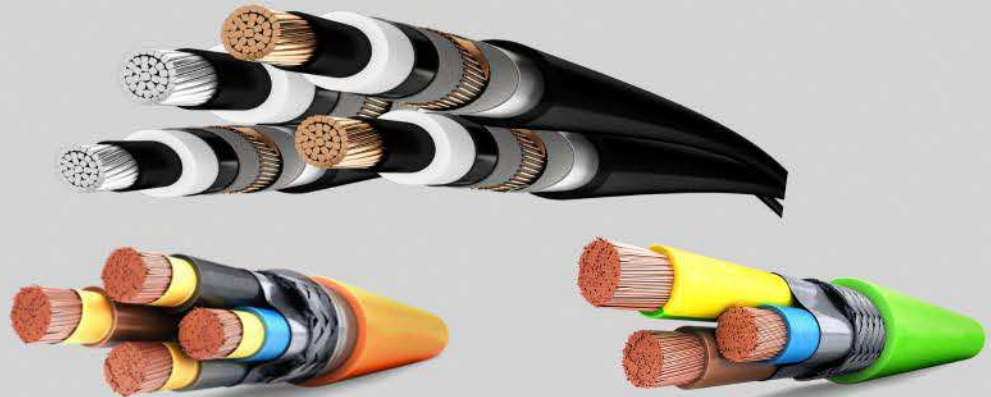
***Communications Interphase: Network/ Fiber Optic to TBM***



***Control Room***

# LV-MV-HV Cables & Coupler Adaptor Range

## High / Medium / Low Voltage Cables to International Standards



### Medium Voltage (MV) Cables

We offer XLPE or HEPR type of cables for the energy supply of MV equipment, in tunneling and underground mining applications. These cables can also have an outer sheath as to customer requirements or the required international standards. Our medium voltages cables are primarily used as an MV feeder cable for the power supply to TBM systems in tunnels, opencast mining equipment, and underground mining equipment. These cables do have pilots and can also be fitted with couplers as required by the customers to ensure that the safety of the system can always be monitored when they are powered during operations.

### Low Voltage (LV) Cables

The types of low voltage cables we supply are also designed to the application in the industry for e.g. construction, mining, and oil/marine/gas sectors with the voltage range to 1000V with different outer sheaths to the environment they will be installed or operating. The manufacturing of these cables also will comply to the following international standards.

Standards - (SS358-3, BS EN 50525-2-31, IEC60227-3, IEC60502-1, IEC60228, IEC60754, IEC61034, AS/NZS 5000.1, IEC60502-2)

## 11/22kV 800/400Amp Aluminium Couplers & 15kV 500/400Amp Aluminium Couplers



### Couplers

- Electrical Cable entry for SWA or UA
- Complete phase segregation, no phase-to-phase failures
- Contact quantity and type: 3 Pin and 1 pilot (2 pilots optional)
- Connector type: Bolted half coupler
- Current rating: 800A & 400A
- Flameproof certified
- Housing: Brass or Pro-Alloy
- Individually screened insulators
- New shorter body: Less weight, easier to handle
- Phase conductors: Copper
- Pilot: Brass
- Voltage: 11 000V up to 22 000V

(SG Electrical do fit couplers to cables if required).

# PROOF

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## MINING SOLUTIONS

SG Electrical Equipment Suppliers & Manufacturing Pte Ltd

# Swiftline System

*The Swiftline system was developed to give Contractors and Miners a flexible Auxiliary Power system that can be added to, changed or relocated during the excavation and construction phase.*

- *System separate to main Excavation Power system.*
- *Modular portable boxes.*
- *1000VAC or 415VAC Systems.*
- *From the Isolator T-Box, other boxes can be bolted together in any combination.*
- *Can be mounted Left or Right hand or both.*
- *Wide choice of Outlet boxes.*

*The Swiftline system can supply power for:*

- *Lighting and Communication Systems with optional 100% Emergency Backup.*
- *Outlet power for other remote Sub Boards distribution.*
- *Outlet Power for Cross Passage equipment or local work area needs.*
- *Machine Power Outlets protected with Earth Fault and Earth Continuity protection.*
- *T-Box Isolation with Local and Section Isolation supporting Interlock protection.*
- *Mining or IP67 rated Outlet fittings*

