



**MEHTA POWER**

# **MEHTA**

## **POWER ELECTRICAL**

WORLD-CLASS  
ENGINEERING SOLUTION



[www.mehtapower.com](http://www.mehtapower.com)





## About us

**MEHTA POWER'S** One of the biggest manufacturer & Exporter of Power/Distribution Transformers, Dry Type Transformers, OLTC Transformers, Automatic Servo Voltage Controllers-(Linear Type Technology), HT AVR/LT AVR & Transformer with built in HT AVR, Electroplating Rectifiers & Anodizing Rectifiers, Isolation Transformers, Variable Transformers, and Special Purpose Transformers & Unitized Compact Substations. Every process regarding manufacturing & quality control of each equipment is being done by a team of qualified & experienced engineers under one roof to achieve better quality & to fulfill customer's requirements and get their 100% satisfactions. We believe in Quality Oriented Product & with state of the art technology. We have established a name as – **Mehta Power Electrical** that has made a major breakthrough in the field of **Engineering and Electricity Saving**. Our high quality products and efficient services to our valued customers have enabled us with ample success. We at **Mehta Power Electrical** believe that, sale is not an end of a relationship, but just the beginning of our services. With this belief we destined to bring in products, which are customer oriented. We have the ability to offer you the best value products that meet or exceed expectations all at competitive prices.

We are engaged in **manufacturing & exporting** following products and are in a position to supply the same at a very competitive price and better technology with strong service after sales support:

- |   |   |
|---|---|
| ✓ <b>Distribution/Power Transformers:</b>                   | Up to <b>10 MVA 33 kV Class</b>                                       |
| ✓ Transformer with <b>OLTC</b> Arrangement                  | Up to <b>10 MVA OLTC 33kV Class</b>                                   |
| ✓ <b>Furnace</b> Transformer                                | Up to <b>10MVA (11/33 kV)</b>   |
| ✓ <b>Earthing</b> Transformers                              | Up to <b>2 MVA 11 kV Class</b>  |
| ✓ <b>Variable</b> Transformers                              | Up to <b>10 MVA 11 kV class</b>                                       |
| ✓ <b>Isolation transformer/Ultra Isolation</b> Transformers | Up to <b>5 MVA Low voltage class.</b>                                 |
| ✓ Special Purpose Transformers                              | <b>Any kind of Step Up/Down</b>                                       |
| ✓ <b>Unitized Substation (Package Substation)</b>           | Up to <b>6.3 MVA</b> with oil cooled Trf.                             |
|   | Up to <b>2.5 MVA</b> with Dry cast resin Trf                          |
| ✓ <b>Automatic Servo Voltage Stabilizer</b>                 | Up to <b>8000 KVA</b> for low voltage class<br>(In Linear Technology) |
| ✓ <b>Rectifiers</b> for DC Applications                     | Up to <b>25000 DC Amps.</b>   |
| ✓ <b>HT Automatic Voltage Stabilizer</b>                    | Up to <b>15 MVA 11 &amp; 33 kV class</b>                              |
| ✓ <b>Transformer with built in HT AVR</b>                   | Up to <b>15 MVA 11 &amp; 33 kV class</b>                              |
| ✓ <b>Skid Based Transformers with Cage</b>                  | Up to <b>6.3 MVA 11 &amp; 33 kV class</b>                             |

**DUTY CYCLE:** Our products are Heavy Duty in construction and are suitable for 100% load for continuous duty cycle. Hence customer should install Servo Voltage Stabilizer as per their running load keeping some margin for future expansion.



**MEHTA POWER**

### **Quality Policy**

Mehta Power's is committed to satisfy customer by supplying quality & energy efficient products as per customers specifications at reasonable price and will continually improve the effectiveness of quality improvement system.

### **Our Mission**

Mehta Power's mission is to provide creative and cost-effective power solutions. Our reliable engineering solutions provide a constant source of power for the future, whilst sustaining the environment.

### **Our Strategy**

With our state-of-the-art in-house design, manufacturing, and testing facilities, our strategy is to continue to steadily expand our product range, ensuring that the company offers one of the widest ranges available in the world. We design and develop innovative and bespoke solutions to even the most challenging customer requirements.

### **Company Future Plan**

Our plan is to continue as a centre of excellence, while developing talent from within, ensuring that we provide only the very best power solutions for our customers' ever changing needs.

