A. T. M. S.

Proven Advanced Technology Solutions

MPV Voltage Stabiliser

by **Magtech**

- **Up to double the PV power capacity on existing line**
- **Provides regulated output**
- **Automatic by-pass function**
- **Rapid response (300 msec.)**
- **No moving parts/long life**
- **Stand-alone unit**

The **Magtech** **MPV Voltage Stabiliser** is installed on a feeder to counter the problems of voltage rise due to power from Photo Voltaic or any other distributed generation source. The **Magtech** patented « Controllable Inductance » technology used in the magnetic circuits modulates the voltage level dynamically according to the varying power flow to reduce the "downstream" voltage for any or all of the phases. The input & output reference voltages are 400 V, and once operating, the units need no adjustment. The exemplary reliability and long life (40 yrs) of the sealed copper/iron system is the same as a normal transformer. The system has high efficiency in operation, and when no regulation is required, it automatically changes to by-pass mode. The rapid reaction time (300 msecs.) of the system ensures good supply quality in all power flow conditions.

Accommodating the reverse power flows due to Photo-Voltaic and other distributed energy sources embedded in an electricity distribution network is an emerging problem requiring new solutions. **Magtech** has employed their patented variable inductance technology, proven over many years of use in hundreds of their Voltage Boosting Transformers, in the conception of a revolutionary **Photo-Voltaic Power Voltage Stabiliser** which has no parts in movement during operation, and automatically takes itself out of the circuit when not needed, so as to give maximum efficiency.

The ease of nstallation, long life and almost zero maintenance of the **MPV** makes it clearly the lowest cost and most efficient solution to the problem of voltage rise due to reverse power flow.

The **MPV** can be quickly installed anywhere along the feeder as a permanent solution to voltage rise problems due to embedded generation.

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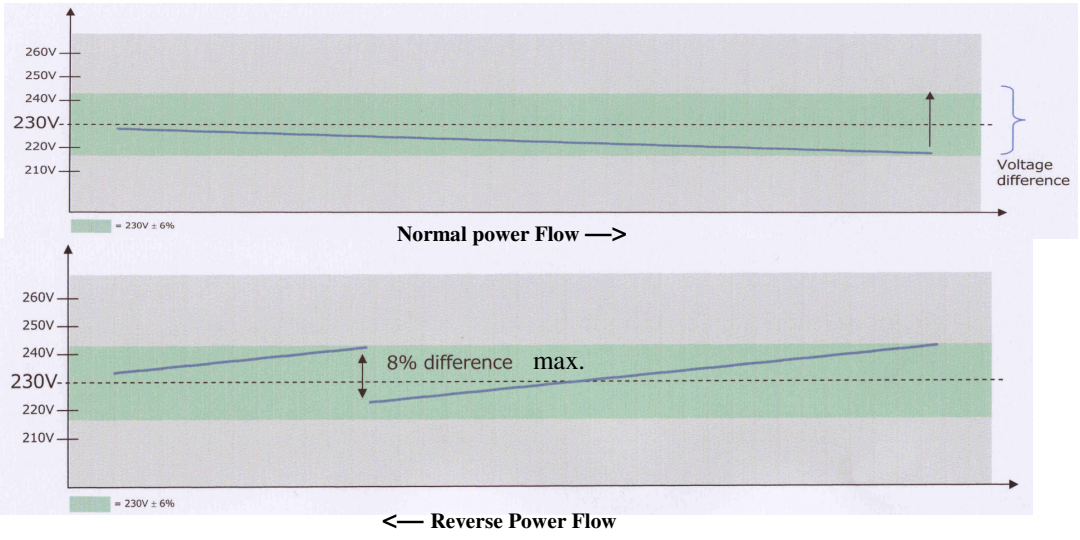
Operation - The increasing installation of generation embedded in the distribution network imposes power flows and loads on the network for which it has not been designed. These inevitably cause excessive voltage rise for many customers unless a solution is implemented, and **Magtech** offers the **MPV** as a single feeder solution which holds down the voltage using continuously variable inductance. This variation dynamically changes the coupling between the primary and the secondary windings, with a response time of 50 to 200 msec. This is done very efficiently (>98%) and independently on each of the three phases. With this state-of-the-art technology, there are no moving parts except the cooling fan, as there is only copper and iron in the power circuits, and the electronic control circuits are both conservatively rated and analogue, so the design life time of 40 years is easily assured and there is no software to develop bugs or need updating.

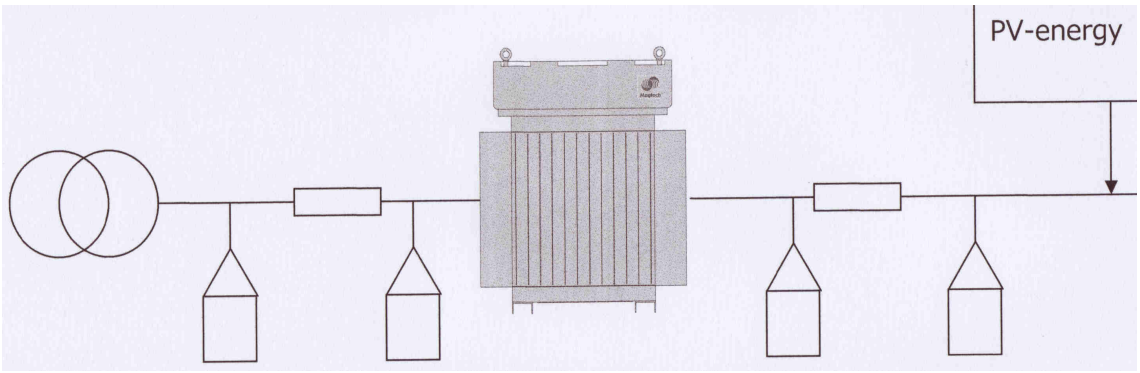
The operation of the system is driven by the power flow, and not only by voltage stabilisation. In the event of a "normal" power flow from the sub-station to the consumers, the unit selects by-pass mode and becomes transparent to the network. When the power flow becomes "reverse", and exceeds a pre-set value, the voltage regulation starts automatically and lowers the "downstream" voltage (which has become the input voltage) linearly in inverse proportion to the net power flow up to the limit of the available attenuation. The unit is protected from overvoltage by internal (and if necessary external) surge arrestors. The cooling fan circulates the air internally, so there is no opening to atmosphere, and there is a heat shield to protect the control module from solar heating.

The installation of a **Magtech MPV** can enable the existing feeder to accept up to double the level of PV power, and it can be used either as a permanent solution or simply for reducing and/or delaying investments into the modification of the distribution network.

When the Power Flow is normal, the PVVS is by-passed.

When the Power Flow is reversed due to PV generation, the PVVS lowers the downstream voltage to keep all customers within limits.





The PV Voltage Stabiliser is installed at a suitable position along the feeder.

The Magtech MPV models

Model	Connection	Input	Output	Continuous Pwr.	Pwr. 6 Hrs.	Volt Drop	Weight	Dims. Cm.
MPV130-400	TN/TT	400 V	400 V	130 kVA	208 kVA	7% max	850 kg	104 x 105 x 94
MPV260-400	TN/TT	400 V	400 V	260 kVA	416 kVA	7% max	1050 kg	104 x 135 x 94
MPV400-400	TN/TT	400 V	400 V	400 kVA	640 kVA	7% max	1050 kg	104 x 135 x 94