

Energy savings in Lighting Applications

Stabilux Luminous Flux Regulator

IREM, Italy

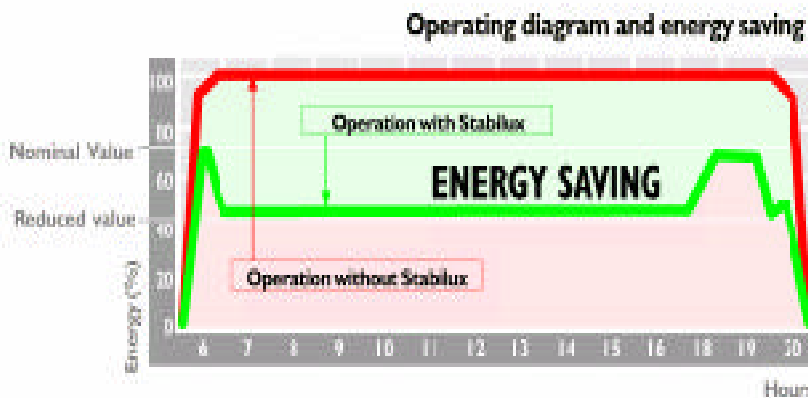
Luminous Flux Regulator (LFR) is a centrally operated fully programmable light dimmer. The technology is based on servo-controlled autotransformer equipped with microprocessor based programming remote control through telephone lines and personal is used with gas discharge lamps like with Magnetic ballast, High Pressure Pressure (LPSV / SOX) Sodium Vapor Vapor (HPMV) lamps, Metal Halide Compact Fluorescent Lamps (CFL/PL). dimming the LFR primarily being a stabilized power to the light enhancing the lamp life. Stabilux is available in over 60 models to suit various plant loads and automated capabilities.



capabilities including computers. The LFR Fluorescent Lamps (HPSV) and Low lamps, Mercury (MH) lamps and In addition to transformer, feeds installation thereby

Operating Principle for Energy Savings with LFR

A gas discharge lamp once ignited and warmed up for about 10-15 minutes, can be subjected to controlled under powering by reducing the voltage. The reduction in voltage leads to substantial energy savings, upwards of 30 per cent with a limited reduction in light output. This under powering leads to power savings in relation to two situations:



◆ LFR Operating Voltage (say 200 Volts) vs. Nominal Voltage (240 Volts) and also

◆ Nominal Voltage (240Volts) vs. Grid Over Voltage (during lean hours, 258 Volts).

Commercial Applications of LFR

Dimming of large light installations can be

achieved matching with the work place requirements in various ways as illustrated:

Street Lighting Stabilux is very successfully used all over Europe, and many parts for Asia for reducing the energy consumption of street / motorway / public lighting. Typically a street lighting / motorway lighting is required with full light output only till about 10 o'clock in the night. Afterwards the lights can be dimmed to the maximum possible extend, thereby saving power till next day morning. In addition to savings on account of difference between nominal voltage and operating voltage, additional 5-10% savings is extracted by Stabilux due to the shooting up of grid voltage over the nominal voltage. Dimming during lean hours is being considered as a safety measure (in Holland) as low illumination makes drivers more cautious. See the Attachment for an illustration of power savings with Stabilux.

Underground Facilities lighting Stabilux can be effectively used for lighting optimization in underground facilities like hotel service areas, car parking, which typically have long lighting durations. For example, in car parking, the lamps can have maximum under powering through out the period of operation leading to very substantial savings. Lamp fixtures in such facilities can be regulated with EMR, EPT, PMR

Facade Lighting Stabilux can be facade lighting of hotels, new generation After the peak evening hours these sites switch-off. This leads to power savings programmable PMR and PMT models are

Public and Township Street Lighting ideally required between 1800 hours and underpowered to an intermediate level 0600 hours maximum under powering programmed for a whole year for such operations to be compatible with daily requirements, summer and winter day lengths, and even requirements of special days when full luminance is required. The fully programmable PMR and PMT models provide these functionalities.



deployed as an efficient energy saver for building complexes, and monuments. could have subdued lighting instead of a and reduced light pollution. The fully most suitable for this application.

The full luminance of the HPSV lamps is 2200 hours. The lamps could be from 2200-0000 hours. Thereafter upto can be effected. Stabilux can be

General Plant Lighting, Stockyard, and Switchyard Lighting Illumination with HPSV and MH starts at 1800 hours in the evening. Once the ignition cycle is completed, the lamps can be under powered to the minimum voltage and still have enough luminance for functional requirements till 0600 hours next day. This application is easily facilitated by EMR and EPT versions, which are the economy models and also by the fully programmable PMR and PMT models.

Large Shop Floor Lighting Stabilux PMT models can be attached to a Luminance Sensor for optimizing large shop floor lighting involving HPSV, HPMV and MH. The LFR will achieve a uniform illumination (constant lux) in the work place by taking full advantage of the daylight and gradually shifting the illumination to the lamps as night progresses.

Type of lamp	Minimum voltage allowed without DAS	with DAS	Indicative value of luminous flux reduction with minimum voltage	Energy saving
High pressure sodium	183V		60%	45 + 50%
Low pressure sodium	190V		10%	35%
Mercury vapours	200V	183V	40% 60%	26 + 30% / 32 + 40%
Metal halides	183V		60%	40%
Fluorescent with standard control gear	190V		35%	35 + 45%
Compact fluorescent	190V		25%	30 + 35%
Mixed lamps	190V		60%	30%

The Stabilux LFR is manufactured by IREM of Italy who are in the voltage stabilization business for the last 40 years. World over IREM has capacity upto 1000 kVA. Thousands of applications. The esteemed clients of Stabilux include



- ABB Ferrari
- AGIP Fiat
- Alfa Romeo Kuala Lumpur Motorway
- Cairo Ringroad Siemens, ST Microelectronics
- CDG Airport Paris Whirlpool....and many more

Perspective of Lamp Manufacturers

All leading lamp manufacturers (Philips, GE, Osram) endorse dimming as a new dimension to energy conservation without any adverse impact on lamp life and have evolved dimming guidelines for their various products.

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