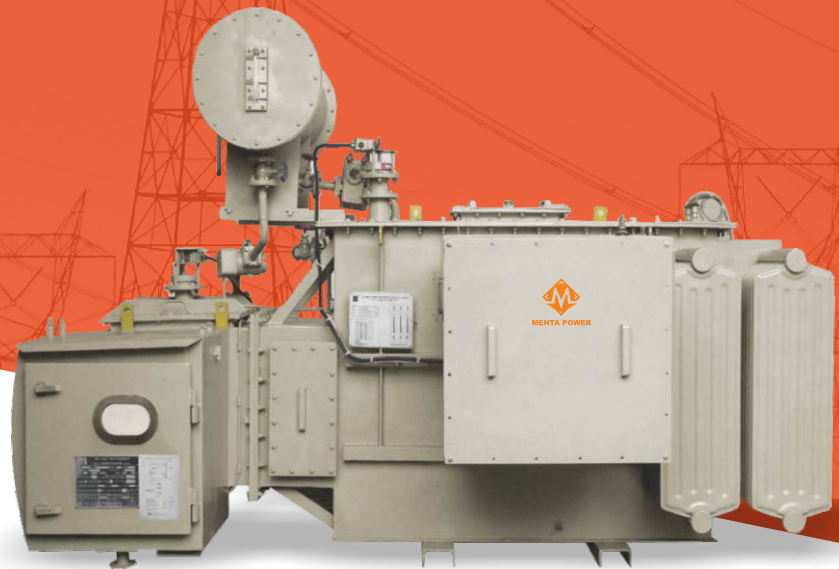
### **Dream Big Inspiring Solutions**

Mehta Power's has been integral in the design and manufacture of environmentally responsible power solutions for a customer, who are the pioneers of emission free trains. Making use of emerging technologies, they bring innovative and smart ideas to benefit passengers, operators, the environment, and the wider rail industry.

# OIL IMMERSED DISTRIBUTION TRANSFORMER



MEHTA POWER



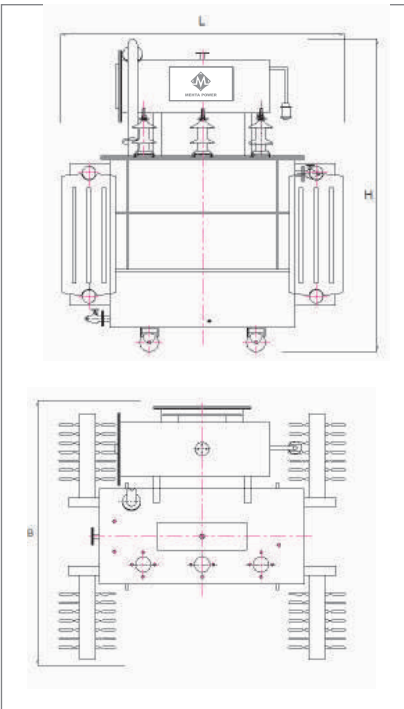
## STANDARD FITTINGS

- 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

<b>Duty, Type</b>	Outdoor / Indoor, Pole or Ground Mounted
<b>Voltage Class</b>	3.3, 6.6, 11, 22, 33 kV or any specific
<b>No of Phases</b>	1 or 3 Phase
<b>Frequency</b>	50/60 Hz
<b>Vector Group</b>	Dyn1 or Dyn5 or Dyn11 or any specific
<b>Insulating Fluid</b>	PCB FREE Mineral Oil, both inhibited & uninhibited, as per IS/IEC, ASTM D3487 and customer requirement
<b>Class of Insulation</b>	Class A
<b>Tap Changer</b>	Off Circuit or On Load
<b>Tapping Range</b>	$\pm 2.5\% \times 2$ for OCTC or $+ 1.25\% \times 4$ & $- 1.25\% \times 8$ for OLTC or as per customer requirement
<b>Winding Material</b>	Aluminium or Copper with multi paper covering
<b>Applicable Standards</b>	IS 2026, IEC 60076, ANSI, IEEE
<b>Painting</b>	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 Mehta Power 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.	RA	OVERALL DIMENSION (MM)			STANDARD LOSSES (W)		OIL QTY. (LTRS)	TOTAL WT. (KGS)
		NO.	(kVA)	LENGTH(L)	BREADTH(B)	HEIGHT(H)		
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.

# CAST RESIN DRY TYPE TRANSFORMER



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## 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

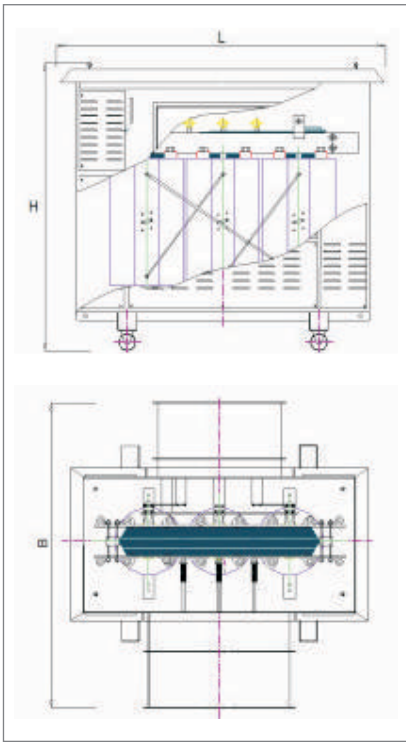
## SAFETY FEATURES

- Environment Friendly
- Fire Resistance
- Non-Hygroscopic

## ▶ TECHNICAL SPECIFICATIONS

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

## PRODUCT DIAGRAM



## 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

## GENERAL DETAILS

We at Mehta Power 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 specially needed in distribution network for feeding basements or stilts of high-rise buildings, hotels, Malls, stadium, air ports, chemical & renerly plants. Following are the dimensional, weight & quantity details along with standard losses for conventional 11kV, (off circuit Type) Cast Resin Transformer (CRT).

