



**RS TECHNOCRACY**

## **DISTRIBUTION TRANSFORMER & SUBSTATION EQUIPMENTS**



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&  
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## ABOUT US

"We at **R S TECHNOCRACY** firmly pledge our allegiance towards the betterment of product & customer satisfaction"

**R S TECHNOCRACY** was established as a distribution Transformer manufacturing company in 2002 with strong team of background. We offer customers complete electrical substations and transformer is one its key item on which the company has achieved a mile- stone on quality. **RST** commits itself to introduce and maintain a quality system that ensures products and services of agreed quality on time every time to the total satisfaction of the customer by meeting their specified and implied needs at competitive prices, and shall strive to exceed their expectations through continuous improvement. The manufacturing facilities for the production of distribution transformer have been extended up to **5000 KVA**.

Our products make happy requirements of Bangladesh Power Development Board (BPDB), Dhaka Electric Supply Authority (DESA), Rural Electrification Board (REB), Barindra Multipurpose Development Authority (BMDA), Defiance & manufacturing organizations.

**R S Technocracy** is equipped with all necessary manufacturing and testing facilities. We made a good team work with overseas transformer experts with our local experiences of more than 15 years and highly motivated some local professors and Engineers. **R S Tech** transformers are designed on requirements of valued customers, comprising the recognized standards of **IEC, BS, ANSI AND VDE**, we are maintaining its continuous improvement in design and product quality by using the modern production technique with latest technology and experience. Hence the most of the small but important innovations is being found to come from quality control team of **R S Technocracy** factory. This quality policy adorns the walls of **R S Technocracy**, but more importantly it is genuinely followed at every stage of manufacture, right from procurement to the processing, the efforts, is always to build quality and to ensure timely delivery.

## DESIGN & DEVELOPMENT

Design & development is a continuous process. A highly qualified and experienced technical personnel's keep on eye upon the latest development in technology and the product. Transformers are designed to meet oil the latest national & international standards, including IEC, ANSI, BS, and VDE. For sake of improvement and innovation, high speed machines are used to analyze and compare the data to simulate the condition on fields.

In house software developed by qualified IT professionals in assistance of design personal are used to further ensure the reliability and accuracy of design and incorporate specific requirement of customers, if any and in translating their needs in to product specification.

1) Designs are made for optimization in terms of-

- Labour and material costs
- Capitalization of losses,
- Specified performance characteristics such as impedance, temperature rise, efficiency, & noise levels.
- Mechanical design with fitting & accessories for specifying maximum overall dimensions and weights.

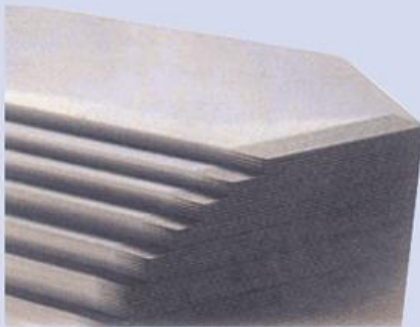
2) Distribution of voltage stresses under impulses, lightning, and switching surge conditions.

3) The ability to withstand the thermal and dynamic effects of short circuit.

4) Analysis of those areas where high electrical stresses can occurs.

5) Calculations for minimizing stray losses, hot spots, electrical gradients etc by electrical and magnetic field analysis.

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### CORE

The magnetic core of the transformers is built up of cold rolled grain oriented magnetic steel laminations. The special cutting and stacking methods result in low no load losses and noise levels. Core leg and yoke laminations are interleaved in mitered joints in order to facilitate the passage of the magnetic flux and to avoid hot spots and reduce no load losses, no load current and low noise level.