***T-Box & Lighting Box c/w Battery Backup  
&  
Multi Socket Outlet Box***



***T-Box & Starter Outlet &  
Socket Outlet & Lighting Box***



***T-Box & Socket Outlet***



***T-Box & Starter Outet***

# Tunnelux Lighting

*Tunnelux Lights have been developed to meet the specific needs and requests of Tunnel construction and Mining industries. The lights are higher efficiency LEDs in rugged IP67 fittings giving more light per kW, longer runs underground, and lowers power bills. Sizes range from 12W to 250W and can meet any job site and underground requirement with a large range of cable and plug options.*

- Increased light output by 30-70% over standard fittings of similar power currently being used.
- Longer runs at 110V or 240VAC on reduced cable sizes. (in turn reduced cable cost and fewer lights)
- Better lighting levels and hence safer workspace PLUS options for large underground diameters/areas.
- Reduced power consumption.
- Decreased toxic PVC plastics in the lights by 43% on standard fittings supplied with LSOH Cabling.
- Increased IP rating to IP67 plus lights can be hot washed.
- Full Emergency Lighting of the system
- EVERY Light ON. - Works on Voltage ranges from 85VAC to 277VAC.
- Utilized fully round fitting avoiding an easy build-up of dust/concrete.
- Options for multiple colors for Safety directions. (Green, Amber, Red, Blue)
- Removed the troublesome batteries from the lights. (Also see Swiftline boxes)



*TLXH Lights extremely compact IP65 Hi Efficiency Hi Power area lights ideal for work areas, cross passage works etc. ranging from 8,000lms to 50,000lms*

*MLXD Lights are DC lights that are available in 24VDC or 48VDC and are an ideal rugged light for fitting to machines needing IP67 mobile lighting. A range of Low Voltage (LV) quick connect plugs are ideal for installation by non-electrical labor.*



# *Schoma Tunnel Locomotive & Cogemacoustic Ventilation*



**SCHOMA**  
LOKOMOTIVEN

## *Tunnel Locomotives*

*Schoma tunnel locomotives are available in various options such as hybrid, diesel, and battery-powered. The ranges are available in 5 - 60 tonnes and diesel engines up to 400kW (540HP) with all common track gauges as to the tunnel mining industry requirements. The Locomotives are equipped with hydrodynamic (torque converters/ power shifters) or hydrostatic transmissions. The Locomotives are fully customizable to the customers' requirements.*

## *Cogemacoustic Ventilation*

*The Experts in ventilation specialize in ventilation and dust removal for mines, tunnels, and underground works.*

**COGEMACOUSTIC®**

Experts ON AIR





# **CIFA S.p.A & Tunnels & Formworks International (TFI)**

## **CIFA S.p.A**

*Products for tunnel lining and Natam Projects that make use of shutters, concrete pumps, and other equipment related to these tasks..*



***Truck Mixers | Rail Mounted Re-mixers,  
Mobile Shotcrete Machines | Concrete Pumps***



## **Tunnels & Formworks International (TFI)**

*A dynamic company with strong roots in the industry and proven experience with machinery construction for tunneling industry, formwork, and steel formwork for the most advanced concrete prefabrication, medium, and heavy steel structures.*



***SG Electrical Equipment Suppliers & Manufacturing Pte Ltd***

## ***22KV Substations***

### ***Permanent & Temporary Substations***



*The substation is a temporary or permanent constructed building for the supply of power from SP Group and includes the following.*

- *Constructed from per- fabricate panels or from concert.*
- *Sub-mission to SP Group for approval is provided.*
- *P.E. Endorsement and Calculation of structural support will be to be supplied.*
- *Metering Board and cabling to PG room.*
- *Provide detailed drawings of the sub-station system.*
- *Provide all steel/concert structure materials and roofing systems.*
- *Provide a Lightning protection system.*
- *Provide Earthing protection grid for PG and Customer side.*





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