

# PACKAGE SUBSTATION

BIOSCO



The right way for your  
Electrical Distribution Network

# SUDHIR

## POWERING THE NATION

GENERATION

DISTRIBUTION

ELECTRIFICATION

**S**udhir is a name synonymous with Power. It stands tall in the Indian Power Sector, providing complete turnkey Electrical solutions from GENERATION DISTRIBUTION to ELECTRIFICATION. An industry leader in the field of setting up Diesel based Captive Power plants upto 40MW having its corporate office in Gurugram. The company has a wide blue-chip customer base and operates through multiple manufacturing facilities across India and focuses on Diesel & Gas Generators, HT & LT Switchboards, Transformers, Packaged Substation & Turnkey EPC Contracts.

The product line includes the widest range of Diesel Gensets 7.5-3000 kVA with a fuel option of Gas, complete range of HT 11kV & 33kV Panels, LT Switchboards, Oil & Dry Type Transformers, Packaged Substation & Turnkey EPC contracts covering electrical and mechanical service of Generation, Distribution & Internal Electrification. Five ultra modern state of the art manufacturing plants strategically located in Silvassa, Jammu, Manesar help serve over 100,000 customer.

### SUDHIR AT A GLANCE

- ◆ Sudhir - A legacy of over 4 decades.
- ◆ A Complete Power Solution Company.
- ◆ One of India's largest Genset manufacturing company with over 50,000 MW installation base.
- ◆ Five state of the art manufacturing plants, at Manesar, Silvassa, & three at Jammu.
- ◆ 23 Pan India offices covering all major metros and cities for sales & service.
- ◆ 24 X 7 customer assistance helpline to provide prompt service support.

### LEADERS GET TOGETHER... SCHNEIDER-SUDHIR

- ◆ Sudhir Under licence from Schneider Electric, France manufacturers BIOSCO- Packaged Sub Station (PSS).
- ◆ BIOSCO design conforming to IEC 62271-202.
- ◆ Factory built Packaged Sub Station (PSS) for outdoor applications.
- ◆ Manufactured at Sudhir, Manesar Plant, with best manufacturing practices.
- ◆ A Co-branded product covering the best of products:
  - Schneider Electric - LV & MV products.
  - Sudhir - Transformers, LV panels & Metal Housing

### The Guiding System, the new way to build electrical systems

The Schneider-Sudhir MV/LV prefabricated substation is a part of a comprehensive offer of products with consistent design. The PSS is a co-branded product offer covering the best of products from Schneider Electric & Sudhir.

BIOSCO design comes from Schneider Electric, France. All LT & MV electrical distribution products come from Schneider Electric, India. The Transformer, LT panels & Housing are products from Sudhir. All these products have been designed to operate together to ensure electrical, mechanical and communication compatibility.

Synergy of Schneider-Sudhir are optimized and efficient: better continuity of supply, enhanced safety for people and equipment, guaranteed up-gradability, effective monitoring and control. Combined with know - how and creativity, the Guiding System ensures optimum installations that are dependable, up-gradable and compliant with standards.

### SUBSTATION RANGE UPTO 33KV

...together a unique concept to meet every customer requirements

PSS manufacturing range 100 kVA to 3000 kVA

#### MV Switchboard

- Rated Voltage: upto 24 kv
- Rated Current:
- Loop : 630 A
- Transformer protection 200 A upto 630 A
- Short-time withstand current: upto 25kA - 1s

#### LV Switch Board

- Enerpact and Simpack
- Compact NS
- Masterpact & Simpack
- Masterpact and Compact NS

#### MV Switchgear:

Ringmains Units  
FBX

#### LV Switchboard

- Rated Voltage: 440 v
- Incomer: upto 5000 A Circuit Breaker
- Feeders: max, upto 10 nos. of 250 A MCCB or 7 nos. of 400 A MCCB or 5 nos. of 630 A MCCB

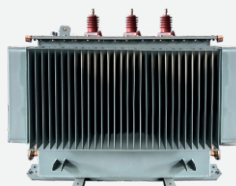
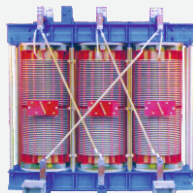