### WINDING



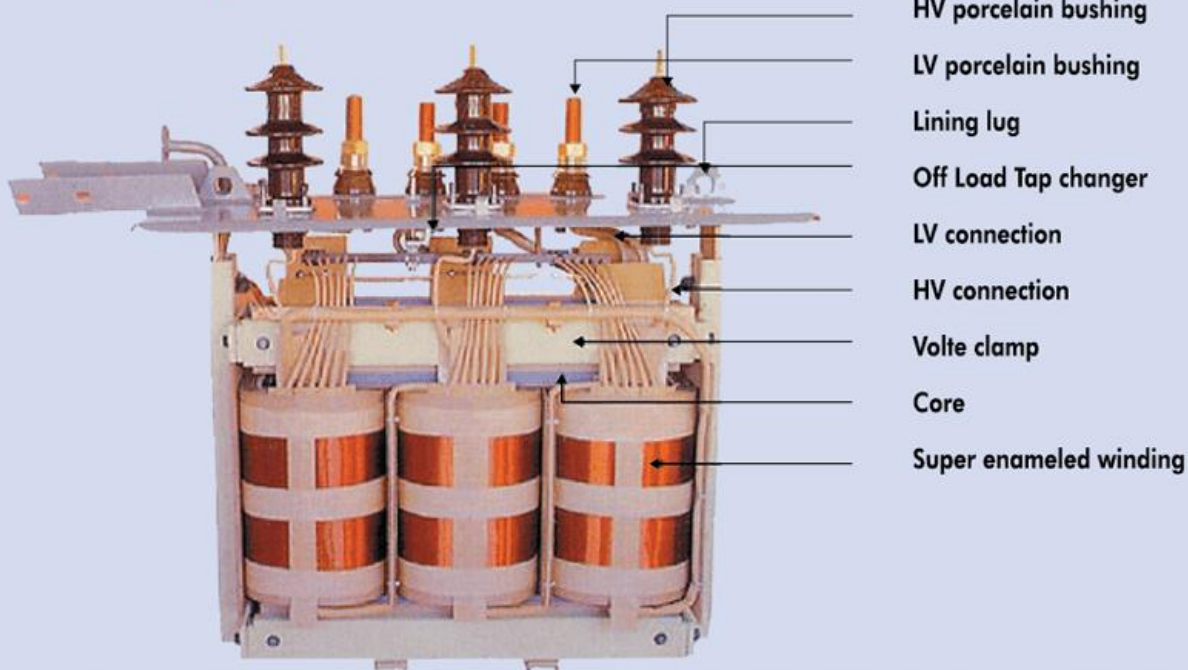
The windings are designed to optimize dynamic, thermal, mechanical & electrical stresses depending upon the current & voltage requirements, spiral, cross over helical, continuous disc, partly interleaved or fully interleaved windings are used depending on the specific design criteria.

The winding machines are equipped with electrical breaking devices which ensure that the proper tension is mentioned on the winding. Dovetailed key spaces are employed to give the winding extra strength. Axial and radial cooling ducts in and between sections of the windings allow the free flow of oil ground the conductor. Individual coils are dried and hydraulically pressed to size in accordance with the calculated short circuit forces to obtain the design height and to guarantee full short circuit resistance.

### TRANSFORMER OIL

Transformer oil is procured from renowned manufacturers. Oil is tested for dielectric strength, resistivity, acidity, flash point, pour point, break down voltage and interfacial tension as per BIS & IEC. Transformer oil is again tested as per BIS & IEC after filling transformer oil in transformers.

### ASSEMBLY OF THE ACTIVE PART



The magnetic core with the windings and some accessories fitted together forms the active part of the transformer. The windings are slipped over the legs of the core and the laminations of the upper yoke are interleaved. All connections between windings and bushings and the connections between the high voltage tapping and the tap changer are made. The tap changer allows the increase or decrease of a certain number of turns in the high voltage winding in order to compensate for a voltage drop or to adapt the transformer to an unstable supply, so that the rated low voltage can be maintained. Subsequently, the top cover on which the bushings for high voltage and low voltage are already fixed is fitted.

### VACUUM DRYING

A transformer may contain no trace of humidity; otherwise there will be a danger of flash over within the windings. The active part of the transformer is completely dried before the transformer is filled with oil under vacuum. The tank with the active part in it, is connected to an oil supply and placed inside a vacuum chamber. A vacuum is applied and when the required vacuum is reached, the oil is admitted into the tank. The rising oil drives out any remaining air and the active part is completely immersed.

### TANK & COVER

The tank is in rectangular shape and provided with corrugated wall panels on sides for natural cooling. The tank base, sides and frames are of welded construction, and all welding are inspected, for oil tightness. Further, when the tank is completed, it is subject to leak test before painting operations.

