

# JINDAL'S

Widely acclaimed as South Asia's Largest Power Control Company, are Pioneers in the field of Industrial Voltage Stabilizers & Rectifiers



**47** Years of  
Leadership

**174+** Sales & Service  
Centres across  
India & Abroad

**25000+** Installations  
across Industry

**JINDAL'S** Automatic Voltage Controllers are trusted in more than  
35 countries across 5 continents

## 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 / agricultural 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 variations could cause crippling losses.

## 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 A 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 for a few days continuously. If you



Saves Energy upto 30%  
Reduces Breakdown upto 80%

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 Engineer for Free On-Site Voltage Analysis.

## ADVANTAGES OF AUTOMATIC VOLTAGE CONTROLLER (AVC)

JINDAL'S AVC resolves 99% of voltage problems automatically, and ensures 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 in 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	Lighting	LoadMotor	LoadLighting
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



JINDAL'S 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 5 to 18 months, depending upon the nature & duration of load and the extent of voltage variation.



Inner view of Stabilizer

## BRIEF TECHNICAL SPECIFICATIONS

Voltage variations can play havoc with electronic systems and even bring the whole plant to a grinding halt. Even if you have not experienced any major negative consequences of voltage variations so far, still your supply could be full of variations with none being severe enough to trigger a shut down. Just a small increase in severity of voltage variations could cause crippling losses.

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 and 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 ranges 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 (up to 500 kVA) and 3 – 8 Volts / second (above 500 kVA)				
WAVEFORM DISTORTION	Virtually Nil				
AMBIENT TEMPERATURE	–10 to +45 °C				
TEMPERATURE RISE	Designed for 35 °C rise above ambient at full load (against IEC std. of 45 °C)				
MOUNTING	On Unidirectional Wheels				
TERMINATIONS	Aluminium Bus – Bars are provided for Input & Output in a common junction box				

## AVC APPLICATIONS

JINDAL'S 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
Hotels & 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
Vineyards & Poultry Farms	Sponge Iron units	Breweries & Beverages	Showrooms
Schools & Colleges	Offices & Residences	Shopping Malls	Any kind of manufacturing

## JINDAL'S LINEAR VOLTAGE REGULATOR TECHNOLOGY

The JINDAL'S 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 are suitable for 100% continuous duty cycle. They have an economic life of about 15–20 years at full load and require negligible maintenance throughout their life.

JINDAL'S Voltage Regulating Units combine fixed ratio transformers with regulating transformers to extend their rating, versatility and applications. JINDAL'S AVC primarily consists of following key components housed in the same tank.

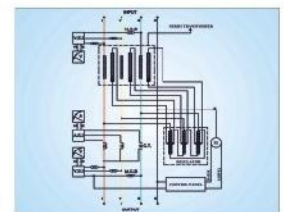
1. Linear +/- Vertical Rolling Contact type On-Load Voltage Regulator
2. Double Wound Buck / Boost Transformer
3. Control Panel with Microprocessor based control module



Carbon Roller



Linear Voltage Regulator



Basic Circuit

## COMPARISON BETWEEN JINDAL'S & CONVENTIONAL AUTOMATIC VOLTAGE CONTROLLER

JINDAL'S LINEAR VOLTAGE REGULATOR WITH CARBON ROLLERS	CONVENTIONAL DIMMERSTAT TYPE REGULATOR WITH CARBON BRUSH
1. Power consumption is 0.5 to 1.5 %	1. Power consumption is 3 to 7 %
2. Suitable for 100 % continuous duty cycle	2. Suitable for only 50 to 60% continuous duty
3. Life at full load is 15-20 years	3. Maximum life is 2-3 years at full load
4. Negligible Maintenance throughout life	4. Require Frequent Maintenance
5. Five Years Unconditional Guarantee	5. Normally One Year Warranty
6. Compact construction	6. Very bulky in size

## JINDAL'S FIVE YEARS UNCONDITIONAL GUARANTEE

Our promise of Quality, Service & Commitment guarantees you Total Peace of Mind for decades together. JINDAL'S AVCs 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.



**NOW** Also Manufacture AIR COOLED VOLTAGE STABILIZERS In Collaboration With IREM SpA OF ITALY

AUTOMATIC VOLTAGE CONTROLLERS

SILICON POWER RECTIFIERS

SPECIAL PURPOSE TRANSFORMERS

LED LAMPS & LIGHTING

EMI FILTERS & CONNECTORS

MICA CAPACITORS

**JINDAL'S**

SOUTH ASIA'S LARGEST  
POWER CONTROL COMPANY

**JEMC**  
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& MACHINERY CORP.  
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