Riverin®

Riverin Power & Generation Ltd.

we do practice to perfection

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Riverin Power & Generation Ltd. is a leading manufacturer of Electrical & Electronic product such as; Transformer, HT- High Tension Switchgear, LT- Low Tension Switchgear, PFI- Power Factor Improvement Plant, BBT- Bus Bar Trucking System, DB- Distribution Board, MCP- Motor Control Panel, AVR- Automatic Voltage Regulator, UPS- Uninterruptible Power Supply, IPS- Instant Power Supply, AC- Air Conditioner, BC- Battery Charger etc with a reputation for quality, reliability and competitiveness.

THE COMPANY'S PRACTICE IS TO PROVIDE QUALITY PRODUCTS AND SERVICE AT A COMPETITIVE PRICE

HT SWITCHGEAR (HIGH TENSION SWITCHGEAR)

The High Tension Switchgears are used for switching the system voltage of mid level (6.35KV-33KV) as well as high level voltage (66KV-230KV).

CONSTRUCTION

- Metal enclosed and air ventilated with sheet steel of SWG-14
- Properly welded steel structure
- Low voltage compartment on the top of the cubicle
- Long creapaze distance
- Circuit Breaker mounted fixed or withdrawable truck
- Single set bus-bar
- Fully factory assembled
- Powder coating paint
- Cable entrance usually provided in the bottom of the cubicles, top entry can also be provided on request

TYPE

- LBS (Load Break Switch) Manual
- VCB (Vacuum Circuit Breaker)
- MOCB (Minimum Oil Circuit Breaker)
- SF6-CB (Sulpher Hexa Floride Circuit Breaker)
- ACR (Auto Colser & Recolser)

FEATURES

- Circuit Breaker mounted on withdrawable truck also fixed type on request
- Suitable for rapid auto re-closing duty
- The charging time of the breaker is only 2 to 3 sec
- Adequate phase clearance and height as per standards to ensure safe operation
- The spring can be charged electrically by DC or AC through rectifier also manually by charging motor
- Motor and manual operating device provides remote control function
- The electrical devices used in the units allow future changes design, there by assuring a high device of diversity
- The mounting, erection and commissioning is very simple
- The devices which are out of services in the equipment are easily accessible
- Additional accessories can he provided for VCB servicing such as; Auxiliary Switch (7N0 + &NC), Closing Coil (24, 30, 48, 110, 220V DC/AC), Tripping Coil (24, 30, 48, 110, 220V DC/AC) etc.

TECHNICAL INFORMATION OF HT SWITCHGEAR

TYPE	VCB			LBS
Model	RPVHT630	RPVHT800	RPVHT1250	RPLHT630
Rated voltage (KV)	12	12	12	12
Rated current (A)	630	800	1250	630
Short circuit Breaking current (KA)	16/20	20/25	50/63/80	25
Basic impulse level (KV)	75	75	75	75
Short circuit Making current (KA)	42/50	63	63	50
Max. interrupting time (cycle)	3	3	3	3
Max. Opening Time (cycle)	2.5	2.5	2.5	2.5
Max. Closing Time (cycle)	2.5	2.5	2.5	3
Operating Sequence	O-3mn-CO-3mn-CO O-0.3s-CO-3mn-CO O-0.3s-CO-15s-CO	O-3mn-CO-3mn-CO O-0.3s-CO-3mn-CO O-0.3s-CO-15s-CO	O-3mn-CO-3mn-CO O-0.3s-CO-3mn-CO O-0.3s-CO-15s-CO	
Dimension Fixed/Draw- out (DxWxH), cm	100x80x210	100x80x210	100x80x210	100x90x210

CONSTRUCTION OF DISTRIBUTION TRANSFORMER

Briefing On Design And Construction

The core of the transformers consists of 0.27mm thick M4 grade silicon steel sheet with grain-oriented Cold rolled (CRGO) laminations on both sides which distinguish themselves by low losses, high dimensional accuracy and flatness.The unpinned core construction with MITRED joints and special method of assembly result in low no-load losses and currents as well as minimum noise generation.