SR.	RATING	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 specic or special requirement.*

## 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 enuring low partial discharge.
- Smooth surface nish 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.





MEHTA POWER

# AUTOMATIC VOLTAGE CONTROLLER

Empowering the  
the POWER behind you



## INTRODUCTION

Voltage Variation is a common phenomenon across the world, esp. in developing and under-developed nations. Voltage variation manifests in many different ways:

- **Low Voltage or Sags:** Sags might be due to undersized distribution lines, connection of large loads to the network, ground faults, units located towards end of a long supply line, etc,
- **High Voltage or Surges:** Surges might be generated by disconnection of large loads, increase voltage at generating plant, atmospheric events, units located close to start of a supply line, etc.
- **Unbalanced Voltage:** Phase to phase unbalancing in voltage is generally observed where multiple consumers draw power from a common distribution line or in remote locations far from power grid.

The duration of the above phenomena depends on the cause and is not easily predictable. Generally, voltage is low during the daytime and high during the night hours. Moreover, on holidays, peak hours, rainy days and when the commercial /agriculture load is switched off, the voltage rises quite sharply.

## IMPORTANCE OF VOLTAGE STABILIZERS

Let's draw an analogy of a human body. Our body needs to maintain a constant temperature of 98.4°F to work effectively. Even a minor increase or decrease in body temperature can reduce our efficiency and can lead to further deterioration of one or more body parts. Similarly, most electrical equipments require a constant voltage supply of 400V to last longer & run efficiently. Electric Motors draw considerably high current at High/Low voltage, causing excessive power losses and resulting in their premature failure. Similarly, Bulbs / Tubes / Luminaires could consume up to 40% more power at high

voltage and may last for a mere 10% of their normal life. The growing use of electrical and electronic equipments, requiring a near constant voltage supply for efficient operation, makes line voltage regulation increasingly necessary and to finer limits operation. Voltage variations can play havoc with electronic systems and even bring the whole plant to a grinding halt. Even though you may currently not be experiencing the negative effects of voltage variations, it doesn't imply that your unit is free from that problem! Your supply may be full of variations, but none has yet been severe enough to trigger a shut down. Your electrical gadgets may be exposed to a significant risk, where a small increase in severity of the voltage

## ILL-EFFECTS OF UNSTABLE VOLTAGE

- Frequent breakdowns/faults in motors, bulbs, lamps, machinery, electronic cards, etc.
- High electricity consumption
- Loss of production
- Quality rejections
- High Diesel costs due to switching to costlier D.G. power
- Loss of data, security failure, inaccurate information, etc.

Voltage Stabilizers have proven to be an efficient answer to prevent from aforesaid potential damages, and to ensure continuity and quality of production.



## WHO NEEDS TO BE STABILIZER

If your unit is suffering from low / high / unbalanced voltage, you need to install a stabilizer soon. Industrial units having acute / higher failure rate of Electrical Equipment such as bulbs, tubes, chokes, starter, contactor coils, motors etc., should verify that it may be due to voltage variation (esp. high voltage). You may note down hourly readings of incoming voltage of incoming voltage for a few days continuously. If you find that input voltage is lower or higher than 230V (single ph) / 400V (3-ph) even for few hours a day, then you definitely require a stabilizer. Call our Engineers for Free On-Site Voltage Analysis.

**Capacity: 100 to 5000 KVA**  
**Save Energy upto 30% Reduce Breakdown upto 80%**



Carbon Roller Assembly

## ADVANTAGES OF AUTOMATIC VOLTAGE CONTROLLER (AVC)

Mehta Power AVC resolves 99% of voltage problems automatically, and ensure steady voltage supply round the clock. Some key advantages of installing an AVC are:

- Up to 80% Reduction in Breakdown of Electrical Equipment.
- Up to 30% savings in Electricity Costs
- Enhanced Productivity of Plant.
- Uniform Quality of End Product
- Reduction of MDI (Peak Demand)
- Improvement in Power Factor
- 80% Depreciation as per Income Tax Act in India. (Being an energy saving device)

The table below gives approx. quantitative advantages of AVC at various voltage fluctuation levels:

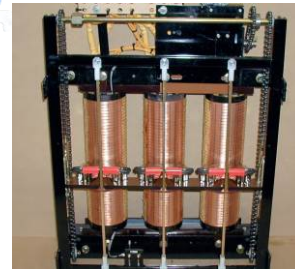
Input Voltage Variation	% Reduction in Breakdown Possible		% Power Saving Possible	
	Motor Load Below 10HP	Lighting Load	Motor Load Below 10HP	Lighting Load
380-400 Volts	Nil & no servo stabilizer required			
380-420 Volts	5%	10%	3%	5%
380-440 Volts	10%	20%	5%	10%
380-460 Volts	40%	40%	7%	20%
380-480 Volts	60-80%	60-80%	10%	30%

## PAY BACK PERIOD

MEHTA POWER AVC ensures continuity in production and consistency in quality despite incoming voltage variations. And more often than not, it is simply avoiding a few minutes machine downtime or just one failure to recover the cost of the equipment. Owing to its high efficiency and associated benefits, the pay back period for the cost of our AVC is typically between 6 to 18 months, depending upon the nature & duration of load and the extent of voltage variation.



