**Total Power Control Solution** 





## **COMPANY PROFILE**

Our Fime "SAHARA TRANSFORMERS " Is a Proprietary Concern Owned by the undersigned Mr. Sudhir Yadav .We are in this line since 2005-06 beginnig with small control transformers. Now we have an established manufacturing & administrative facilities to manufacture transformers / reactors / filter chokes ets.up to 500KVA We have 50 Employees altogether & floor space of 15000 Sq.Ft.

We are registered as a SSI Unit (Ref.No.) aslo registered under centeral GST (GST 27ABZPY5986F1ZD) We have achieved present position of annual turnover of Rs.10 cores with steady growith . We have obtained ISO-9001-2015 certificate recently.

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### webside: www.saharatransformers.in

#### **ISOLATION TRANSFORMER**

SAHARA TRANSFORMERS Has A Wide Range Of Isolation Transformers Which Reduce The Effects Of Power Line Problems Like Noise, Spikes, Surges, Transients And Neutral, To A Minimum.

Power Generation In Our Country, Is No Doubt Good And Availability Of Continuous Power Is Certainly Better, But The Stringent Requirements Of The Sophisticated Equipment Being Used Today Underlines Necessity Of Clean Power. Owing To Inductive Loads, Capacitive Loads, Smps Loads, Electronic Ballasts And With Pwm Switching Systems, The Present Ac Power Lines Are Superimposed With Dangerous Spikes, Surges, Transients, Sags And Rfi Noise And Harmonics. As A Result Failure Rates Of Electronic Equipment Are On The Rise. Without Adequate Protection, All Electronic Equipment Is At A Great Risk. Usually The Failures Are Not Seen Right Away. Repeated Stress From Normal Electrical Transients Weaken Components And Lead To Shortening Of Component Life. Line Noises Like Spikes, Surges, Transients And So On Definitely Cause Stress On Semi Conductor Components. And Machine Systems Experience Catastrophic Program And Software Failures, Extensive Damage To Plc's And Storage Media, Leading To Heavy Losses Of Production, Data And Man-Hours.

## **3PH ISOLATION TRANSFORMERS**

# 1PH LINE CHOKE

**3PH LINE CHOKE** 



### 1/3 PH LINE CHOKE

Reducing harmonics caused when mains is rectified for creating a DC link.

Reduce the peak currents drawn by the inverter or other device.

Help to protect the input rectifier from mains problem. Ensure complete safety of input rectifiers and phase correction



**3PH STEP UP TRANSFORMER** 



**1PH WATER COOL TRANSFORMER** 



#### **R - CORE TRANSFORMER**



**BRAKING RESISTER** 

### → HARMONIC FILTER REACTOR ←

Reactors: We manufacture Iron Core & Air Core Reactors as per IS 5553 Application: Used with harmonic filter duty power capacitors to mitigate Harmonics, improve power factor and avoid electrical network. Design and construction: Reactors are designed for 20% overload And which will not saturate at 150% of rated current. They are designed Operation in an ambient temp 600 C with natural air cooling Temp. Class F. Reactors are fitting with thermal overload protector in one coil. Core is made out of best stamping with very low core loss Coil are made with SE/DFG Copper Strip Class F Interlayer insulation by Nomex paper Inductors are vacuum impregnated with F class varnish followed by over pressure (VPI) Frame parts Zinc Plated Termination on nickel plated studs continuously for continuous OR Tie rods are provided for mechanical strength and avoid vibration/noise

## CONTROL TRANSFORMER

These are shell type transformer manufactured using standard E & I lamination from type 17 to 8 covering a range from 1 VA to 20 KVA as IS

## **Furnace Transformers**

Rating	10KVA TO 1MVA		
Primary Voltage	415V TO 33 kV		
Secondary voltage	As per Requirement		
No of Phase	Single & Three Phase		
Cooling	ONAN /OFWF		
Winding Material	Copper		
Tapping	Off Circuit or OLTC		
Insulation class	A		
Applicable Standards	IS 2026, IS 12977		

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## CONSTANAT VOLTAGE TRANSFORMER

RATED

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"K" Rated Transformers are designed to reduce the heating effect of harmonic currents produced by non-linear loads. A Standard Transformer is not nonlinear load and will overheat and fail prematurely when connected to these loads K-Factor is defined as a ratio between the additional losses deu to harmonics and the eddy current losses at 50 Hz. it is used to ovulate transformers for non-linear loads. The ANSI / IEEEE C 57. 110 has derived a system of weighing how much harmonic load currents a transformer can handle without exceeding its maximum temperature rise level. A 'K' factor of 1 indicates no harmonics. while a 'K' factor of 50 is the harshest harmonic environment possible. Typically a 'K' factor of 13 is sufficient for most applications 'K' factor must be determined to calculate the right size transformer that is needed.

