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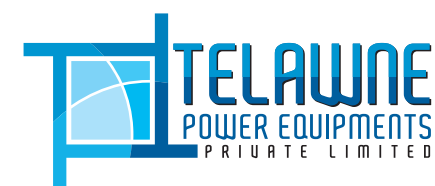
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**TELAWNE POWER EQUIPMENTS PRIVATE LIMITED**

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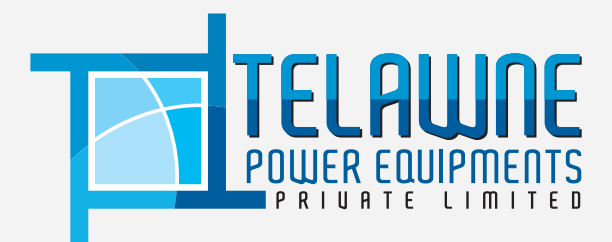
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# PRODUCT CATALOGUE



Empowering Generations

## OVERVIEW

Telawne Power Equipment is located in Asia's Largest Manufacturing Zone of Navi Mumbai. The plant is spread over 38000 sq ft. Our founder, Late Shri. Sudhakar Telawne having experience of over 17 years in Crompton Greaves, Mumbai and started producing and servicing oil Immersed distribution transformers, established by name of "Telawne Cromptek" in 1988.

All plants are certified by ISO 9001:2008 and ISO 14001:2004. It has all the necessary Machinery for handling and producing transformers in accordance with IEC:60076

standards. Telawne has a capacity to produce over 750 MVA Transformers per annum in assorted sizes and types.

We are equipped with all infrastructure facilities complete with Epoxy Flooring, Testing Pit (for better safety), Vacuum Oven, Yokogawa Power Analyzer and also the best Human Safety Equipments.

Our success and growth has been mainly due to thrust and emphasis on quality which never compromise to manufacture zero defect transformers.

## MILESTONES

Established Indigenous Manufacturing facility at a new location as "Telawne Power Equipments Pvt Ltd.

2003-2004

Expanded infrastructure and testing facility for handling up to 50 MVA 132 kV.

2007-2008

Enhanced additional winding machinery for Foil VPI type Dry Transformer Processing facility.

2010-2011

Installed foil winding machinery. Built separate section for processing Dry type Transformer. Incorporated new casting plant & partial Discharge (PD) Testing Arrangement

2015-2016

## OUR CREDENTIALS

2012 Udyog Bodh

for Business Excellence

2014 SME

for SME Excellence Award 2014

2015 SKOTCH

for Business Excellence

## LAUNCH

2014

New Launch for Pad Mounted and Tower Substation

2016

New Launch for Contanarized Substation

## EXHIBITIONS

2006

Consistently Participating in ELECRAMA.

2010

Participated in the Mactech 2010 CICC, Egypt Exhibition also CEEAMA 2010.

2014

Participated in Exhibition on power in Sri Lanka, Ghana.

2015

Participated in Exhibition in Dubai, Russia, Myanmar.

## CERTIFICATIONS

**CPRI** Successfully Type Tested 1250 KVA - 22 kV; 5,10 and 20 MVA 33/11 kV Transformers at CPRI, Bangalore.

**ERDA** Successfully Type Tested 100 to 2500 KVA - 11 & 22 kV, Oil & Dry Type Transformer, Packaged & Pad Mounted Substations.

**ASTA** Complete Type Tested 1000KVA - 11/0.433 kV Oil Cooled Distribution Transformer as per Gulf & African Utility Specification.

## MOTTO



### VALUES

Maintain Transparency, Commitments & Harmonious relationship with Employees, Business Associates & Well Wishers. Develop healthy & safe working environment & provide Integrity throughout the Organisation.



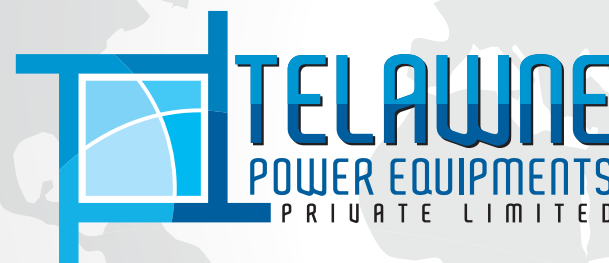
### VISION

To be market leader in Energy Efficient Transformers & Unitised Substations and maintain. Consistent growth of more than 50% annually.



### MISSION

To empower as world recognized service provider for Low Loss Transformers & Compact Substations with a zeal to create excellent customer relationship by being transparent, committed & maintaining Harmonious relationship.



# OIL IMMERSED DISTRIBUTION TRANSFORMER

## STANDARD FITTINGS

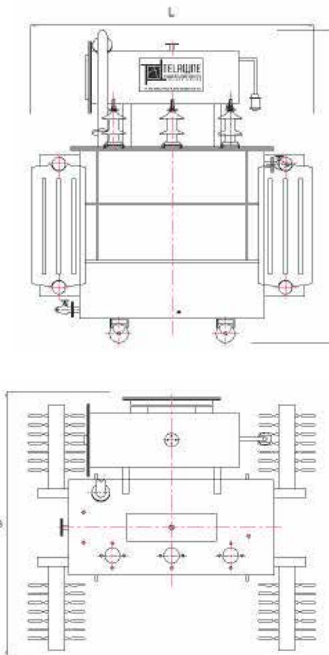
- H. V. Bushing
- L. V. Bushing
- Off Circuit Tap Changer
- Conservator oil filling hole with cap & drain plug
- Under carriage with four bi-directional rollers
- Earthing terminals
- Drain cum bottom filter valve with sampling plug
- Top filter valve with sampling plug
- Plain Oil Level gauge
- Rating diagram plate
- Air release device
- Thermometer Pocket
- Lifting lugs
- Pressed Steel Radiators (Fins or corrugated type)
- Double Diaphragm Explosion Vent
- Silica gel breather
- Additional Neutral bushing
- First filling of oil

## TECHNICAL SPECIFICATIONS

Duty, Type	Outdoor / Indoor, Pole or Ground Mounted
Voltage Class	3.3, 6.6, 11, 22, 33 kV or any specific
No of Phases	1 or 3 Phase
Frequency	50/60 Hz
Vector Group	Dyn1 or Dyn5 or Dyn11 or any specific
Insulating Fluid	PCB FREE Mineral Oil, both inhibited & uninhibited, as per IS/IEC, ASTM D3487 and customer requirement
Class of Insulation	Class A
Tap Changer	Off Circuit or On Load
Tapping Range	±2.5% X 2 for OCTC or + 1.25% X 4 & - 1.25% X 8 for OLTC or as per customer requirement
Winding Material	Aluminium or Copper with multi paper covering
Applicable Standards	IS 2026, IEC 60076, ANSI, IEEE
Painting	Enamel, Epoxy, Polyurethane or customer specific