Small Capacity AVC  
30 to 75 KVA



Linear Type Regulator  
Inner view



Carbon Roller  
Linear Regulator

## AVC APPLICATIONS

MEHTA POWER AVCs are installed either along with the main Distribution Transformer / Panel to ensure stabilized voltage supply to entire plant & machinery/complex, or along with individual machines or processes to hold voltage / current / power / temperature / lighting intensity constant. Our AVCs find wide application across all kinds of machines or industries / commercial / residential complexes.

- |                            |                         |                         |                             |
|----------------------------|-------------------------|-------------------------|-----------------------------|
| • Mines & Collieries       | • Cement Plants         | • Flour Mills           | • Rice Shellers             |
| • Hotel & Restaurants      | • Food Processing Units | • Pharmaceutical Units  | • Engineering Products      |
| • Hospitals & Clinics      | • Tea & Coffee Estates  | • Paper Mills           | • Cold Storages             |
| • Oil Plants               | • Rubber Industries     | • Textile Mills         | • Warehouses                |
| • Rolling Mills            | • Plastic Moulding      | • High Rise Buildings   | • Leather & Footwear        |
| • Vineyard & Poultry Farms | • Sponge Iron Units     | • Breweries & Beverages | • Showrooms                 |
| • Schools & Colleges       | • Offices & Residences  | • Shopping Malls        | • Any Kind of manufacturing |

## MEHTA POWER LINEAR VOLTAGE REGULATOR TECHNOLOGY

The MENTA POWER Linear Voltage Regulating Transformer has been specially designed to meet a wide variety of heavy-duty Industrial applications Globally, these have become an established method of control, wherever continuously variable on-load control of voltage & power is needed. These regulators are wound with heavy section of copper strip and aresuitable for 100% continuous duty cycle. They have an economic life of about 20-25 years atfull load and require negligible maintenance throughout their life.MEHTA POWER Voltage Regulating Units combine fixed ratio transformers with regulating transformers to extend their rating, versatility and applications. Mehta Power AVC primarily consists of following key components housed in the same tank.

- Linear +/- Vertical Rolling Contact type On-Load Voltage Regulator
- Double Wound Buck / Boost Transformer
- Control Panel with Microprocessor based control module

## MEHTA POWER FIVE YEARS UNCONDITIONAL GUARANTEE

Our promise of Quality, Service & Commitment Guarantees you Total Peace of Mind for decades together. MEHTAPOWERAVCs come with an Unconditional Guarantee for Five Years against any manufacturing defect. You pay absolutely nothing for visits, spares, service or replacement during these 5 years

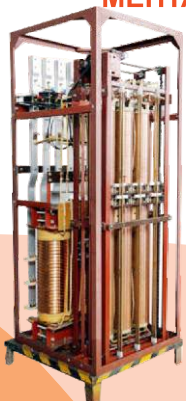


### TECHNICAL SPECIFICATION

Capacity	30 kVA to 5000 kVA				
Technology	Linear Type On-Load Voltage Regulators with stepless Regulation (also referred to as Vertical Rolling Contact or Columnar Design)				
Control Module	Microprocessor based				
No. of Phases	Three-Phase				
Frequency	50 / 60 Hz $\pm$ 5%				
Type	<b>Balanced</b> (Common Control for all three phases. Suited for Balanced input supply & up to 40% unbalanced load) <b>Unbalanced</b> (Individual Phase Control. Suited for unbalanced input supply & unbalanced load)				
Load Variation	Admitted from 0 to 100%				
Installation	INDOOR/OUTDOOR as per site requirement				
Cooling	Natural Oil-Cooled, ONAN (available in all models) Air-Cooled, Natural / Forced (available in select models)				
Output Voltage	400V $\pm$ 1% (Ph-Ph) / 230V $\pm$ 1% (Ph-N)				
Input Voltage	350-450V	340-460V	330-470V	320-480V	300-500V
	*(wider & asymmetrical range are manufactured on order)				
Efficiency	~99.5%	>99%	~99%	~98.5%	>98%
Duty Cycle / Life	Designed for 100% Continuous Duty Cycle & for a life of 18-20 years at extreme conditions.				
Response Time	Less than 10 milliseconds.				
Correction Rate	6-15 Volts/second (upto 500kVA) and 3-8 Volts / second (above 500kVA)				
Waveform Distortion	Virtually Nil				
Ambient Temperature	-10 to 45°C				
Temperature Rise	Designed for 30°C rise above ambient at full load (against IEC std. of 45°C)				
Mounting	On Unidirectional Wheels				