### Special Features of 'K' Rated Transformer

**Copper Windings** 

Lower Output Impedance

Excellent Transverse mode noise attenuation

Coil design is optimaized for low eddy current loss and high harmonic current carrying capacity

Cores designed for reduced flux densities to compensate for harmonic voltage destortion

Double size neutral terminal

Core of high quality electrical steel

Quiet operation

Ref.Standard UL - 1561 , IS 11171

### →<u>TECHNICAL HIGHLIGHTS</u>←

1.Input voltage : 180V to 280V at the rated power At lesser loads, the low voltage limit is increased automatically .Short term high Input Voltage shall not effect the loads side.
Control Systems CVT can handle up to 300V for 10 minutes and shall deliver the rated output voltage during this period.
2.Output Voltage: 225V to 232V from No load to full load or line voltage swing from 180V to 280V

3.Output waveform: Sinusoidal.

4. Ultra Isolation Form Spikes / surges transients : Since the Input and Output voltages are separated not only electrically , but physically also , by a magnetic shunt.
5.Short Circuit Protection : This is the gem of property of the CVT where in output voltage instantaneously goes to zero on short circuit and remains in the same state as long as short circuit is not remover. When short circuit fault is rectified the output voltage again goes back to normal and this happens without any damage to CVT and Connected equipment.

### Recommendations

1} Keep Magnetic storage and display devises like diskettes spools,monitors etc. away from the CVT. 2} Avoid using the CVT for high inductive loads like motors.

### • Applications

- ➡ Data Centers Call Centers , IPO
- → Induction Heaters / Inverters
- ➡ UPS , VFD'S and Drives
- → HID Lightings
- → Hospital / Medical Centers, Reseach Labs
- ➡ Corporate, Banking and Financial Institutions

## C.T. / P.T. METERING SET



#### 11kV C.T /P.T Combined Unit



#### **33kV C.T /P.T** Combined Unit



RESIDUAL VOLTAGE TRANSFORMER (R.V.T)

### <u>CONSTRUCTION</u> <

Oil cooled.out door type C.T.P.T metering sets are made for use on 11KV to 33KV systems & are suitable for mounting on structures Basically a set consists of 1) C.R.G.O. core

2) H.V.&L.V windings

3)M.S tank with secondary terminal box.

4)Bushings &

5)Transformer oil overall general arrangement of parts is shown here One C.T.P.T set has two C.T.s in phases'A'&'C' & one three phase P.T.

### → <u>SPECIAL FEATURES</u> <</p>

1)A pressure release devices is provided on the top cover of the tank which operates in case of abnormal operationg conditions.

2) The set is much more compact compared to C.T.P.T sets of other makes.

#### APPLICATIONS

The C.T.P.T metering sets of this type as the name suggests are used for measuement of power on higt voltage side.The C.T.P.T sets are instralled before the main transformer and the main line goes through C.T.P.T set to the main transformer.Metering equipment is connected to the secondary side of the C.T.P.T set.As the accuracy of the C.T.P.T set is high & as it is connected before the transformer. measurment of power is much more accurate compared to the metering done on LT.side the transformer losses are also included in the measurment.

### →<u>RESIDUAL VOLTAGE TRASNFORMER</u> ←

RESIDUAL VOLTAGE TRANSFORMER is used to detect unbalanced voltage in three phase system and to supply voltage to directional earth.fault ralay.For direction earth-fault relay. it is necessary that the voltage applied to voltage coil of the relay corresponds in phase to that of the Residual voltage of the three line-to-earth voltages.Residual voltage can be achieved by connecting secondary of three sinle phase.V.Ts connected in three different phase. in opendelta fashion.It is however economical to use three phase V.Ts insted of three nos. single phase V.Ts 'SE' manufactures three phase R.V.Ts suitable up to 33kv system voltage.

### → GENERAL TECHNICAL PARTICULARS

	Current Transformers (2nos)	Current Transformers (1no.)
System voltage	11,22 or 33kV	11,22 or 33kV
Insulation level	28,50 or 70kV	28,50 or 70kV
Frequency	50 Hz	50Hz
Ratio	Double or	11kV / 110V.
	Tripple	22kV / 110V.
	Current/5A	33kV / 110V.
Accuracy	0.5 or 1.0	0.5 or 1.0
Burden	15 or 30 VA	50 or 100 VA
IS	6277	

## **OIL COOLED INSTRUMENT TRANSFORMERS**

## VOLTAGE TRANSFORMERS APPLICATION

Direct measurement of voltage in High voltage system is not possible because of insulation problem of measuring instruments. It is also not possible to use direct voltage for the system protection purpose due to its high value and high insulation problem protective relays. Therefore voltage transformers are used to step-down the high system voltage ti low standard value accurately in proportion to their ration.

