



SERVOKON

RAKHE SAB CONTROL MEIN



**CPRI
TESTED**

**HT AVR
&
TRANSFORMER WITH BUILT IN HT-AVR**

**Upto 10 MVA
11 & 33 KV Class**

About Us

Servokon Systems Ltd. was established in 1990 and since then, it is one of the leading manufacturers & exporters of Power Conditioning Products in the country.

Servokon is professionally managed approved and ISO 9001: 2008, 14001:2004, CE certified company with a churning turnover of over 100 crores, having 250 professional and trained personnels at all levels to meet the commitment and provide highly reliable, robust, versatile products and prominent services.

We are maintaining to state-of-the-art testing lab with most advanced testing facilities. Our products confirm specifications as per IS: 9815-94, IEC & BS and other Indian Standards. Quality and standard of our products have been approved by various National Inspecting Agencies viz. Engineers India Ltd, (EIL), RITES, Department of Industries, Haryana, SGS, CPWD, DGS&D. Our brand "Servokon" is a registered supplier of the products in various Central & State Govt. Departments viz. GEM, NSIC, MES, PWD, Delhi Jal Board, CPWD and counting.

We have proved our existence through highly renowned awards like "Rashtriya Ekta Puraskar" from the President of India, Mr Shankar Dayal Sharma and recently awarded as "No. 1 in Quality Products" from Uttarakhand Government and the list goes on. India's most trusted brand in Servo Stabilizer awarded by IIBA

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|---------------|--|
| India's No. 1 | "Servo Voltage Stabilizer Manufacturer" |
| India's First | Company to stabilize input voltage of "Minimum 50V" & "Maximum 500V" . |
| India's Only | Company with all types of "HT & LT" voltage stabilizers under one Roof. |
| India's Only | Company with the largest capacity range of voltage stabilizers. "0.5KVA to 10,000KVA" |
| India's First | Company to stabilize the Maximum Voltage Classes "110V, 220V, 400V, 6.6kV, 11kV, 22kV & 33kV" |

HT AVR (High-Tension Automatic Voltage Regulator) Up to 5000 KVA

Servokon offers precision engineered state-of-art HT servo stabilizer (HT AVR), as the name suggests this AVR operates "ON load", continually and directly on the HT line giving stabilized HT voltage output. The fluctuating HT voltage from Grid supply is initially controlled by the HT AVR with accuracy of +/-1% and then fed to the transformer resulting in constant LT output within +/-1% accuracy. This can be understood better by the schematic diagram shown below:



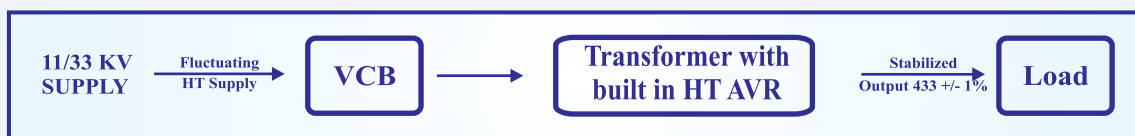
Being a low profile product in the industry, many may not be aware of this product. But, this product has existed and has successfully served a huge clientele in the past decades. Now, we at Servokon have taken the initiative to reintroduce the product in the industry and most importantly manufacture it with its trusted original UK Based mechanism and design.

One of the biggest advantages being its ability to make the distribution transformer be utilized to 100% capacity because the transformer is fed with the rated voltage which is not obtainable when the voltage drops before the transformer; subsequently the current becomes high and hampers the transformer capacity utilization. Another major advantage is that very low input ranges in higher ratings (from 5Kv-upto 5000Kva) can also be stabilized which is not feasible and practical through LT-AVR because of the high current and neither through OLTC because of its limited variation range.

Transformer with Built in HT AVR (Two-In-One/Combo) Up to 5000 KVA

Just like HT AVR, this is also a low profile product in the industry and many may not be aware of this product either. But, this product is in existence and has successfully been serving a huge clientele from the past few decades. Now, we at Servokon have taken the initiative to reintroduce the product in the industry and most importantly, we are manufacturing it, with its trusted original UK based design and mechanism.