### COMPARISON BETWEEN

#### MEHTA POWER AUTOMATIC VOLTAGE CONTROLLER VS CONVENTIONAL STABILIZER



#### Mehta Power Linear Voltage Regulator with Carbon Rollers

- Power consumption is 0.5 to 1.5 %
- Suitable for 100% continuous duty cycle
- Life at full load is 15-20 years
- Negligible Maintenance throughout life
- Five years unconditional Guarantee
- Compact construction

#### Conventional Dimmerstate Type Stabilizer with Carbon Brushes

- Power consumption is 3 to 7 %
- Suitable for only 50 to 60% continuous duty
- Maximum life is 2-3 years at full load.
- Require Frequent Maintenance
- Normally One year Warranty
- Very bulky in size





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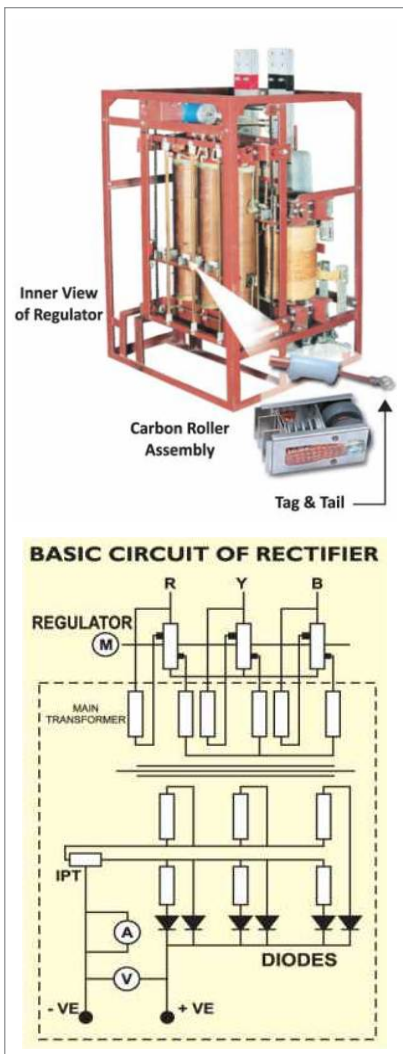
# SILICON POWER RECTIFIERS

POWER packed performance...

- Electroplating
- Cleaning
- Etching
- Stripping
- Barrelling
- Anodising
- Hydrogenion
- Electrowinning
- Other Electrochemical Process



## PRODUCT DIAGRAM



## GENERAL DETAILS

MEHTA POWER rectifier are designed for continuous rated current with adequate margin of safety and are capable of working at 100% load factor.

## TECHNICAL SPECIFICATION

Metha Power rectifiers are designed for continuous rated current with adequate margin of safety and are capable of working at 100% load factor: The Standard specification are as follows:

<b>Input Voltage</b>	400 Volts, 3-Phase, 50 Hz, AC Supply
<b>Output Voltage</b>	Fixed rated maximum DC voltage or variable from zero to maximum rated voltage
<b>Output Current</b>	From zero to rated maximum DC current
<b>Temperature Rise</b>	Less than 35 degrees celsius above ambient at the top of the coil
<b>Efficiency</b>	<ul style="list-style-type: none"> <li>• 12 V Rectifier : 82%</li> <li>• 24 V Rectifier : 90%</li> <li>• 100 V Rectifier : 94%</li> <li>• 200 V Rectifier : 92%</li> <li>• More than 250 V Rectifier : 97%</li> </ul>
<b>Ripple Content</b>	Less than 5% optional feature of 1.5% Ripple Content also available
<b>Insulation</b>	'A' class for oil cooled

## THE STANDARD EQUIPMENT CONSISTS OF:

- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>• <b>Linear type continuously variable Rolling Contact type ON-LOAD Voltage Regulator</b> (with straight <math>\pm</math> connection) operable electrically with the help of raise/lower push button and a step-synch motor or manually with the help of a 'T' handle</li><li>• Copper wound delta/double star (hexa-phase) step down transformer as per IS 2026</li><li>• Copper wound Inter phase transformer</li><li>• Junction Box for Three Phase Input terminals and aluminum Bus Bars for DC Output (Cu Bus Bars optional)</li><li>• Meter panel with DC Voltmeter and DC Ammeter and raise/lower push buttons.</li></ul> | <ul style="list-style-type: none"><li>• Thermometer Pocket</li><li>• Oil fill plate</li><li>• Oil level gauge</li><li>• Oil drain out valve</li><li>• Lifting lugs</li><li>• Wheels for uni-directional movement</li><li>• Name plate with complete specs of the equipment.</li><li>• Earthing terminals</li><li>• Indicator lamps for RYB input AC supply, as per IS-1248</li><li>• <b>First Filling of OIL</b></li></ul> |
|--|--|

## STARTING CIRCUITRY

Mehta Power Rectifiers are designed for 3 phase, 50 Hz, 400 Volts, AC Input supply. It is recommended that the input of the rectifier should be connected through a proper protective device, to provide positive protection to personnel and the system, in the event of maintenance or in case a fault occurs. Incoming protection switch gear (contractors / MCB etc.) can be provided as optional features, if required.

