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For more information's and details contact:

Mr. Atiq Ahmed: 0300-2142961
Mr. Shafiq Ahmed: 0333-2156934

Ph: (021) 35805163, 35405495, 6010208

Fax: (021) 35313968

E-mail: info@ues-electrical.com

Web: www.ues-electrical.com

Address: C-2, Mezzanine Floor, 15th Commercial Street Phase II (Ext.) DHA. Karachi.

Technical Bulletin # 6

Energy Saving by using Electronic Ballasts (Choke)

It is very difficult to replace the existing lighting system with energy saver lamps generally the lighting system constitute of a florescent lamp tube light with conventional electro-magnetic chokes.

A tube light of 36watts generally used will consume 36W (tube light) + 12W (Choke losses) i.e. 48 watts.

An electronic choke will have losses of 2W therefore power consumption by a tube light with electronic choke will be 36+2=38 Watt. For each tube light there will be a saving of 10 Watts.

Following example will illustrate the simple payback of investment for replacing the existing system with electronic chokes.

Example:

| | |
|---------------------|--------------|
| Electronic Choke | = Rs. 500/- |
| Standard Choke | = Rs. 100/- |
| Cost of Electricity | = Rs. 10/KWh |

Electronic choke premium = (500-100) = 400
Input Power for standard fluorescent lamp (Tube light)

$$2 \text{ lamp} \times [36\text{Watt}/\text{lamp} + 12\text{Watt}/\text{choke}] = 96\text{W}$$

$$\text{Input power for electronic choke} = 2 \text{ lamp} \times [36\text{Watt}/\text{lamp} + 2\text{Watt}/\text{lamp}] = 76\text{W}$$

$$\begin{aligned} \text{Energy Saving} &= (96-76) \times 3000\text{hour}/\text{year} \\ &= 20 \times 3000 \\ &= 60000\text{Wh} \\ &= 60\text{KWh} \end{aligned}$$

$$\text{Cost Saving} = 60 \times 10 = \text{Rs. } 600/\text{year}/\text{Tube light fixture}$$

$$\text{Simple Pay back} = 500/600 = 0.75\text{of the } 12\text{month}$$

Period i.e. 9months

In addition to cost saving there are many advantages for using electronic ballast.

1. Increase efficiency 10 to 12% compared with conventional tube light with convention choke.
2. Reduce noise or hum
3. No flickering
4. Reduce eye strain and headaches
5. High power factor and good tolerance to supply voltage and frequency fluctuation.
6. Easy to control
7. Reduce heat loss
8. Improved lamp life.