Servokon offers innovative state-of-the-art Transformer with built-in AVR, which is a combination of HT AVR and a standard distribution transformer. The fluctuating HT voltage from Grid supply is initially controlled by the HT AVR with accuracy of $\pm 1\%$ and then fed to the transformer which transforms it into its standard ratio to LT voltage. Subsequently, stabilized HT voltage will result in stabilized LT voltage with an accuracy of $\pm 1\%$. Basically input will be 11/33Kv and the output will be LT voltage with $\pm 1\%$ can be obtained through a single product. This can be understood better through the following schematic diagram given below:



The Transformer with built in AVR reduces the installation cost of the plant and even saves the required space in comparison to a Transformer with a separate stabilizer. One of the major benefits is the ability to make distribution transformer to be utilized up to 100% capacity due to the fact that the transformer is fed the rated voltage which is not obtainable when the voltage drops before the transformer; subsequently current becomes high and impedes with the transformer capacity utilization. An added benefit is that very low input ranges in higher ratings (from 5Kv upto 5000Kva) can also be stabilized which is not feasible nor practical through OLTC because of its limited variation range and neither through the LT AVR because of the high current.

ADVANTAGES

- Energy saving between 30% to 40%
- Compact Design
- Minimum Power losses
- Better Efficiency
- As low as 5Kv-12Kv up to 5000Kva
- Low maintenance
- Trouble Free operation
- Long service Life
- Low input ranges can be stabilized in High Ratings
- Reduced installation cost
- Reduced electricity bill
- Suitable for corrosive industrial sites

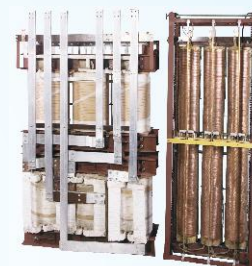
Construction



Graphite Carbon Roller



Inner view of Regulator with carbon roller assembly



Regulator with Buck n Boost Transformer

The unit will comprise of following:

| | |
|----|---|
| 1. | Copper Wound Stepdown Transformer Double wound Star/Delta connected. |
| 2. | On Load Stepless Voltage regulators having Carbon Roller Assembly Copper Auto Wound and Delta connected |
| 3. | Buck n Boost Transformer Double Copper Wound, Open/Open connected |
| 4. | Automatic Control Gear consisting of: <ul style="list-style-type: none">(i) One electronic voltage relay(ii) One reversing geared motor unit(iii) Two limits switches in order to avoid over running highest and lowest positions(iv) Chain drive, coupling device and all electrical connections |

Advantages of "HT AVR" Over "LT AVR"

| S.NO. | HT AVR | LT AVR |
|-------|---|---|
| 1. | Since the stabilized voltage is fed to the transformer, the transformer will be used to its rated capacity. | Since the transformer is getting fluctuating supply voltage the unit can not be utilized at its rated capacity and the rating of the transformer will be restricted to the ratio of minimum supply voltage by the rated voltage |
| 2. | The Efficiency of the transformer will be better since it is fed rated voltage | The efficiency of the transformer will be lower as the transformer is not fed proper voltage |
| 3. | AVR is installed before step-down transformer and stabilized HT supply is fed as the input of the transformer. | AVR is installed after the step-down transformer, Fluctuating HT supply is fed as the input of the step-down transformer |
| 4. | Since the supply to the transformer is at stabilized voltage, the transformer is protected from voltage fluctuations. | Since fluctuating voltage is fed to the Transformer, the unit will not be protected from Voltage fluctuations. |

Advantages of with "Transformer built in HT-AVR" Over "Transformer with OLTC"

| S.NO. | Transformer Built in HT AVR | Transformer with OLTC |
|-------|--|---|
| 1. | Since stabilized voltage is fed to transformer, transformer will be used to its rated capacity. | Since the transformer is getting fluctuating supply voltage, it cannot be utilized to its capacity and the rating of the transformer will be restricted to the ratio of minimum supply voltage by the rated voltage |
| 2. | Wide voltage controlling range can be obtained, depending upon the requirement | Only 20% range can be controlled |
| 3. | On the lowest voltage, the Efficiency of the complete system will be more than 98% (Combined for HT AVR transformer) | On the lowest voltage, Efficiency of the transformer with OLTC will not be more than 60-65% subsequently reducing the transformer capacity drastically. |
| 4. | Full Load Losses at the lowest voltage will not be more than 2-2.5% of the rating. (Combined for HT-AVR transformer) | Full Load losses at lowest voltage will be more than 30% of the rating. |
| 5. | Voltage control is entirely step less, thereby providing close tolerance on the desired output. | Voltage control is in discrete steps and the available output would be dependent on step voltage. |
| 6. | Output voltage of AVR remains constant at any connected load and up to full load. | Output voltage the of transformer drops down under load conditions from rated No-Load voltage depending upon the percentage regulation of the respective unit and percentage of load |

Applications :

- Cement Plant ● High Rise Building ● Cold Storages ● Tea Estate ● Rolling Mills ● Textile Mills ● Paper Mills
- Hotel ● Hospital ● Pharmaceutical Units ● Engineering Units ● Foot & Leather Units ● Rubber Industries etc



SERVOKON

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