FEATURES

- Using the best quality 0.27mm M4 grade cold rolled silicon steel
- Vacuum filling of oil ensuring highest possible oil insulation
- Computer aided architecture providing smart out look and convenient installation
- Disk thermometer for easy monitoring of temperature rise
- Compact winding arrangement guarantees high, short circuit strength and superior thermal stability

CAPACITY

- 1- Phase upto 150 KVA , 50 Hz
- 3- Phase 50 KVA to 4,000 KVA, 50 Hz

System Voltage:
Generally 6.305/0.240KV, 11/.415KV

WINDING

- The low voltage winding is in cylindrical shape, the high voltage winding is in cylindrical Disk/foil type
- HT & LT windings are made of copper
- IT will have sufficient capacity secured against short circuit, and make the magnetic circuit more reasonable

CORE

- The core is made of Cold Rolled Grain Oriented (CRGO) silicon steel
- The core cut as an angle of 90° for rectangular shape, 45° for MITRED shape also cut "V" notch
- Stacking and Wound core

TANK

- The tank is made of mild steel plates by welding its surface with removing and treated for rust phosphorous
- The tank sprayed with good antiseptic dope.
- This mild steel plates consist of sufficient radiating surface.

INSULATION CONSTRUCTION

- The oil immersed power transformer is applied for class A insulation
- The insulation is concentric arrangement for high and low voltage windings
- The gaps between the windings are separated with board structure of the small oil gap for the thin paperweb

TAP CHANGER

- Each unit is provided with tap changer for off load, on load (on request) with voltage regulation range of + 1X2.50%, 0, -2X2.5%, -3x2.5% in the HV side with 5(five) & 7(seven) Tapes

COOLING SYSTEM

- AN (Air Natural)
- ONAN (Oil Natural & Air Natural)
- ONFA (Oil Natural & Forced Air)

ACCESSORIES

- HV Bushing with terminal connector
- LV Bushing with terminal connector
- Off Load Tap changer
- Lifting lugs
- Oil level indicator
- Drain Valve
- Grounding terminal
- Dehydration breather with silica gel
- Technical data plate
- Conservator tank
- Thermometer pocket
- Dial type thermometer
- Arcing horns on HV bushing
- Bi-directional rollers (on request)
- Buchholz relay (on request)

TESTING (ROUTINE TEST & TYPE TEST)

- Winding resistance test
- Ratio test
- Meggar test(Insulation resistance test)
- No-Load loss test
- Full load loss & Impedance test
- Power frequency high voltage test
- Dielectric strength of oil
- Polarity test
- Vector group test

PFI (POWER FACTOR IMPROVEMENT PLANT)

Power Factor is defined as the ratio of real power (KW) to the apparent power (KVA) and is cosine of the angle by which the current lags or leads the voltage.

CONSTRUCTION FEATURES

- Metal enclosed design for indoor installation
- Flexibility in installation either wall or floor
- Built with dry type self healing extra reduced losses capacitor
- Easy top and bottom connection
- Perfect integration with electric switchgear
- Reduced floor space due to its design
- Possibility of future extension
- HRC fuses/MCCB or MCB with visual fusing indicator
- Easy access to the capacitors enabling convenient maintenance
- Resistors to ensure quick discharge of the capacitors

DISADVANTAGE OF LOW PF

- Large KVA rating of equipment, KVA = KW/ cos Φ
- Extra bill charged for low PF
- Greater conductor size; I_L = KW/ $\sqrt{3}V_L$ cos Φ
- Large copper losses; I_L = KW/$\sqrt{3}V_L$ cos Φ
- Poor voltage regulation
- Larger line drop
- Reduced handling capacity of system

ADVANTAGE OF MOST ECONOMIC PF

- Increase carrying capacity of the power station.
- Reduce billing of the system
- Increase voltage
- Good voltage regulation
- Least conductor size
- Least copper losses
- Reduce KVA demand

LT SWITCHGEAR (LOW TENSION SWITCHGEAR)