#### BASIC FUNCTIONS OF VOLTAGE TRANSFORMERS ARE

To reduce the line voltage to a value which is suitable for standard measuring instruments relays etc. To isolate the measuring instruments, meters ,relays etc. from high voltage side an installation .To sense abnormalities in voltage and give signals to protective relays to isolate the defective system.

#### CONSTRUCTION VOLTAGE TRANSFORMER MAINLY CONSISTS OF :

- 1. Primary & Secondary winding
- 2. Electromagnetic Core
- 3. Bottom Tank & Oil Expansion Chamber
- 4. Porcelain Bushing

#### **PRIMARY & SECONDARY WINDING:**

Copper enameled wire is used for winding. Primary is wound with multilayer and graded insulation. The diameter and length of each layer is selected such that Surge voltage is distributed equally in all layers of the Winding. Multilayer Kraft Paper insulation is provided between winding layers. Stress equalizing shield is provided on last layer of the winding. H.T. Connection is brought out through metallic pipe. Secondary is separately wound and inserted in the primary winding as per the requirement. Winding and tapping of VT is done in dust-free atmosphere.

#### **ELECTROMAGNETIC CORE:**

C.R.G.O. Silicon Steel is used for building up Electromagnetic core. Shell type construction is used to minimize leakage reactance.

### **BOTTOM TANK &OIL EXPANSION** CHAMBER :

Bottom tank and oil expansion chamber are made of M.S. Sheet. All tanks and chambers are painted with Oven baked paint, after cleaning by seven tank process. All surfaces which come in contact with oil are painted with oil insoluble paint. M.S. parts can be hot dip galvanized on request.



## 33kV V.T

## 11kV V.T



### APPLICATION OF SOME SPECIAL PURPOSE CURRENT TRANSFORMERS

#### SUMMATION CURRENT TRANSFORMERS

Summation current Transformers are in association with feeder current Transformers which may not have the same ratio. Each feeder is provided with its own current transformer, and their secondary windings are connected to the appropriate primary winding of the summation current transformer. The summation current transformer has a single secondary winding which is connected to the burden. It is essential that the summation current transformers are used on the currents of the same frequency and phase.

#### CORE BALANCE CURRETN TRANSFORMER: (CBCT)

The core balance current transformers are used for sensitive earth fault protection. Generally it is sufficient to incorporate insulation monitoring for signaling appearance of earth faults. The operating staff in such cases will be able to take the measures to switch the load over to other feeders and switch out the fault circuits for repairs.

#### **INTERPOSING CURRETN TRANSFORMERS**

A current transformer which is intended to amend the ratio of a main transformer by having its primary winding connected to the secondary winding of the main transformer and its secondary winding connected to the burden.

### **BUSHING CURRENT TRANSFORMERS**

Bushing Cts are big round type LT CTs . They are used in power transformers and they are fitted inside the HV busing of power Transformers. these Current Transformers are mainly special purpose class current transformers. these are used for protection purpose. so in these Cts. knee point voltage, magnetizing current and resistance values are important. In protection class Cts, specific burden , accuracy class and accuracy limit factor is mentioned these are oil immersed fiber glass taped ring type CTs.



#### **CURRENT TRANSFORMERS**

## LOW TENSION INSTRUMENT TRANSFORMER

66 SAHARA manufactures all type of Indoor / Outdoor low tension current and voltage transformers and have supplied large nos. of L.T. instrument transformers from 1975 to all the major O.E.Ms. The company undertakes the design and development of all types of LT current transformers and voltage transformers to suit the special electrical and dimensional specification required by the customer.





#### **TYPES OF LOW TENSION Cts :**

- 1. Tape wound Ring type current transformers with/without mounting arrangement.
- 2. Tape wound/ Resin cast, wound primary current transformers (WPL).
- 3. Resin cast Bar Primary Current Transformers.
- 4. Bushing Cts.
- 5. Universal Auxiliary Transformer (Multi Ratio CT).
- 6. Interposing Current Transformer.

#### **TYPES OF LOW TENSION Vts :**

- 1. Tape wound / Resin cast voltage Transformer.
- 2. Interposing Voltage Transformer.
- 3. Isolation Voltage Transformer.

#### SPECIAL PURPOSE LOW TENSION INDOOR Cts AND Vts :

- 1. Summation Current Transformer.
- 2. Core balance Current Transformer (for earth fault protection).
- 3. Precision Grade CTs and VTS.
- 4. Furnace Current Transformers (Split core Type).
- 5. D.C. Current Transformer for measurement purpose.