## PRODUCT DIAGRAM



## OPTIONAL FITTINGS

- Detachable Radiators with isolating valves.
- Jacking Pads
- Dial type Oil Temperature Indicator with A/T contacts
- Dial type Winding Temperature Indicator with A/T contacts
- Magnetic Oil Gauge with A/T contacts
- Buchholz relay with A/T contacts
- Marshalling box with control wiring
- Equaliser pipe between conservator & explosion vent
- On Load Tap Changer
- RTCC Panel with automatic voltage Regulator (AVR)
- Pressure Release valve
- DGPT Relay

## GENERAL DETAILS

We at TELAWNE manufacture both hermetically sealed, corrugated radiator type and conventional rectangular tank type distribution Transformers. These Transformers are generally used in distribution network for feeding residential, commercial & bulk consumers. Following are the dimensional, weight & quantity details along with standard losses for conventional 11 KV distribution transformer (Off Circuit Type).

SR. NO.	RATING (kVA)	OVERALL DIMENSIONS (MM)			STANDARD LOSSES (W)		OIL QTY. (LTRS)	TOTAL WT. (KGS)
		LENGTH (L)	BREADTH (B)	HEIGHT (H)	NO LOAD	FULL LOAD		
1	100	1200	1400	1500	300	1750	235	750
2	150	1250	1500	1600	400	2500	350	1025
3	200	1300	1500	1700	480	3000	400	1225
4	250	1400	1600	1750	540	3500	465	1365
5	315	1500	1700	1800	580	4200	490	1500
6	400	1600	1800	1850	720	5000	520	1800
7	500	1700	2000	1900	850	5800	575	2200
8	630	1800	2100	2000	1000	7000	650	2400
9	750	1900	2150	2200	1150	8000	750	2600
10	1000	2200	2200	2350	1500	10500	1000	4000
11	1250	2300	2600	2400	1800	12500	1250	4750
12	1600	2400	3000	2600	2100	14250	1310	5450
13	2000	2600	3200	2400	2500	17000	1450	6000
14	2500	2800	3300	2800	3000	20000	1650	7200
15	3000	3200	3400	3000	3750	25000	1900	8250
16	5000	4500	4200	3200	6500	38000	3350	12950

\*Dimensions and weight & losses may vary for any specific or special requirement.

## ASSURED FEATURES

- Highest dielectric insulation property to withstand Lightning Impulse.
- Mechanical design to withstand short circuit forces arising during faults.
- Optimum oven heating under vacuum as to achieve desired compression height and maximum insulation resistance (IR) to windings.
- Adequate ducts between layers, coils, discs for maximum oil flow and reduced hot spot temperature.
- Step-lap designed CRGO laminations for lower losses and excitation current.
- Pre compressed Insulation material for minimal moisture absorption.



# POWER TRANSFORMER

## STANDARD FITTINGS

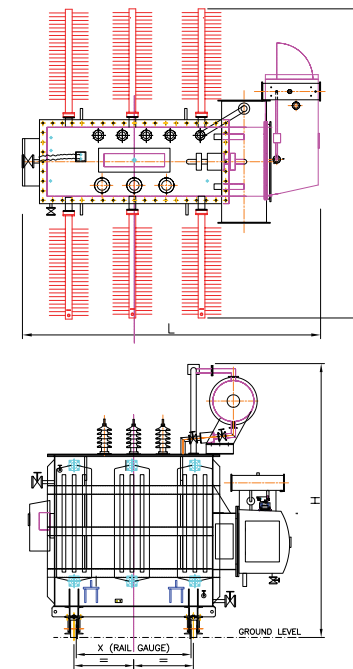
- H. V. Bushing / L. V. Bushing
- Conservator oil filling hole
- Bi-directional rollers
- Earthing terminals pads
- Drain cum bottom filter valve
- Top filter valve with sampling plug
- Plain Oil Level gauge
- Rating diagram plate
- Air release device
- Thermometer Pocket
- Lifting lugs
- Pressed steel Radiators (Detachable)
- Double Diaphragm Explosion Vent
- Silica gel breather
- Additional Neutral bushing
- First filling of oil
- Isolating valves for radiator
- Jacking Pads
- Dial type OTI with A/T contacts
- Buchholz relay with A/T contacts
- Marshalling box with control wiring

## TECHNICAL SPECIFICATIONS

Duty, Type	Outdoor / Indoor
Voltage Class	11, 22, 33, 66 kV or any specific
No of Phases	3 Phase
Frequency	50/60 Hz
Vector Group	Dyn5 or Dyn11 or YNyn0 any specific
Insulating Fluid	PCB FREE Mineral Oil, both inhibited & uninhibited, as per IS/IEC, ASTM D3487
Class of Insulation	Class A
Tap Changer	Off circuit or on load tap changer
Tapping Range	±2.5% X 2 for OCTC or + 1.25% X 4 & - 1.25% X 8 for OLTC or as per customer requirement
Winding Material	Copper with multi paper covering
Applicable Standards	IS 2026, IEC 60076, ANSI, IEEE
Painting	Enamel, Epoxy, Polyurethane or customer specific



## PRODUCT DIAGRAM



## OPTIONAL FITTINGS

- Dial type WT1 with A/Tcontact
- Magnetic Oil Gauge with A/T contacts
- On Load Tap Changer
- RTCC Panel with automatic voltage Regulator (AVR)
- Pressure Release valve
- DGPT Relay
- Air cell bag
- Scada Compatible OTI & WT1
- Equaliser pipe between conservator & explosion vent
- Annunciators in RTCC panel
- Force cooling arrangement with fan cubical

## GENERAL DETAILS

We manufacture both on load & off circuit tap switch type power transformer. These Transformers are generally used in receiving substation for feeding residential, commercial & bulk consumers. Following are the dimension, oil quantity & weight details along with standard & low losses for 33KV Power transformer with On Load Tap Changer.