- Metal enclosed and air ventilated with sheet steel of SWG-l4.
- Free standing and floor mounting type for indoor installation.
- Well furnished with hard-drawn electrolytic copper bus-bar.
- Easy inspection and maintenance
- Adequate creepage distance.
- All cubicle are composed of 5(five) bus-bar; L1, L2, L3, N & E
- Flexibility of future extension
- Powder coating painted panel
- The operating handle takes out grouping the panel

TECHNICAL DATA OF LT SWITCHGEAR

- Rated voltage Ue — up to 660V/415V
- Rated current Iu — up to 6300A
- Peak withstand current — up to 176KA
- Frequency — 40-60Hz

TECHNICAL INFORMATION OF TRANSFORMER 6350/240V SINGLE PHASE, 50Hz

Model	Rated Capacity (KVA)	% Impedance Volt at 75°c	No Load Loss (W)	Full Load Loss at 75°C (W)	% Regulation		% Efficiency		Total Wt. (Kg)	Dimension HxLxW (cm)
					At PF = 1	At PF = 0.8	At PF = 1	At PF = 0.8		
RPT51	5	2.5	25	115	2.30	2.42	90.28	96.62	115	42x43x30
RPT101	10	3.0	50	160	1.63	2.81	97.94	97.44	135	45x46x33
RPT151	15	3.0	65	210	1.43	2.72	98.20	97.76	170	48x52x52
RPT251	25	3.0	80	320	1.32	2.80	98.43	98.04	230	57x53x53
RPT37.51	37.5	3.0	120	420	1.16	2.58	98.58	98.23	320	63x57x57
RPT501	50	4	160	840	1.75	3.54	98.00	97.50	400	69x61x61
RPT751	75	4.0	200	1000	1.48	3.52	98.40	98.01	620	103x63x63
RPT1001	100	4	240	1340	1.41	3.36	98.42	98.03	600	105x65x65

11/0.415KV, THREE PHASE, 50Hz.

Model	Rated Capacity (KVA)	No Load Loss (W)	Full Load Loss at 75°C (W)	% Impedance Volt at 75°c	% Regulation		% Efficiency		Total Wt. (Kg)	Dimension HxLxW (cm)
					at pf= 1	at pf= 0.8	at pf= 1	at pf= 0.8		
RPT503	50	200	954	4.53	1.94	4.15	97.74	97.19	400	117x95x60
RPT1003	100	335	1575	4.75	1.68	3.98	98.09	97.61	600	130x105x65
RPT1503	150	540	2050	4.75	1.50	3.88	98.30	97.89	700	135x110x90
RPT2003	200	560	2500	4.75	1.36	3.79	98.47	98.09	1000	148x113x95
RPT2503	250	670	2960	4.75	1.29	3.75	98.55	98.19	1150	150x114x96
RPT3153	315	785	3540	4.75	1.23	3.71	98.63	98.28	1360	155x122x98
RPT4003	400	950	4230	4.75	1.16	3.67	98.71	98.38	1400	160x124x100
RPT5003	500	1120	4970	4.75	1.10	3.63	98.78	98.48	1795	164x126x102
RPT6303	630	1330	5980	6	1.06	3.60	98.84	98.55	2540	168x138x103
RPT7503	750	1400	6700	6	0.94	4.3	98.93	98.67	2800	185x150x112
RPT8003	800	1430	7720	6	1.14	4.41	98.86	98.57	2875	186x151x113
RPT10003	1000	1730	9770	6	1.15	4.42	98.85	99.56	3000	200x178x115
RPT12503	1250	2140	12280	6	1.16	4.42	98.85	98.56	3900	215x195x116
RPT16003	1600	2650	15800	6	1.16	4.43	98.85	98.56	4900	220x205x120
RPT20003	2000	2730	19700	6	1.16	4.43	98.88	98.60	5650	230x210x130
RPT25003	2500	2980	24560	6	1.16	4.43	98.89	98.62	7500	250x220x150
RPT30003	3000	5250	27500	6	0.93	4.43	98.92	98.66	9400	280x235x170

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