## DC. OUTPUT CONTROL

The function of the variable output controls is to control the voltage or current or its operating range by varying input voltage to the main transformer primary. The DC output voltage variation is achieved steplessly 0-100% by means of an ON LOAD roller type MEHTA POWER make voltage regulator.

## SPECIAL FEATURE

**On Load Voltage Regulator:** MEHTA POWER Rectifiers are equipped with Vertical Rolling Contact Type ON LOAD Voltage Regulators, which are manufactured by us in-house & is actually our forte across the country Our Voltage Regulators are +/- type wound with heavy section of copper strip and fitted with Carbon Rollers (As illustrated in our brochure enclosed). The copper section is 3 times than that in conventional dimmer/thyristor controlled rectifiers, and hence, losses are less than 20% compared to the latter. The efficiency of our Regulators is more than 99% (which is 4-5% better than conventional dimmer types) and they are designed to deliver 100% continuous duty cycle. These regulators have an economic life of about 20 years without any trouble.

MEHTA POWER Rectifier equipments are wound with electrolytic prime grade copper strip to minimise power losses, in comparison to Aluminium conductor used by many other manufacturers. Our equipments are designed liberally as per capacity and are also suitable for marginal over loading conditions.

**BUSBARS:** Aluminium Bus Bars / Annealed Copper bus bars of electrolytic grade with conductivity greater than 99.99% as per IS: 6131984 are used. Inner View Of Rectifier

**DIODES:** Silicon diodes are tested in house. Similar PIV batch and same forward drop diodes are used in the equipment for equal load sharing and reducing the power losses of diodes. The diodes in the Rectifiers are fitted with suitable heat sink whenever necessary.

**IPT:** Inter Phase Transformer-IPT is connected between two star points of the secondary of the main transformer. The IPT improves the commutation, thereby increasing the rating of the Rectifier.

**LAMINATION CORE:** We use imported CRGO Lamination of grade M3 or M4 which has minimum power losses and results in better efficiency of equipment and savings in energy bill.

**PAINTS:** We paint the equipment with Epoxy Paint after two coats of epoxy primer (ROP), which is resistant to acidic environment of plating process and enhances the life of the equipment by preventing it from corrosion.8. **METER:** We use reputed make (AE / RISHABH / CONZERV or equivalent) DC meters only, which are very accurate and durable

**SERVICING:** MEHTA POWER have maintained an enviable reputation in after sales service right since its inception. Our service engineers, stationed across the sub continent, deliver prompt pre sales and post sales support to our clients.



**MEHTA POWER** Rectifier equipments come with an unmatched **FIVE YEARS GUARANTEE** against any manufacturing defect from the date of supply. We do not charge anything for the visits and spare parts and during the guarantee period.

Note: Diodes are not prone to ageing and get damaged only due to short circuit on the output side, hence the same are not covered under guarantee



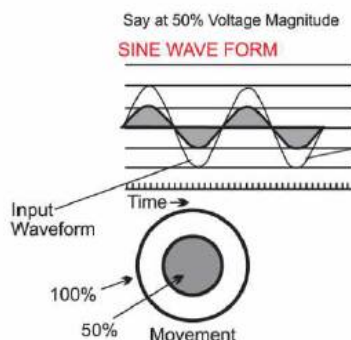
## OPTIONAL FEATURES

Mehta Power offer following optional features with rectifier equipment

Item	Application	Advantage
Constant Voltage Controller (CVC)	The CVC will automatically maintain a constant output voltage as per setting, irrespective of input voltage variation	By using CVC, uniform of plating can be maintained thereby controlling excessive consumption of plating raw material at high voltage.
Constant Current Controller (CCC)	The CCC will automatically maintain a constant output current as per setting, irrespective of input voltage variation	By using CCC, uniform of plating can be maintained thereby controlling excessive consumption of plating raw material at high voltage.
DC Overload Trip System	The DC Overload Trip instrument will sense the signal from the output of the Rectifier and trip the main contactor in case of overshooting the set range.	By using the DC Over Load Trip system, the diodes will be saved during any accidental short circuit in the bus bars or in the tank.
Signal Isolators	The Signal Isolators can be used to avoid the milli-volt drop of the Ammeter/ Voltmeter signals. The isolators can give output in milli-Volts / milli-Amps	Ideal for use when the Voltmeter/Ammeter panel is kept too far from the Rectifier. These Signal Isolators are also necessary for the input signals to the PLC panel, i.e. to make the Rectifiers PLC compatible.
Zero Run Down System	With the help of Zero Run Down system, once the Rectifier trips or is switched off while working, it will automatically start from 0 Volts when restarted.	This saves the diodes from sudden load current, thus increases the life of the equipment.