#### TRANSFORMER

Oil Type Transformer  
Dry type Cast Resin Transformer  
Dry type VPI Transformer

#### TRANSFORMER

- Rating upto 3MVA
- Rated MV Voltage: Upto 33 kv



#### OPTIONAL EQUIPMENT

- OLTC - On load tap changer +5% to - 15% in steps of 1.25%
- LV metering
- MV metering
- APFC panel
- Remote interface
- Remote Control of MV switches
- Monitoring of fault passage
- Remote monitoring interface (load, alarms, events)
- Fault passage indicator







# Characteristics of Outdoor Package Substations



Ambient temperature	Normal Operating Conditions	Upto 40°C
Standard color		RAL 1001(Cream)
Outdoor operation		Yes
<b>Compartmentalised design</b>		Yes
Type of ventilation		Natural
Degree of standard protection	MV & LV Compartment	IP 54
	Transformer Compartment	IP 34
<b>Electrical characteristics</b>		
Rated voltage(KV)		12/17.5 24
Rated insulation	kv rms 50Hz 1 min	28/38 50
Level	kv impulse, 1.2/50µs	75/95 125
Rated frequency		50
<b>Switch connection to MV network</b>		
Rated Current (A)		630
Short time withstand current	kA - 1s	25
Peak withstand current	kA - peak	62.5
<b>Transformer protected by circuit breaker</b>		
Rated current (A)		200/360
Breaking capacity (A)	Transformer off-load	16
	Cable off-load	30
Short time withstand current (KA 1s)	Circuit breaker	25
Peak withstand current (KA peak)	Circuit breaker	62.5
<b>Immersed transformer</b>		
Rated power (KV)		100 to 2500
Rated secondary voltage (V)		440
Vector Group		Dyn 11
Tapping range (%)		± 5 insteps of 2.5%
Compliance with standards		IEC 439-1; BS EN 601439 part1: IEC 947-1 and 947-2
Metering devices (LV & MV)		Yes (optional)



- BIOSCO substations have successfully passes internal arcing with-stand test for 20kA 1s.
- Access to the MV & LV compartment provided through a double door arrangement.
- Louvers designed for natural ventilation ratio and thermal class K10.
- Roof designed to support load upto 250kg/m<sup>2</sup>.
- Spaciously designed to have adequate clearance.
- Degree of protection for MV/LV compartment is IP54 & for transformer compartment IP34.
- LV inter-connection made Al/CU busbars.
- Internal earthing with 50x6mm Aluminium or 25x2mm copper busbars.



- Factory- built MV/LV Substation assemblies meet users needs with respect to reliability, safety, overall quality, time-saving and appropriateness for the local surroundings (climatic conditions, operating mode, architectural requirements..)
- 2mm thick painted GI enclosure mounted on a hot dip galvanized 4mm thick GI base.
- Partitions between compartments with 2mm thick GI sheet.
- Gasket/Stiffners provided as required.
- Internal lighting facility provided.

**Remote Terminal Unit:**  
Easergy T200

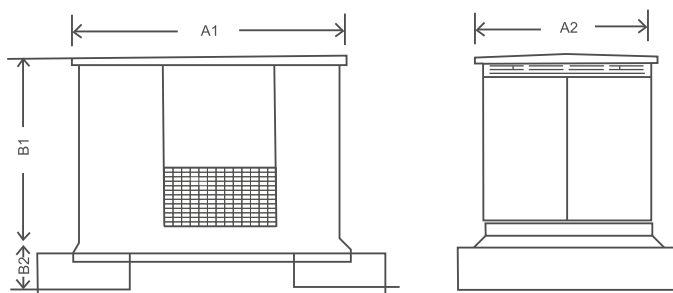
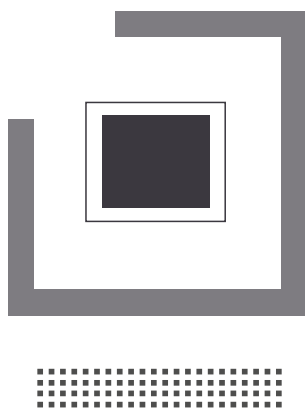
**Faulty Passage Indicator:**  
Easergy Flair