STANDARD TRANSFORMER WITH OLTC									
SR. NO.	RATING (kVA)	OVERALL DIMENSIONS (MM)			LOSSES (W)			OIL QTY. (LTRS)	TOTAL WT. (KGS)
		LENGTH (L)	BREADTH (B)	HEIGHT (H)	NO LOAD	LOAD	%		
1	3150	3300	3000	3500	4000	24000	7.15	2450	9250
2	5000	3500	3200	3600	5500	33000	7.15	3300	11550
3	6300	3600	3000	3800	6500	40000	7.15	3800	13250
4	8000	3800	3100	3900	8000	48000	8.35	4200	15000
5	10000	4000	3600	4000	9000	57000	8.35	4800	17500
6	12500	4200	3800	4200	10000	67000	8.35	5200	19500
7	16000	4400	4000	4400	12000	80000	10.00	6300	22250

LOW LOSS TRANSFORMER WITH OLTC									
SR. NO.	RATING (kVA)	LENGTH (L)	BREADTH (B)	HEIGHT (H)	LOSSES (W)			OIL QTY. (LTRS)	TOTAL WT. (KGS)
					NO LOAD	LOAD	%		
1	3150	3500	3000	3300	3000	14000	7.15	2700	10850
2	5000	3700	3200	3400	3900	19000	7.15	3600	14150
3	6300	3800	3000	3600	4500	25000	7.15	4200	15000
4	8000	4000	3100	3700	5000	32000	8.35	4600	17850
5	10000	4200	3600	3800	5400	37000	8.35	5200	21500
6	12500	4400	3800	4000	6000	43000	8.35	5700	24500
7	16000	4600	4000	4200	7000	52000	10.00	6800	28250

\*Dimensions and weight & Losses may vary for any specific or special requirement.

## ASSURED FEATURES

- Highest dielectric insulation property to withstand lightning impulse.
- Mechanical design to withstand short circuit forces arising during faults.
- Optimum oven heating under vacuum as to achieve desired compression height and maximum insulation resistance (IR) to windings.
- Adequate ducts between layers, coils, discs for maximum oil flow and reduced hot spot temperature.
- Step-lap designed CRGO laminations for lower losses and excitation current.
- Pre compressed Insulation material for minimal moisture absorption.
- Permawood rings for uniform clamping.

# EXTRA HIGH VOLTAGE TRANSFORMER

## STANDARD FITTINGS

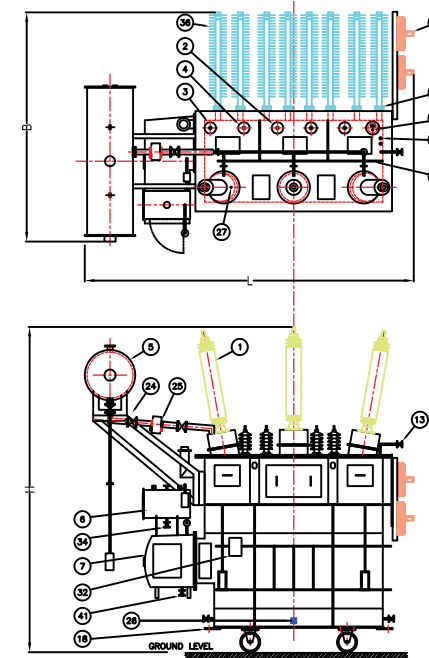
- H.V Bushing / L.V Bushing
- Conservator with oil filling hole
- Rollers (Plain / Flange)
- Earthing terminal pads
- Drain with bottom filter valve
- Top filter valve with sampling plug
- Shut off valve
- Plain oil level gauge
- Rating diagram plate
- Terminal Marking Plate
- Air release device
- Thermometer Pocket
- Lifting lugs
- Pressed Steel Radiators (Detachable)
- Double Diagram Explosion Vent
- Equaliser pipe between
- Silica Gel Breather
- Additional Neutral Bushing
- First filling of oil
- Isolating valves for radiator
- Jacking Pads
- Dial type OTI with A/T contacts
- Dial type WTI with A/T contacts
- Marshalling Box with control wiring
- Buchholz relay with A/T contacts
- Magnetic Oil Gauge with A/T contacts
- Skid under base
- Inspection Cover
- On Load Tap Changer / Off Circuit Tap Changer
- RTCC Panel with automatic voltage regulator (AVR)

## TECHNICAL SPECIFICATIONS

Duty, Type	Outdoor / Indoor
Voltage Class	66, 100, 110, 132, 220 kV or any specific
No of Phases	3 Phase
Frequency	50/60 Hz
Vector Group	Dyn5 or Dyn11 or YNyn0 any specific
Insulating Fluid	PCB FREE Mineral Oil, both inhibited & uninhibited, as per IS / IEC, ASTM D3487
Class of Insulation	Class A
Tap Changer	Off Circuit or On load tap Changer
Tapping Range	$\pm 2.5\% \times 2$ for OCTC or $+1.25\% \times 4$ & $-1.25\% \times 8$ for OLTC or as per customer requirement
Winding Material	Copper with multi paper covering
Applicable Standards	IS 2026, IEC 60076, ANSI, IEEE
Painting	Epoxy, Polyurethane or customer specific



## PRODUCT DIAGRAM



## OPTIONAL FITTINGS

- Pressure Release Valve
- Air cell bag
- Scada Compatible OTI & WTI
- Annunciator in RTCC panel
- Force cooling arrangement with fan cubical
- Anti vibration pads
- Fire fighting process
- RTD for oil & winding
- Nitrogen purging system

## GENERAL DETAILS

We manufacture both on load & off circuit tap switch type EHV transformer. EHV transformer have voltage class 66KV or above. These transformer are generally used for stepping down voltage from transmission line. EHV transformer generally have force cooling & on load tap changer. Following are the dimension, oil quantity & weight details along with standard & low losses for 66kV & 132kV EHV power transformer with On Load Tap Changer having ONAN /ONAF Cooling.

### STANDARD TRANSFORMER WITH OLTC

SR. NO.	RATING (MVA)	OVERALL DIMENSIONS (MM)			LOSSES (W)			OIL QTY. (LTRS)	TOTAL WT. (KGS)
		LENGTH (L)	BREADTH (B)	HEIGHT (H)	NO LOAD	LOAD	%		
1	10/12.5	5100	3900	4100	9	60	10	8300	24000
2	12.5/16	5800	4500	4400	11.5	70	10	8400	28000
3	16/20	7000	4900	4750	13	85	10	13000	34000
4	20/25	7500	5000	5200	16	100	10	14000	42000
5	25/31.5	8000	5100	5750	20	120	10	20000	52000
6	32/40	8400	5650	6000	25	150	12.5	21000	63000
7	40/50	8600	5750	6150	31.5	185	12.5	22000	70000

### LOW LOSS TRANSFORMER WITH OLTC

1	10/12.5	5300	4100	4300	7	40	10	9130	26400
2	12.5/16	6000	4700	4600	9.5	48	10	9240	30800
3	16/20	7200	5100	4950	11.5	60	10	14000	36550
4	20/25	8000	5200	5400	14	76	10	15050	45150
5	25/31.5	8300	5400	5950	18	92	10	21000	54600
6	32/40	8700	5950	6200	21	120	12.5	22050	66150
7	40/50	8900	6050	6450	25	150	12.5	23100	73500

\*Dimensions and weight & Losses may vary for any specific or special requirement.