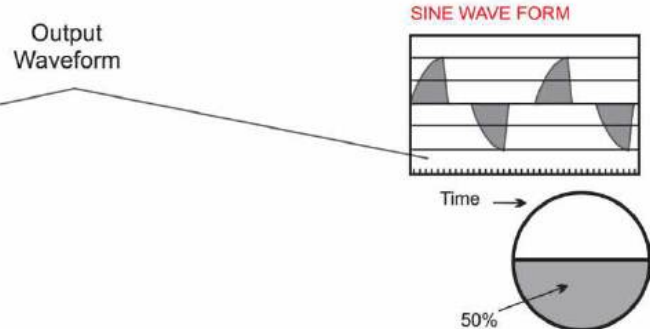
## Advantage of Linear Type Regulator as compared to Thyristorised Control

### LINEAR TYPE REGULATOR



- No wave form distortion at any load
- Electrical wave form is like a moving wheel. For 50% rated Voltage the Dia of wheel is reduced accordingly i.e. magnitude for a wave is decreased.
- Higher power factor of more than 0.95 is achieved.
- The system is simple and can be repaired and maintained by ordinary mechanic / electrician.
- Virtually maintenance free. Cost of spares in negligible.
- Proven extra long life of 30+ years.
- Overall losses are less.
- Five years guarantee.

### THYRISTORISED CONTROL



- Wave form distortion. It is like cutting the wheel by 50% and then moving the wheel i.e. wave form is cut as shown at full magnitude.
- The power factor is lower between 0.5 to 0.9.
- The system is specialized and needs specially trained Electronic Engineer to repair and maintain.
- The cost of replacement is very high.
- Life of electronic cards / thyristors is very short and unpredictable.
- Over all losses are more.
- One year warantee.



MEHTA POWER

# HT Automatic Voltage Regulators

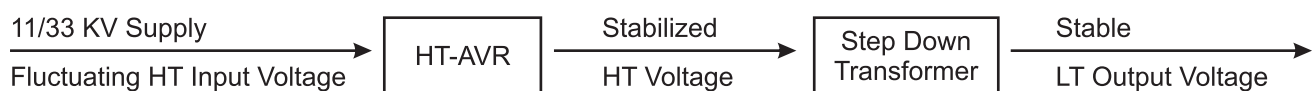
## HT-AVR UPTO 33kV Class



### HT Automatic Voltage Regulators (HT-AVR)

It is seen that despite best efforts by many Electricity Boards/supply undertakings, due to diverse loading duties arising in transmission and distribution network, voltage at consumer end is never constant. This low/high voltage is applied to all electrical machines like Transformers, Motors etc. hence causing loss in substantial electrical energy. Besides voltage fluctuations also play havoc by damaging expensive, sophisticated, CNC/PLC controlled equipment lighting elevators, etc. Therefore arising a need to conserve energy as power tariffs ever increasing.

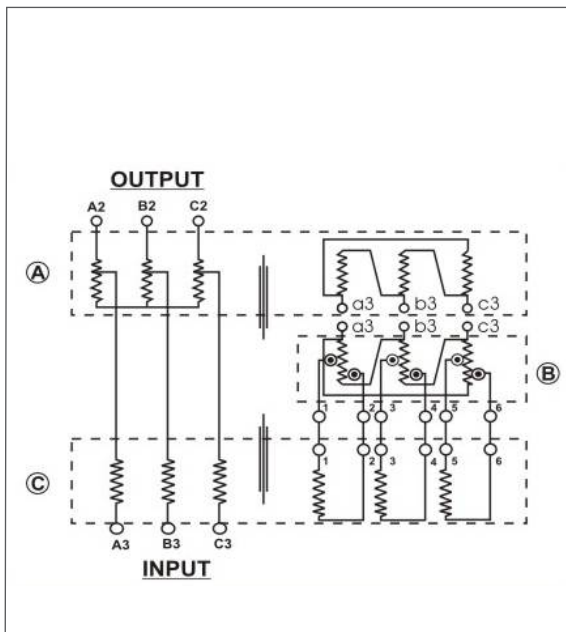
We manufacture HT-AVRs that are designed to overcome control voltage fluctuations due to diverse loading duties & line losses arising in transmission & distribution network. These are designed for balanced as well as unbalanced loads & balanced input voltage supply. HT-AVR operates ON Load directly on the HT line and provides a stabilized HT output voltage of-1% that is fed to the step down transformer resulting in constant/stable LT output. The line diagram is given below showing the same



## APPLICATIONS

HT-AVRs are virtually required at all such places where controlled and constant voltage is one of the most important requirements and are suitable where breakdown due to voltage fluctuation results in heavy financial losses. Like Hospitals, Laboratories, various life saving Et testing equipments, pharmaceuticals, Research Institutes, Defense, Telecommunications, Air Conditioning, Data Processing, Electronics based Industries, Educational Institutes, Food processing units, Paper plants, Footwear and Leather Industries, Cement plants, Textile Industries, moulding units, hotels, farm houses, offices and residences/ housing apartments, etc.

