

ENERGY SAVING CUM VOLTAGE REDUCER DEVICE FOR WELDING RECTIFIER

INTRODUCTION:

In a Welding rectifier, the primary winding of the transformer is always energized. Even if welding is not going on, the machine always draws some current from the supply to meet the no load losses. Although arc welding can be performed safely, there are circumstances where there is a substantial risk of electric shock where workers need to weld in tight areas where heat and humidity can be a factor. The severity of the shock received when a person becomes part of an electric circuit is affected by several factors.

These include:

- 1) The amount of current flowing through the body of the person.
- 2) The path of the current through the body, and the length of time the body is in the circuit.
- 3) The current level (measured in mA, milli-amperes) is a function of both the voltage at the electrodes and the resistance of the person's body.

This energy saving cum voltage reducing device is designed to operate on any constant DC current welding machine (stick welder) with an open circuit voltage of 60 - 100 volts. Until the arc is struck the output voltage is maintained lesser than 12 volts. This prevents the operator from receiving a shock. Also the input supply to primary of transformer is cut when the output voltage is 12V, hence there is no power loss during this idle condition. Thus it performs energy saving action.

About Energy Saving cum Voltage reducing device and its working principle:

This device is connected between the input supply of the welding rectifier and it continuously monitor the welding output terminal voltage. On striking the arc, full selected output is available instantaneously. Energy saving cum voltage reducing device senses the stoppage in welding and cuts off the supply to the primary winding within the predetermined time (approx. 100mili-second to 5 minute) and safe voltage of 12 Volts will be appeared on the Welding terminals until the next arc strike. This device reenergizes the primary winding instantly without affecting the welding quality as soon as the electrode comes in contact with the job.

APPLICATIONS

- Energy Saving application.
- Confined Spaces such as vessels, mine shafts
- Wet or damp conditions.
- Hot and humid conditions.
- Working at heights.

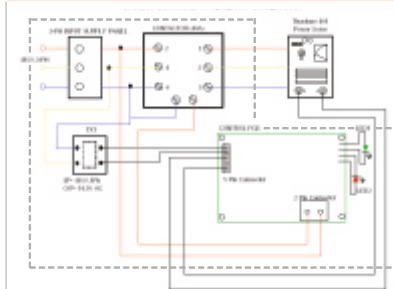
SALIENT FEATURES

- Safe voltage to protect from electric shock when welding is not going on.
- Instant Start of welding operation
- Reduction in machine heating
- Compact assembly.
- Easy for mounting.
- Welding performance unaffected

BRIEF SPECIFICATIONS:

1.	Input Supply.	415V AC, 1- Ph, 50Hz
2.	Voltage across welding terminals at which machine switch to Energy Saving Mode.	<12V & >50V
3.	Time to switch to Energy Saving Mode.	Adjustable by trimmer on PCB (100msec-5 minute) – factory set value is 3 minute.
4.	No load voltage at OCV terminal (Voltage reducing / Energy Saving Mode).	Between 10.0 -11.5 Vdc

WIRING DIAGRAM ENERGY SAVER UNIT



ENERGY BILL SAVING DUE TO ENERGY SAVER

For 400A Thyrolux or CHOPREC machine No load power	= 0.35kW
Machine is continuously ON for 24 Hour a day.	
Out of 24 hours, if the arc time is 33%	
then non arc time (No load condition) per day	= 16 Hours.
Hence with energy saving device the energy saved per day	= 16 Hr. x 0.35 kW
	= 5.6kWhr.
Saving on Energy Bill per day	= Rs. 5.5 x 5.6 = Rs. 31
Yearly saving (On an average for 300 working days/year)	= Rs. 31 x 300
	= Rs. 9300



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