## ASSURED FEATURES

- Highest Dielectric insulation property to withstand Lightning impulse.
- Step lap designed CRGO laminations for lower losses & excitation current.
- Pre heating of coils under vacuum as to achieve desired compression height & max shrinking of coils.
- Premali wood clamping rings for uniform compression of primary & secondary winding.
- Coil clamping screws for sustaining high mechanical strength due to short circuit forces.
- Adequate ducts between layers, coils, discs for max oil flow & reduced hot spot temperature.

# CAST RESIN DRY TYPE TRANSFORMER

## STANDARD FITTINGS

- H.V. Cable box.
- L.V. Cable box with bus bar or bus duct
- Off circuit tap links
- Under carriage with four bi-directional rollers
- Earthing terminals.
- Rating and diagram plate
- Lifting lugs for complete transformer
- Tapping link operation door
- Enclosure with louver panels
- Canopy
- Base channel - 2 Nos.
- Separate neutral bushing on LV side.
- Paint: Powder coated with RAL 7032 Shade

## SAFETY FEATURES

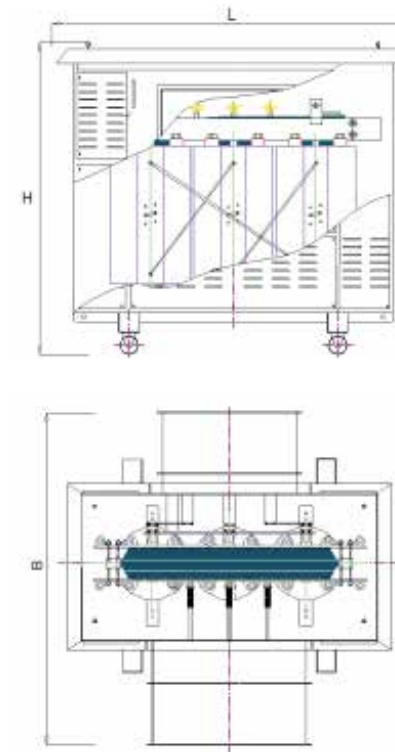
- Environment Friendly
- Fire Resistance
- Non-Hygroscopic

## TECHNICAL SPECIFICATIONS

Duty, Type	Outdoor / Indoor Ground Mounted Type
Voltage Class	UPTO 33 kV
No of Phases	3 Phase
Frequency	50/60 Hz
Vector Group	Dyn1 or Dyn5 or Dyn11 or any specific
Insulating Fluid	F or H with Temp Rise of 90 or 115 Deg C or as per customer requirement
Class of Insulation	Class A
Tap Changer	Off Circuit or On Load
Tapping Range	+ 2.5% X 2 for OCTC or + 2.5% X 2 & - 2.5% X 6 for OLTC or as per customer requirement
Winding Material	Aluminium or Copper with multi paper covering
Applicable Standards	IS 11171, IEC 60726
Painting	Powder coated with RAL 7032 shade or as per customer requirement



## PRODUCT DIAGRAM



## GENERAL DETAILS

At TELAWNE casting method of these transformers is obtained with the combined action of vacuum and temperature. The casting method makes it possible to assure void-free epoxy penetration of both the inner layer and between turn insulation. These Transformers are specifically needed in distribution network for feeding basements or stilts of high-rise buildings, hotels, Malls, stadium, air ports, chemical & refinery plants. Following are the dimensional, weight & quantity details along with standard losses for conventional 11KV, (off circuit Type) Cast Resin Transformer (CRT).

SR. NO.	RATING (KVA)	OVERALL DIMENSIONS (MM)			LOSSES (W)		TOTAL WT. (KGS)
		LENGTH (L)	BREADTH (B)	HEIGHT (H)	NO LOAD	LOAD	
1	100	1400	1500	1500	400	1600	925
2	150	1500	1600	1600	500	2400	1050
3	200	1600	1700	1700	600	3000	1400
4	250	1700	1800	1800	700	3500	1550
5	315	1750	1900	1900	950	4400	1650
6	400	1850	2100	2000	1200	4750	2100
7	500	1900	2200	2200	1450	5200	2300
8	630	2000	2400	2300	1600	6000	2600
9	750	2100	2500	2350	1800	7000	3200
10	1000	2200	2600	2400	2200	9500	3400
11	1250	2300	2700	2450	2600	11500	3600
12	1600	2350	2800	2500	3200	13500	4000
13	2000	2400	3000	2600	3800	16500	4450
14	2500	2500	3200	2700	4500	20000	5000
15	3000	2600	3400	2800	5000	23000	6500

\*Dimensions and weight & losses may vary for any specific or special requirement.

## OPTIONAL FITTINGS

- RTD with A/T contact
- Marshalling box with control wiring
- On Load tap changer with RTCC panel with AVR
- Forced Cooling arrangement
- Neutral Current Transformer

## ASSURED FEATURES

- Windings are electrically balanced to minimize axial short circuit forces.
- Coils are held rigidly in place between insulators clamped to the upper and lower core frames under high compression.
- Precise casting under vacuum ensuring low partial discharge.
- Smooth surface finish and robust construction of MV & LV cast Coils.
- Adequate ducts between coils, discs for maximum air flow and reduced hot spot temperature.
- Step-lap designed CRGO laminations for lower losses and excitation current.