Tank cover which includes thermometer pockets, bushings, tap changer drive and lifting lugs mounted on the tank cover sufficient for lifting of the complete transformer the lifting of core and windings assembly is put in transformer tank and are then fastened by nut bolts the holts of pneumatic wrench. The connection items (bolts, nuts, bushing holders, studs, etc) on the cover, and arching horns on HV bushing which are subject to rust, are either made of stainless steel or of specially surface treated steel material cover gasket is made of high quality cork-rubber. The rollers of uni-directional

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## SURFACE TREATMENT & PAINTING

To attain satisfactory protection against corrosion, and rusting, oil surfaces of steel parts are shot blasted in compliance with standard quality prior to painting. Thereafter tanks and steel parts are painted with one primer and two final coats with synthetic enamel paint.

## TESTING

All transformers are subjected to all routine tests in our sophisticated laboratory in factory confirming to latest national and international standards specifications. **R S Technocracy** test laboratory is approved by **BSTI**, Electrical licence authority of energy ministry and BUET.

All transformers are subjected to all **routine tests**. This includes following tests:

- Insulation resistance test
- Resistance measurement of winding
- Turn ratio test
- Polarity and phase relationship test
- No load losses measurement
- Excitation current measurement
- Impedance voltage test
- Load loss measurement
- Insulation oil test
- Dielectric test
- Leakage test of transformer tank



### Type tests

Type test are special optional tests. These tests are carried out at additional fees, to be borne by the customer.

- Impulse voltage test
- Temperature rise test
- Short circuit test

## PHYSICAL DIMENSIONS

Rating (KVA)	100	150	200	250	315	400	500	630	750	800	1000	1250	1500	2000	3000
Height (mm)	1280	1280	1350	1480	1480	1400	1450	1500	1600	1700	2050	2150	2200	2250	2560
Width (mm)	760	820	830	850	900	940	1000	1000	1050	1200	1200	1200	1200	1250	1400
Length (mm)	860	900	950	1000	1050	1060	1200	1250	1350	1400	1700	2000	2120	2150	2280
Wt. of oil (kg)	130	170	200	220	250	280	350	390	460	500	640	750	800	970	1260
Total wt. (kg)	750	830	920	1030	1250	1400	1550	1760	2150	2340	2660	3080	3200	3500	5750

**N.B:** (All dimensions are including radiator & conservator tank, dimensions & weight can be changed up to  $\pm 5\%$  subject to change of design)

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### WARRANTY

We provide warranty on the performance of our manufactured equipment for any defect of design, workmanship and materials for a period of 24 months from the date of delivery from our factory.

### AFTER SALES SERVICE

**R S Technocracy** offer free delivery at our factory premises for customer satisfaction, we may deliver to customer's premises subject to negotiation at extra payment.

We have an excellent team with service vehicle, required handling equipment, tools and test equipment to provide possible best service to our client at door steps. **R S Technocracy** has a well-built team of committed members to testing, installation, commissioning and grant after sales service.

### HIGH TENSION (HT) SWITCHGEAR

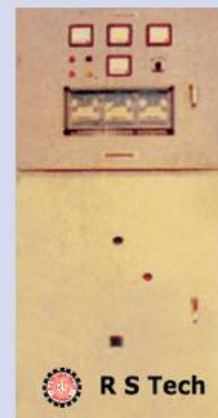


**R S Technocracy** high tension switchgear confirm to IEC, BS, VDE, DIN & ANSI standard and equipped with MOCB, VCB, LBS, SF6 circuit breaker and the switchboards are of optimized design for Bangladeshi supply condition and ambient. They are designed in co-ordination to over voltage due to lightning transients for highest system voltage of 12 KV & current rating from 400A to 1205A.

The panel boards are made of strong sheet (minimum 16 SWG) at all sides with iron angles & channels welded together. They are painted in accordance with general practice and recognized methods to meet the tropical conditions at site. Potential transformer (PT), current transformer (CT), earthing switch, the main unit & other components are imported from America, Germany, France, Italy, UK & Japan or as per the choice of the valued customers

### LOW TENSION (LT) SWITCHGEAR

**R S Technocracy** low tension switchgear (415V, 3 phase, 50 Hz) confirm to IEC, BS, DIN & ANSI standard and equipped with circuit breaker, hard drawn electrolytic copper bus bar, ammeter, voltmeter, selector switch & indicating lamps. Totally enclosed panels are designed to withstand the mechanical & thermal stress produced by current. All live part are adequately protected against accidental touching, interior wiring with minimum cross sectional area of 0.75 mm<sup>2</sup> is accommodated in plastic conduits. The LT panel boards so designed that the cables are feed in and split and removable type to facilitate cable entry



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having cable grommet. The LT panel components are imported from America, Germany, France, Italy, UK & Japan or as per the choice of the valued customers.

