LUTRON®

For Your Information ...

APPLICATION NOTE

#111

Ballast Efficacy Factor of Electronic Ballasts

Overview

Ballast Efficacy Factor (BEF) is the ratio of the Ballast Factor[1] (BF) to the input power to the ballast, of any lamp-ballast system.

$$\text{BEF} = \frac{\text{Ballast Factor (\%)}}{\text{Input Power (W)}}$$

Discussion

BEF is the only objective method to compare the performance between different ballasts. BF is the relative light output of a lamp on the ballast and the input power in watts is the ballast energy consumption. Therefore BEF is a quantity that relates the lamp light output to the ballast power usage. BEF can then be used to calculate the lumens per watt (lm/W) of the lighting system.

Typical installation

Consider two 1 lamp ballasts for F32T8 lamps. If the BF of the first is 0.90 and the BF of the second is 1.0, the second ballast is not necessarily more efficient in producing light. Let the input power to the first lamp-ballast combination be 34W. Let the input to the second lamp-ballast combination be 38W. Then,

BEF of the first ballast is	(0.90x100 / 34)	= 2.70
BEF of the second ballast is	(1.0x100 /38)	= 2.56

This illustrates that the ballast with the lower BF may have greater efficacy and is therefore a lower energy usage product.

Energy codes

U.S. federal regulation sets minimum requirements for the BEF of specific ballasts for 4ft and 8ft T12 fluorescent lamps. There might be additional state and local codes for lighting efficiency, that specify a minimum required BEF.

However all ballasts designed for low temperature operation (0°F) and for dimming are exempt from the above regulations. As Lutron exclusively manufactures electronic dimming ballasts, the minimum BEF requirements for switching ballasts do not apply to Lutron ballasts. However Lutron dimming ballasts meet or exceed all switching ballast energy efficiency recommendations.

1 Please refer to App. Note 102 (048-072) for more information

Summary

Ballast Efficacy Factor allows one-to-one comparison between different ballasts by considering both the light output and the correlated power consumption of a lamp-ballast system.

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