# VACUUM PRESSURE IMPREGNATED DRY TYPE TRANSFORMER

## STANDARD FITTINGS

- H.V. Cable box
- L.V. Cable box with Bus bar or Bus duct
- Off Circuit Tap links
- Under carriage with four bi-directional Rollers
- Earthing terminals
- Rating and diagram plate
- Lifting lugs for complete Transformer
- Tapping Link operation Door
- Enclosure with Louver Panels
- Canopy
- Base Channel-2 Nos.
- Separate Neutral bushing on LV side
- Paint: Powder Coated with RAL 7032 shade
- Hinged Windows for inspection of core and windings

## SAFETY FEATURES

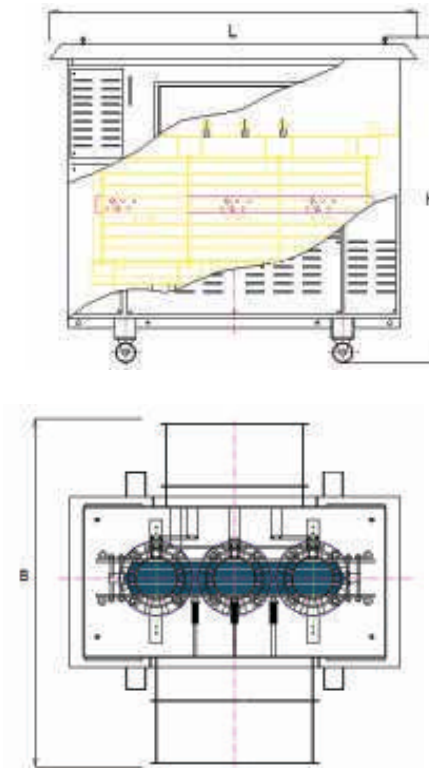
- Environment Friendly
- Fire Resistance
- Non-Hygroscopic

## TECHNICAL SPECIFICATIONS

Duty, Type	Outdoor / Indoor, Pole or Ground Mounted
Voltage Class	Upto 22 kV
No of Phases	3 Phase
Frequency	50/60 Hz
Vector Group	Dyn1 or Dyn5 or Dyn11 or any specific
Class of Insulation	F or H with Temp Rise of 90 or 115° C or as per customer requirement
Tap Changer Type	Off Circuit or On Load
Tapping Range	±2.5% X 2 for OCTC or + 2.5% X 2 & - 2.5% X 6 for OLTC or as per customer requirement
Winding Material	Aluminium or copper with multi paper NOMEX covering
Applicable Standards	IS 11171, IEC 60726
Enclosure Painting	Powder coated with RAL 7032 shade or as per customer requirement



## PRODUCT DIAGRAM



## GENERAL DETAILS

We TELAWNE manufacture both hermetically sealed, corrugated radiator type and conventional open enclosure type vacuum pressure impregnated dry Transformers. These Transformers are specifically needed in distribution network for feeding basements or stilts of high-rise buildings, hotels, Malls, stadium, air ports, chemical & refinery plants. Following are the dimensional & weight details along with standard losses for conventional 11kV, Dry Type (VPI) Transformer (off circuit Type).

SR. NO.	RATING (kVA)	OVERALL DIMENSIONS (MM)			STANDARD LOSSES (W)		TOTAL WT. (KGS)
		LENGTH (L)	BREADTH (B)	HEIGHT (H)	NO LOAD	FULL LOAD	
1	100	1400	1500	1500	400	1600	925
2	150	1500	1600	1600	500	2400	1050
3	200	1600	1700	1700	600	3000	1400
4	250	1700	1800	1800	700	3500	1550
5	315	1750	1900	1900	950	4400	1650
6	400	1850	2100	2000	1200	4750	2100
7	500	1900	2200	2200	1450	5200	2300
8	630	2000	2400	2300	1600	6000	2600
9	750	2100	2500	2350	1800	7000	3200
10	1000	2200	2600	2400	2200	9500	3400
11	1250	2300	2700	2450	2600	11500	3600
12	1600	2350	2800	2500	3200	13500	4000
13	2000	2400	3000	2600	3800	16500	4450
14	2500	2500	3200	2700	4500	20000	5000
15	3000	2600	3400	2800	5000	23000	6500

\*Dimensions and weight & Losses may vary for any specific or special requirement.

## OPTIONAL FITTINGS

- RTD with A/T contact
- Marshalling box with control wiring
- On Load Tap Changer with RTCC Panel with AVR
- Forced Cooling arrangement
- Neutral Current Transformer
- Space heaters for core & windings

## ASSURED FEATURES

- Windings are electrically balanced to minimize axial & radial short circuit forces.
- Coils are held rigidly in place between insulators clamped to the upper and lower core frames under high compression.
- Polyester resin or thixotropic epoxy resin or silicon varnish impregnation as per the application is used.
- High temperature resistant materials are used including Nomex papers, silicone coated fibreglass and pressure sensitive glass tape.
- Adequate ducts between coils, discs for maximum air flow and reduced hot spot temperature.
- Step-lap designed CRGO laminations for lower losses and excitation current.

# UNITISED SUBSTATION

## STANDARD FITTINGS

- M.S./ CRC Sheet fabricated Enclosure as per IS 14786
- Load Balancing Lifting Hooks
- Collapsible hinge mounted doors
- Perforated sheet & Air ventilation louvers in Transformer section
- Easy removable rain water protection canopy
- For safety doors with alarm & tripping circuit
- Inter connecting MV & LV cables & Bus bars
- Powder coated paint, Shade - RAL 7032 or as per customer request
- Illuminating lamps with MCB

## SPECIAL FEATURES

- ➔ Completely Factory built
- ➔ Superior Aesthetics
- ➔ Convenience in portability
- ➔ Ready to install & Commission
- ➔ Compact in size
- ➔ Minimal maintenance
- ➔ Suitable for rooftop & Basement
- ➔ Tamper proof

## TECHNICAL SPECIFICATIONS

### Medium Voltage Compartment

MV Switchgear	3.3 to 33 kV
Type of Switchgear	LBS / SFU / Circuit Breaker / RMU
Insulation Medium	SF6 Gas or Vacuum
Tripping	Fuse / Relay
Short Circuit Rating	21 KA or as per customer requirement

### Transformer Compartment

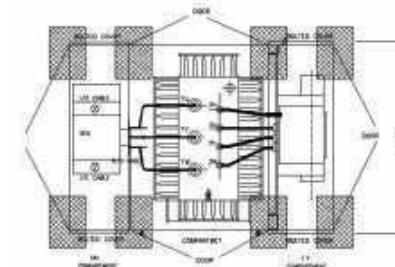
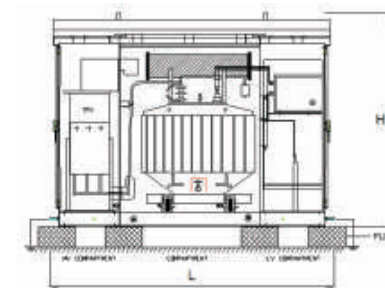
Type of cooling	Oil Immersed / Dry Type
Rating	100 to 2000 kVA
Voltage	3.3 to 33/0.433 kV or any specific
Phase / Frequency	3 Phase / 50 or 60 Hz.
Vector Group	Dyn1 or Dyn5 or Dyn11 or any specific.