## BASIC CIRCUIT OF H.T. AVC



- (A) Step Down Transformer
- (B) Voltage Regulator
- (C) Buck Boost Transformer



Main Transformer & Buck Boost Transformer



Linear Type Voltage Regulator

## ADVANTAGES

- HT-AVR supplies rated Stabilized Voltage to the Transformer, thereby the utilization of the transformer will be up to full rated capacity and is protected from High/Low voltage fluctuations
- Low losses as voltage fluctuation is removed from the system
- Single unit of HT-AVR can be connected to multiple Distribution Transformers
- Reduction in Breakdown of Electrical Equipment
- Power Saving (Reduction in Power Bills).
- Improvement in power factor and reduction in MDI.
- Better efficiency in plant.
- Being categorized as a power saving device the payback period for the cost of our HT-AVR is from 12-15 months depending upon the input voltage and no. of working hours of the plant

## KEY FEATURES

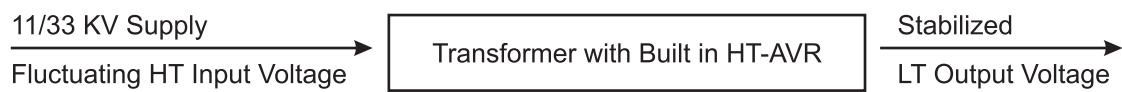
- Compact Design
- Minimum Power Losses
- Better Efficiency
- Low Input ranges can be stabilized in High Ratings
- As low as 6 KV-12KV upto 5000 KVA capacity
- Fast response time
- Low Maintenance
- Trouble Free operation
- Long service Life
- Space Saving
- Reduced Installation Cost
- Reduced in Electricity Bill
- Suitable for corrosive industrial sites

## TRANSFORMER WITH BUILT IN HT-AVR

We offer state of the art Transformer with Built in HT-AVR. It is a combination of HT-AVR and a standard distribution transformer.

The fluctuating HT voltage from the utility is controlled by the HT AVR with accuracy of  $\pm 1\%$  and then fed to the transformer, which transforms it to the standard ratio as per the specifications of the distribution transformer, to LT voltage. Subsequently, stabilized HT voltage will result in a stabilized LT voltage with accuracy of  $\pm 1\%$ . Basically, stabilized LT voltage can be obtained through a single device.

The line diagram is given below showing the same.



The main advantages is that very low input ranges in higher ratings (from 5KV) can also be stabilized.

## CARBON ROLLER ASSEMBLY

- Reduction in Breakdown of Electrical Equipments.
- Uniform Quality of end product.
- Power Saving (Reduction in Power Bills).
- Better Efficiency in Plant.
- Improvement in Power Factor (Oil in case of High Voltage).
- Reduction in Maximum Demand.
- 80% Depreciation as per Income TAX ACT.



## PAYBACK PERIOD

Owing to its high efficiency and associated benefits, the payback period for the cost of **MEHTA POWER** HT-AVR is from 6-12 months depending upon the input variation and number of working hours of plant. the HIGHER the input voltage the SHORTER will be payback period.

## SUGGESTION FOR INDUSTRIAL UNITS HAVING OLTC.



The units which have already installed OLTC with their Transformer, also require stabilizer due to the reason that the tapping of OLTC is not changed frequently. It is changed only when the problem of very or very low voltage is felt. On the other hand, the stabilizer continuously monitors the output voltage level. However the input voltage range of Stabilizer can be kept low where OLTC is installed.





MEHTA POWER

# UNITISED SUBSTATION

POWER packed  
performance...



## 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

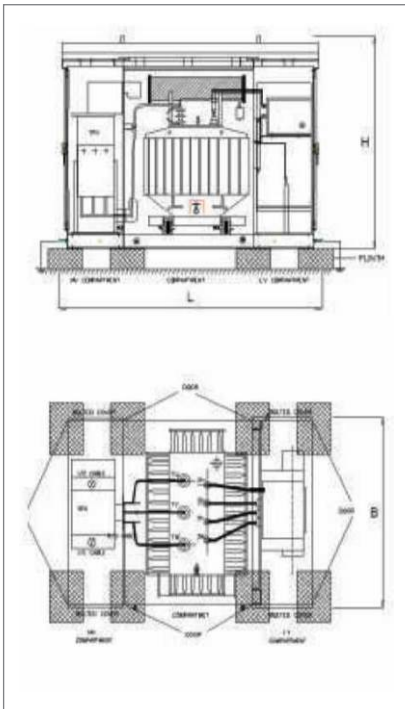
### Transformer Compartment

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	Dyn 1 to Dyn 5 or Dyn 11 or any specific

### Low Voltage Compartment

LV Switchgear	ACB's, MCCB's
Current Rating	Up to 4000 Ams
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 is 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.	Rating (kVA)	Overall dimension (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:



Airports



IT Industries



Theatre / Mall



Refineries



Mines



Construction Site

## ASSURED FEATURES

M.V. Compartments	Transformer Compartments	LV Compartments
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	Bucholz Relay with Alarm & Trip contacts	L.T. Earth fault & Over current relay

# SOME OF OUR CLIENTS





**MEHTA POWER**



## **Mehta Power Electrical**

**AN ISO 9001:2015 Certified Co.**



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