HIGH VOLTAGE DC UPTO 3KV FROM AC BY USING DIODE AND CAPACITORS IN LADDER NETWORK

ABSTRACT

The project is designed to develop a high voltage DC around 2KV from a supply source of 230V AC using the capacitors and diodes in a ladder network based on voltage multiplier concept. The method for stepping up the voltage is commonly done by a step-up transformer. The output of the secondary of the step up transformer increases the voltage and decreases the current. The other method for stepping up the voltage is a voltage multiplier but from AC to DC. Voltage multipliers are primarily used to develop high voltages where low current is required. This project describes the concept to develop high voltage DC (even till 10KV output and beyond) from a single phase AC. For safety reasons our project restricts the multiplication factor to 8 such that the output would be within 2KV. This concept of generation is used in electronic appliances like the CRT’s, TV Picture tubes, oscilloscope and also used in industrial applications. The design of the circuit involves voltage multiplier, whose principle is to go on doubling the voltage for each stage. Thus, the output from an 8 stage voltage multiplier can generate up to 2KV. As this is not possible to be measured by a standard multimeter, a potential divider of 10:1 is used at the output such that 200V reading means 2KV. Due to low input impedance of the multimeter, the reading would actually be approximately 7 times the input AC voltage. Further the project can be enhanced to generate the high voltage DC up to the range of 30-50 KV by increasing the number of stages. It can then be used for required industrial and medical applications.

NOTE: The project needs to be handled with utmost safety as touching any high voltage even with a multimeter could be fatal. The company is not responsible for any eventual accident.

BLOCK DIAGRAM:

HARDWARE REQUIREMENTS:
Diodes, Electrolytic Capacitors, Resistors, Multi meter, Lamp.