### Low Voltage Compartment

LV Switchgear	ACB's, MCCB's
Current Rating	Up to 4000 Amps
Voltage	440 Volts
No. of Poles	3 / 4
Short Circuit Rating	36 kA or as per customer requirement



## PRODUCT DIAGRAM



## GENERAL DETAILS

Unitised substations are designed for locations where space and safety are a concern, population density is high, such as urban centres. Unitised substations are divided into three sections or compartments – Medium Voltage, Transformer and Low Voltage Switchboard. Unitised substations are designed in accordance with IS 14786 / IEC 61330 standards with a degree of protection for IP 23 Transformer and IP 54 for MV & LV compartments or as per customer requirement.

Following are the dimensional and weight details for a typical 11kV, Unitised substation with off-circuit type oil-cooled transformer.

SR. NO.	Rating (kVA)	Overall dimensions (mm)			Approx. WT. (KGS)
		LENGTH (L)	BREADTH (B)	HEIGHT (H)	
1	100 to 250	2600	1800	2000	2500
2	315 to 630	2800	2000	2200	3800
3	750 to 1000	3000	2200	2400	5200
4	1250 to 2000	3200	2400	2600	7000

*\*Dimensions and weight may vary for any specific or special requirement.*

## APPLICATIONS

### Airport



### IT Industry



### Refineries



### Mines



### Theatre / Mall



### Construction Site



## ASSURED FEATURES

M.V. Compartments	Transformer Compartment	L.V. Compartment
MV RMU/ VCB/ SFU	On Load Tap Changer with R.T.C.C. panel & AVR	L.T. microprocessor based trip unit
H.T. Metering/ Load manager	Pressure Release valve	L.T. MFM / Load manager
Annunciator & Power pack	W.T.I & O.T.I. with Alarm & Trip contacts	Feeder Pillar (HRC fuse / MCCB Based)
Earth fault, over current relay	Magnetic Oil Gauge with low level contacts	APFCR Panel with capacitor Bank
Scada or P.L.C compatible	Buchholz Relay with Alarm & Trip contacts	L.T. Earth fault & Over current relay



# PAD MOUNTED SUBSTATION

## BASIC COMPONENTS

- MS/ CRC Sheet fabricated Enclosure as per IS 14786
- Load Balancing Lifting Hooks
- Collapsible hinge mounted doors
- Corrugated tank for Transformer
- Safety door switches
- Interconnecting MV & LV Bus bars
- Powder coated paint, Shade - RAL 7032 or as per customer requirement

## SPECIAL FEATURES

- ➔ Completely Factory built
- ➔ Superior Aesthetics
- ➔ Convenience in portability
- ➔ Ready to install & Commission
- ➔ Compact in size
- ➔ Minimal maintenance

## TECHNICAL SPECIFICATIONS

### Medium Voltage Compartment

MV Switchgear	Upto 22 kV
Type of Switchgear	LBS / SFU / Circuit Breaker / RMU / VCB
Insulation Medium	SF6 Gas or Vacuum
Tripping	Fuse / Relay
Short Circuit Rating	21 kA or as per customer requirement

### Transformer Compartment

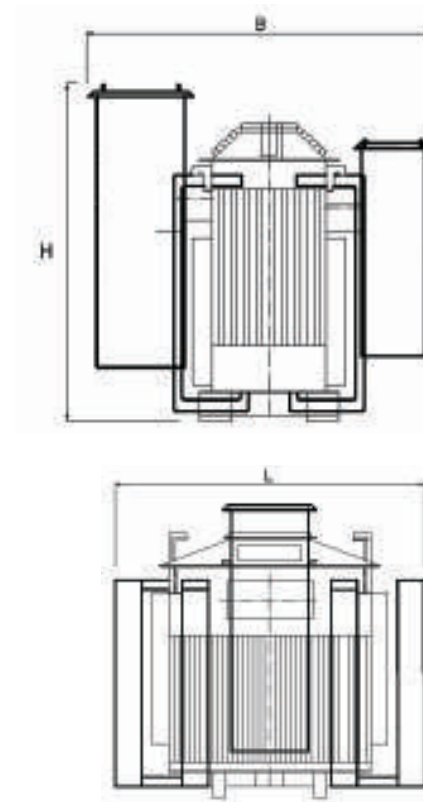
Installation	Outdoor / Indoor Ground Mounted
Type of cooling	Oil Immersed / Dry Type
Rating	63 to 1000 kVA
Voltage	6.6 to 22/0.433 kV or any specific
Phase / Frequency	3 Phase / 50 or 60 Hz
Vector Group	Dyn1 or Dyn5 or Dyn11 or any specific

### Low Voltage Compartment

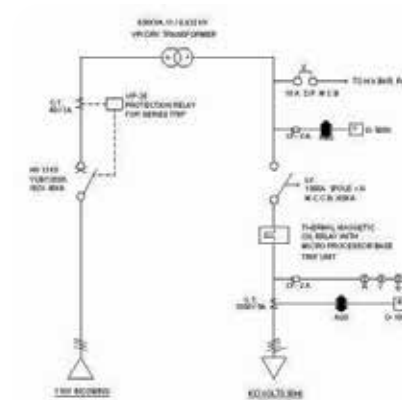
LV Switchgear	ACB's, MCCB's or HRC Fuse
Current Rating	Upto 2000 Amps
Voltage	440 Volts
No. of Poles	3 / 4
Short Circuit Rating	36 kA or as per customer requirement



## PRODUCT DIAGRAM



## SINGLE LINE DIAGRAM



## GENERAL DETAILS

Pad Mounted Substations are designed for use in distribution application as well as for dedicated loads. Pad mounted substation's are easy to install and are of low cost. These are basic & simplest configuration required for distribution substation. Pad Mounted Substation are designed in accordance with IS 14786 / IEC 61330 standards with degree of protection for IP 54 or as per customer requirement.

Following are the dimensional and weight details for a typical 11kV, Pad Mounted Substation.

SR. NO.	Rating (kVA)	Overall dimensions (mm)			Approx WT. (KGS)
		LENGTH (L)	BREADTH (B)	HEIGHT (H)	
1	100 to 250	1600	2000	1800	2000
2	315 to 630	1800	2200	2000	3200
3	750 to 1000	2000	2400	2200	4000

\*Dimensions and weight may vary for any specific or special requirement.