**Remote Monitoring Interface:**  
Easergy W200

**MV/LV Prefabricated substation**  
Galvanized Steel

**Transformer Protection**  
Over current + Earth fault  
Winding temperature indicator (WTI)  
Oil temperature indicator (OTI)

## General Installation & Civil Work Layout



The table below gives footprints dimensions for each enclosure.

kVA	A1	A2	B1	B2*
Upto 500	3100	1550	2200	700*
Upto 1000	3300	2000	2400	700*
Upto 2500	4500	2400	3000	700*

\*Recommended Plinth (Concrete)

Package substations are delivered in a protective cover or optional packed for sea transport. They are fitted with a lifting beam. Package substation dimensions allow 20-feet open top container transport. Units are delivered fully equipped, only the concrete foundation slab and external cable connection are required on site. Commissioning and operating instruction are provided with each substation.

## SMART PSS with DAS compatibility

Smart PSS with Data acquisition systems include Wi-Fi/Bluetooth access for remote/local Configuration with Cyber Security Compliance. It also offers Web Accessibility for remote maintenance & PLC programming facility for self healing, giving Complete controlling & monitoring from remote location.

### Smart PSS



### VALUE OFFER

#### Opened Communication

- Protocol : Multiple options IEC101/104, DNP3, Modbus, IEC 61850(#)
- Ports: 3 Ethernet, 1 Serial, 1 USB, 1 PT100, Wi-Fi
- Peer to peer and redundant communication
- Flexible comm. medias (Eth, RS232, 3G, 4G, USB...)
- Local Wi-Fi connection for operator
- Open IEC61131-3 PLC for Network Automation :** Sectionalizer, Self healing grid

### CUSTOMER BENEFITS

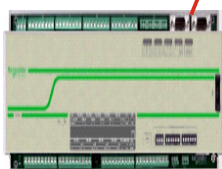
#### Powerful

A concentrate of innovation dedicated to customer performance **by overcoming challenges e.g. quality, accuracy, smart grid readiness, reduction of cost of operations.** An up to date communication **for customer future proof systems with open protocol.**

**FRTU**  
(Feeder remote terminal unit)



(as slave)



#### Simplified maintenance

- Local & remote access via embedded web apps
- Wi-Fi access for laptop smart phone and tablet
- Local and remote software update

#### Simple

A modern solution entirely designed to make easier the installation. RTU configuration/ maintenance on Wi-Fi with closed door of PSS.

#### Secure connectivity

- Compliance to the Cyber Security standards (IEEE P1686, IEC62351) : RBAC, Secure protocol
- Radius server and IPsec services

#### Secure

To secure all control and data acquisition for the operation of customer electric system.

#### Large IO Capability

- 32 DIs, 16 DOs, 4 AIs, 2 general purpose DIs
- Expandability: Supports up to 16 additional boards

#### Scalability

To support future expandability with add-on modules.

## HOSPITALS



## HOTELS



## INFRASTRUCTURE



## SCHOOL & UNIVERSITY



## REAL ESTATE



## UTILITIES



## OTHERS



# Sudhir Power Limited

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**Plant 1 :** Plot No.8, 9 & 10, Survey No. 144/1/2/1/2 & 144/1/2/10, Athal Industrial Estate, Village - Athal, Post: Naroli, Silvassa 396230

**Plant 2 :** Plot No. 444/1/4, Masat Industrial Area, Masat-Silvassa, Dadra & Nagar Haveli - 396230

**Toll Free No : 1800 102 7475**

### Regional Offices :

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**Branch Offices:** Alwar | Amritsar | Bikaner | Jalandhar | Jammu | Jodhpur | Karnal | Ludhiana | Silvassa | Srinagar | Surat | Udaipur | Vadodara