## POWER FACTOR IMPROVEMENT (PFI) PLANT

P.F.I plant equipped with the sheet steel clad, dust, and vermin proof, free standing. Floor mounting type, 415 V 50 Hz up to 1250 KVAR automatic /manual power factor improvement plant equipped with three phase capacitor bank manufacture by latest method comply with IEC, BS, VDE, ANSI standard. Capacitor made of zinc metalized polypropylene film is self healing and dry type without impregnation liquid. Capacitor is of low losses, and within built discharge resistor. Care has been taken to select the capacitor, imported from Germany, France, Italy, UK & Japan or as per the choice of the valued customers.



## WARRANTY

We provide warranty on the performance of our manufactured equipment for any defect of design, workmanship and material for period of **24** months from the date of delivery.

## AFTER SALES SERVICE

**R S Technocracy** has a well-built team of committed members to testing, installation, commissioning and grant after sales service.

# TECHNICAL DATA

## A. THREE PHASE, 11/0.415 KV, 50 Hz

Capacity (KVA)	No load losses (watts)	Full Load losses at 75°C (watts)	Impedance at 75°C (%)	Voltage regulation at P.F.=1 (%)	Efficiency at 100% load (%)	
					P.F.=1	P.F.=0.8
50	124	1190	3.5	2.43	97.44	96.82
100	228	1590	4.0	1.67	98.21	97.78
150	300	2000	4.0	1.40	98.49	98.12
200	350	2300	4.0	1.47	98.69	98.37
250	430	2780	4.0	1.49	98.73	98.42
315	510	3450	4.0	1.45	98.76	98.45
400	608	4250	4.0	1.44	98.80	98.50
500	700	4600	4.0	1.05	98.95	98.69
630	805	5500	4.5	0.99	99.01	98.76
750	860	6000	5.0	0.92	99.09	98.87
800	950	6300	5.5	0.92	99.10	98.88
1000	1110	7990	5.5	0.95	99.10	98.88
1250	1310	9000	6.0	0.90	99.18	98.98
1500	1600	11010	6.0	0.94	99.17	98.96
1600	1805	12000	6.0	0.96	99.14	98.93
2000	2112	15000	6.5	0.96	99.15	98.94
2500	2500	18012	6.5	0.93	99.19	98.98
3000	3000	21010	7.0	0.91	99.21	99.01

## B. THREE PHASE, 33/0.415 KV, 50 Hz

Capacity (KVA)	No load losses (watts)	Full Load losses at 75°C (watts)	Impedance at 75°C (%)	Voltage regulation at P.F.=1 (%)	Efficiency at 100% load (%)	
					P.F.=1	P.F.=0.8
100	260	1650	4.0	1.73	98.13	97.67
200	352	2900	4.5	1.50	98.40	98.01
500	950	6500	5.0	1.42	98.53	98.17
1000	1410	11500	6.0	1.35	98.73	98.41

## C. SINGLE PHASE, 6350/240V, 50 Hz

Capacity (KVA)	No load losses (watts)	Full Load losses at 75°C (watts)	Impedance at 75°C (%)	Voltage regulation at P.F.=1 (%)	Efficiency at 100% load (%)	
					P.F.=1	P.F.=0.8
5	25	110	2.5	2.35	97.37	96.74
10	50	156	3.0	1.67	97.98	97.49
15	65	210	3.0	1.43	98.20	97.76
25	82	326	3.0	1.32	98.39	98.00
37.5	121	425	3.0	1.16	98.56	98.21
50	140	540	3.5	1.15	98.66	98.33
75	205	1000	4.0	1.44	98.42	98.03
100	230	1410	4.0	1.40	98.39	97.99
150	312	1790	4.5	1.29	98.62	98.28

## D. SINGLE PHASE, 11/0.240 KV, 50 Hz

Capacity (KVA)	No load losses (watts)	Full Load losses at 75°C (watts)	Impedance at 75°C (%)	Voltage regulation at P.F.=1 (%)	Efficiency at 100% load (%)	
					P.F.=1	P.F.=0.8
10	52	160	3.0	1.67	97.92	97.42
15	60	310	3.0	1.56	97.59	97.01
25	75	410	3.5	1.66	98.10	97.63
37.5	110	590	4.0	1.67	98.17	97.72
50	135	855	4.0	1.78	98.06	97.58

**CONTRACT: FOR Enquires**  
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