## OPTIONAL FEATURES

- M.V. Drawout type breaker
- M.V. Earth Fault (E/F), Over Current (O/C) relay
- Aluminum or copper winding
- Stainless Steel Tank
- DGPT Relay
- Pressure Release Valves
- M.V. / L.V. orientation, made to suit
- L.T. Micro-processor based Trip unit
- L.T. MFM / Load manager
- L.T. Earth Fault (E/F), Over Current (O/C) relay

Specification	Oil Type	Dry Type
Tapping	Off Circuit Switch	Off Circuit Links
Insulation Class	'A'	'F'
Temperature Rise	Oil / Winding up to 55/65°C	Winding up to 130°C
Temperature Protection	OTI, WTI	RTD

# TOWER SUBSTATION

## BASIC COMPONENTS

- MS/ CRC Sheet fabricated Enclosure as per IS 14786
- Load Balancing Lifting Hooks
- Collapsible hinge mounted doors
- MV/LV switchgear enclosure with IP54
- Corrugated tank for ONAN Transformer with IP 54
- Dry & Cast resin transformer enclosure with IP 23
- Safety door switches
- Inter connecting MV & LV cables/ Bus bars
- Powder coated paint, Shade – RAL / IS-5 or as per customer requirement

## SPECIAL FEATURES

- ➔ Completely factory built
- ➔ Superior Aesthetics
- ➔ Convenience in portability
- ➔ Ready to install & Commission
- ➔ Compact in size
- ➔ Minimal maintenance

## TECHNICAL SPECIFICATIONS

### Medium Voltage Compartment

MV Switchgear	Upto 22 kV
Type of Switchgear	LBS / SFU / Circuit Breaker / RMU / VCB
Insulation Medium	SF6 Gas or Vacuum
Tripping	Fuse / Relay
Short Circuit Rating	Upto 20 kA or as per customer requirement

### Transformer Compartment

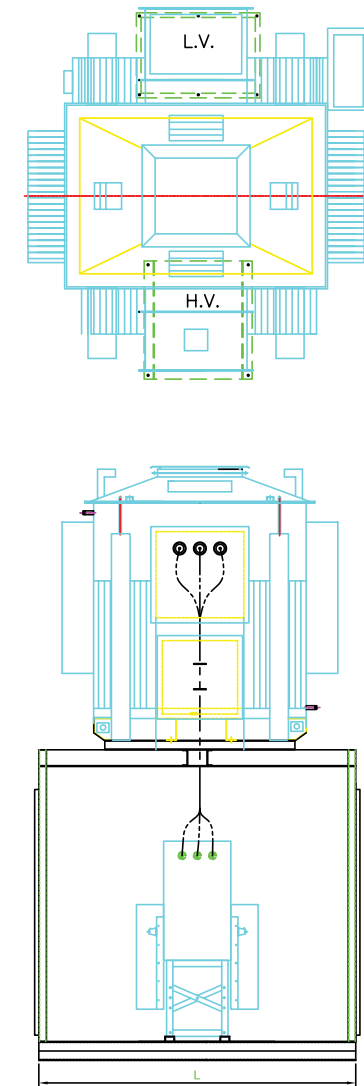
Installation	Outdoor / Indoor Ground Mounted
Type of cooling	Oil Immersed / Dry Type
Rating	63 to 1000 kVA
Voltage	3.3 to 22/0.433 kV or any specific
Phase / Frequency	3 Phase / 50 or 60 Hz
Vector Group	Dyn1 or Dyn5 or Dyn11 or any specific

### Low Voltage Compartment

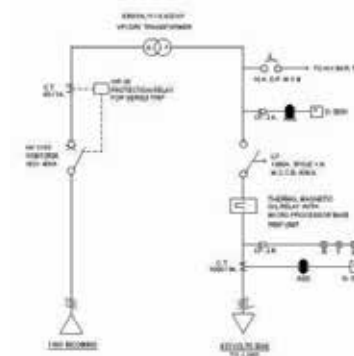
LV Switchgear	ACB's, MCCB's or HRC Fuse
Current Rating	Upto 2000 Amps
Voltage	433 Volts
No. of Poles	3 / 4
Short Circuit Rating	Upto 50 kA or as per customer requirement



## PRODUCT DIAGRAM



## SINGLE LINE DIAGRAM



## GENERAL DETAILS

Tower Substations are designed for use in distribution application as well as for dedicated loads. Tower substation's are easy to install and are of low cost. These are basic & simplest configuration required for distribution substation. Tower Substation are designed in accordance with IS 14786 / IEC 61330 standards with degree of protection for IP 54 with ONAN transformer & with Dry / Cast resin transformer only transformer enclosure with IP 23 or as per customer requirement.

Following are the dimensional and weight details for a typical 11kV, Tower Substation

SR. NO.	Rating (kVA)	Overall dimensions (mm)			Approx WT. (KGS)
		LENGTH (L)	BREADTH (B)	HEIGHT (H)	
1	100 to 250	1800	1800	3800	3000
2	315 to 630	1800	2000	4000	4000
3	750 to 1000	2000	2000	4400	5250

\*Dimensions and weight may vary for any specific or special requirement.

## OPTIONAL FEATURES

- M.V. Drawout type breaker
- M.V. Earth Fault (E/F), Over Current (O/C) relay
- Aluminum or copper winding
- Stainless Steel Tank
- DGPT Relay
- Pressure Release Valves
- M.V./L.V. Orientation, made to suit
- L.T. Micro-Processor Based Trip unit
- L.T. MFM/ Load Manager
- L.T. Earth Fault (E/F), Over Current (O/C) relay
- HT metering / Load manager
- SCADA or PLC compatible
- Feeder pillar (HRC fuse / MCCB based)
- Dry type / Cast resin transformer
- For ONAN transformer, PRV, MOG, WTI / OTI & Bucholz relay
- For Dry / CRT transformer, space heaters, surge arresters, Temp. scanner

Specification	Oil Type	Dry Type
Tapping	Off Circuit Switch	Off Circuit Links
Insulation Class	'A'	'F'
Temperature Rise	Oil / Winding up to 55/65°C	Winding up to 130°C
Temperature Protection	OTI, WTI	RTD

# CONTAINERISED SOLAR SUBSTATION

## STANDARD FITTINGS

- M.S./ CRC Sheet fabricated Enclosure as per IS 14786
- Load Balancing Lifting Hooks
- Collapsible hinge mounted doors
- Rain water protection IP 54 for Breaker compartment
- IP 43 for Transformer / Invertors compartments
- For safety doors with alarm & tripping circuit
- Inter connecting MV & LV cables or bus bars from Invertors to Transformer, Transformer to MV Breaker
- Powder coated paint, for HV& LV equipments
- Epoxy / PU paint, Shade - RAL 9003 or as per customer request
- Illuminating lamps with MCB