#### **TYPES OF LOW TENSION OUTDOOR CTs:**

- 1. Cycloaliphatic resin cast wound primary Cts for metering and protection.
- 2. Cycloaliphatic resin cast bar primary CTs for metering and protection.







#### **CURRENT TRANSFORMERS**

### **INDOOR BLOCK TYPE CURRENT TRANSFORMERS**

TECHNICAL DATA	<u>1</u>	20			20	-
Operating voltage (maximum)	kV	3.6	7.2	12	15	
Rated power-frequency withstand voltage 1min	kV	10	20	28	35	
Impulse test voltage 1.2/50 µs full wave	kV	40	60	75	95	
Rated frequency	Hz	50 oi	r othe	r feq.	on requ	uest
Rated primary current	Α	20 to	1250	)		
Max.Rated continuous thermal current	X/N	1.2	1.2	1.2	1.2	
Secondary current	А	5or1	5or1	5or	1 5or1	
Rated short-time thermal current (/ <sup>)1 s</sup>	kA	40	40	40	40	
Rated dynamic current ( $/_{dyn}$ 2.5 x $/_{th}$ )	kA	100	100	100	100	
Number of cores	max	3	3	3	3	

<u>IECHNICAL</u>	<u>. DAI</u>	<u>A</u>
Operating voltage (maximum) Rated power-frequency withstand voltage 1min Impulse test voltage 1.2/50 µs full wave	kV kV kV	24 50 125
Rated frequency	Hz	50 or 60 other feq.on request
Rated primary current	А	20 to 2500
Max.Rated continuous thermal current	X/N	1.2
Secondary current	А	5or1
Rated short-time thermal current (/ $_{th}$ ) <sup>1 s</sup>	kA	26.24
Rated dynamic current ( $/_{dyn}$ 2.5 x $/_{th}$ )	kA	65.6
Number of cores	max	3

Hz	50 or 60 other feq.on request
A	upto 12000A
А	5A
	A A



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#### **Potential Transformers**

## **Our Products And Services**



## Power Transformers Isolation Transformers

#### **Manufacturing Facilities**

- Synthesis make fully automaton coil winding machine model - S-10. This is for mass production of small control transformers rating from 1VA to 100VA
- Motorized coil winding M/c -6Nos. for transformers up to 5KVA & Winding of round Conductors up to 13 SWG.
- Heavy gauge winding M/c -2Nos. with 2HP motor, 70:1 ratio gearbox suitable for strip conductors up to 20x6mm.
- Vacuum impregnation plant (chambers Size -700mm x1000mm depth)
- Drying & Baking Over -1 No. L- 1000, D-750, H-1200mm with 5KW heaters.
- ➡ 185 sq. mm Crimping Tool -1 No.
- Small fabrication shop with cutting, drilling, welding facility.
- Monorail trolley with 2 ton chain pulley / Hoist
- In house brazing facility
- Transformers oil filtering Machine (600LPH)
- Hydraulic floor crane (one Ton)
- ➡ Pallet truck 1 ton.

### **Our Products**

- Distribution Transformers
- Three Phase Transformers
- Single Phase Transformers
- Isolation Transformers (Single And Three Phase)
- Auto Transformers (Single And Three Phase)
- ➡ Power Transformers (Single And Three Phase)
- HT Transformers (High Tension Transformers)
- Air Core Reactors
- ➡ Special Purpose Transformers
- AC, DC Chokes (Inductors)
- Harmonic Filter Reactors
- ➡ Phase Reduction Transformers
- ➡ Battery Charger Transformers
- Solar & UPS Transformers
- Constant Voltage Stabilizer

### **Testing Facilities**

- Digital Multi meters.
- ➡ Digital Panel for No load /load testing .
- H.V break down tester 0.5 KV, 30MA .
- ➡ H.V break down tester 0-100 KV, 50MA .
- Induced voltage test facility (Double Voltage/Double Frequency)
- ➡ Tong Tester .
- 0-500Variable supply
- Digital milliohm meter .
- ➡ 28Amp. 3 Phase Dimmer stat
- ➡ 100 Amp. 3 Phase Dimmer stat
- ➡ Megger (1KV)
- Meco make LCR meter .

### **Field of Applications Industries**

- ➡ Automobile Industry
- Cement Industry
- Packaging Industry
- Instrumentation & Power Electronics
- Control & APFC Panels
- ➡ Heating Systems
- ➡ UPS, Battery Chargers
- Plating Rectifiers
- ➡ Process Control Equipments
- ➡ Power Packs for CNC M/c
- Welding Machine and many more



tra isolation H Oil Cooled Transforn



## **OUR VALUABLE CLIENTS**













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