## SPECIAL FEATURES

- ➔ Completely Factory built
- ➔ Superior Aesthetics
- ➔ Convenience in portability
- ➔ Ready to install & Commission
- ➔ Compact in size
- ➔ Minimal maintenance
- ➔ Ideally Suitable for on Grid Solar Projects
- ➔ Tamper proof
- ➔ Numerical Reverse Power Protection Relay
- ➔ Numerical 3 pole Differential Relay

## TECHNICAL SPECIFICATIONS

### Medium Voltage Compartment

MV Switchgear	11 to 33 kV
Type of Switchgear	SFU / Circuit Breaker / RMU SF6
Insulation Medium	Gas or Vacuum
Tripping	Fuse / Relay
Short Circuit Rating	21 kA or as per customer requirement

### Transformer Compartment

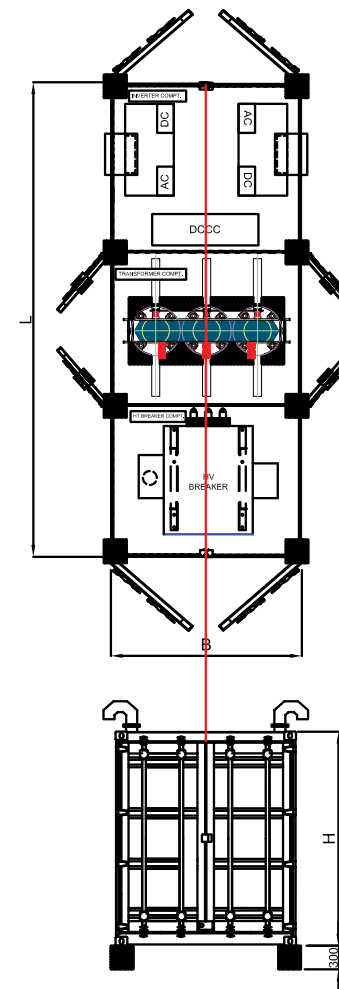
Type of cooling	Dry Type VPI / Cast Resin
Rating	Up to 2500 kVA
Voltage	11 or 33/0.350-0.350 kV or any specific
Phase / Frequency	3 Phase / 50 or 60 Hz.
Vector Group	YNd11d11 or Dy11y11 or any specific.

### Low Voltage Compartment

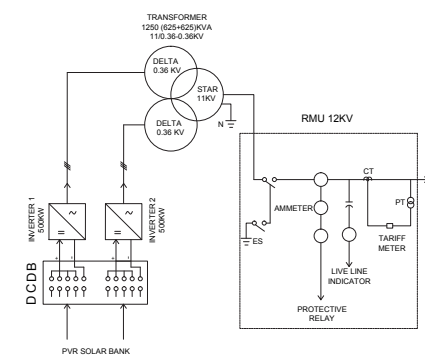
LV Switchgear	ACB's, MCCB's with DCDB
Current Rating	200A & above in multiple range
Voltage	300 to 440 Volts in multiple Inputs to Transformer.
No. of Poles	Single to Multiple. Robust & Compact Design
Short Circuit Rating	ABB or SMA or Bonfiglioli or any as per customer requirement



## PRODUCT DIAGRAM



## SINGLE LINE DIAGRAM



## GENERAL DETAILS

Containerised solar substation are designed for clustered solar parks where space and safety is a concern, and are of capacity 500KW to 20MW projects. Containerized substation is divided in three section or compartment– MV Breaker, Transformer and Invertors with DCDB. Containerised substations are designed in accordance with IS 14786 / IEC 61330 standards with degree of protection upto IP 43 for Transformer and Invertors compartments & upto IP 54 for MV breaker compartment.

Following are the dimensional and weight details for a typical 11kV, Containerized substation with off circuit type Dry / Oil Cooled Transformer.

SR. NO.	Rating (kVA)	Overall dimensions (mm)			Approx WT. (Tonnes)
		LENGTH (L)	BREADTH (B)	HEIGHT (H)	
1	500 to 1250	6000	2400	2450	10
2	Up to 2500	12000	2400	2450	15

\*Dimensions and weight may vary for any specific or special requirement.

## OPTIONAL FITTING

M.V. Compartments	Transformer Compartment	L.V. Compartment
MV RMU/ VCB/ SFU	Dry type (VPI / Resin Cast) / Oil Cooled.	L.T. microprocessor based trip unit
H.T. Metering/ Load manager	Copper wound or Aluminum wound	Output from 300 to 400 Volts
Annunciator & Power pack	Scanner with RS 485 port & Blower control, Alarm & Trip contact	RS-485/ MODBUS/ TCP,CAN,PROFIBUS
Earth fault, over current relay	3 or 4 winding transformers	Efficiency up 98.6%
Scada or P.L.C compatible	Input: 300 to 400 V or any as per requirement	Innovative two zone & Amb. Protection system

## APPLICATIONS





# GLOBAL PRESENCE

## GOVERNMENT UTILITIES & PUBLIC SECTOR UNITS

- Maha Discom / Transco (MSEDCL)/ (MSETCL)
- Karnataka Power Co. Ltd. (KPCL)
- Southern Railway
- Bharat Heavy Electricals Ltd. (BHEL)
- National Thermal Power Corp. (NTPC)
- National Hydroelectric Power Corp. (NHPC)
- Ordnance Factories
- Oil & Natural Gas Corp. (ONGC)
- Madhya Pradesh Power Transmission Co. Ltd. (MPPTCL)
- Kerala State Electricity Board Ltd. (KSEB)
- Telangana State Electricity Transmission Co. Ltd. (TSETCL)

## INDUSTRIES CATERED

Power Utilities | Government Undertakings | Steel | Healthcare | Renewable Energy | Oil and gas | Hospitality Real Estate | Textile | Engineering | Food and Beverage | Automobile | Telecom | Information & Technology.

## CORPORATES & MULTINATIONALS

- Siemens Ltd
- IVRCL Infrastructure Project Ltd
- Gammon India Ltd
- Rolls Royce Energy Ltd
- Jindal Steel Ltd
- Larsen & Toubro Ltd
- Vadilal Industries Ltd
- Tata Power Ltd
- Shreem Electric Ltd
- ABB LTD.
- Harsha Abakus Solar Pvt Ltd.
- Gamesa Renewable Pvt. Ltd.

15+ COUNTRIES

150+ EMPLOYEES

3000+ INSTALLATIONS

38000+ SQUARE FEET

