

# Save It Easy<sup>®</sup>

The Ultimate Plug & Save e-Ballast



**RI**

Reinig Inotec Group

Artificial lighting has become an indispensable component of modern lifestyle, creating a huge annual demand for energy – an issue that has already become a key environmental concern worldwide. Among all artificial lighting sources, Fluorescent Tube Lamps (FTL) are by far the most commonly used lamp type around the world.

REINIG INOTEC GROUP is a leading technology innovator of energy saving lighting products through its extensive research and development in lighting technology. Save It Easy®, a worldwide-patented invention originated from Germany, is an electronic ballast offering simple Plug & Save retrofitting solutions in energy savings for FTL applications.

## Fluorescent Tube Lamp (FTL)

The choice of FTL over all other lamp types is mainly due to its high efficacy and long lifetime. Linear FTL has an even higher efficacy than common Compact Fluorescent Lamps (known as energy saving Light Bulbs). Unlike high & low pressure sodium lamps, FTLs are more preferred by users for lower costs and effective colour rendering. Having a wide medium for distribution of light and operating at lower temperature, FTLs are the most common lighting solution for industrial and commercial applications.

Unlike traditional incandescent lamps (Light Bulbs), FTLs cannot be connected directly to the electrical mains, but instead must operate in conjunction with either conventional electromagnetic or high frequency electronic ballasts.

General Comparative Efficacy of Common Lamp Types

Lamp type	Efficacy (Lumens per W)	Lifetime (Operating Hours)
Standard incandescent	12	1,000
Tungsten-Halogen	18	2,000
Mercury vapor	30	24,000
Compact fluorescent	60	12,000
Linear Fluorescent Tube T8	90	12,000
Linear Fluorescent Tube T5	105	24,000
High pressure sodium	110	24,000
Low pressure sodium	180	18,000

**Fluorescent Tube Lamp is most commonly used**

## Ballast - conventional electromagnetic

Since the introduction in the 1930's, FTLs have been operated with conventional electromagnetic ballasts.

economical and stable, conventional electromagnetic ballasts continue to be commonly deployed, despite such shortcomings.

Conventional electromagnetic ballasts generate substantial energy losses and operate with poor power factor. Excessive heat, noise and flickering are the inherent problematic behavior. Being

**Conventional ballasts are inefficient**

## Ballast - electronic

High frequency electronic ballasts are designed to replace the functions of conventional electromagnetic ballasts in a more efficient manner. Electronic ballasts consume substantially less energy than conventional electromagnetic ballasts, and operate at near optimal power factors. Peak power demand can be reduced by as much as 50%. They also enhance the performance of FTLs, whereby their efficacy can be increased by about 10% when operated at higher frequencies. Together with lower ballast losses, system efficacy is improved by as much as 30%.

6) No visible flicker during operation; 7) No stroboscopic effect and; 8) Lower total harmonic distortion (THD).

Indeed the European Parliament aims to have all conventional electromagnetic ballasts phased out and replaced with energy saving electronic ballasts within the European Union by 2005.

Despite the growing demand to conserve energy, relatively high costs hinder the market penetration of common electronic ballasts. Not only does it involve the capital cost of the electronic ballast itself, but the entire cabling system for the lighting fixture also has to be modified by qualified electricians. Moreover, considerably long installation time for replacement of existing conventional electromagnetic ballast also disrupts normal operations of facilities. The application of common electronic ballasts will only be commercially viable in limited cases.

**Electronic Ballasts save energy**

**Expensive wiring cost**

## Save It Easy®

Save It Easy® is an innovative electronic ballast for the purpose of retrofitting existing FTL fixtures with conventional electromagnetic ballasts. Its Plug & Save technology is designed to be user-friendly. Indeed, its quick and easy installation method is just as straight forward as replacing a FTL. By fitting Save It Easy® onto one end of the FTL and then placing it back into the fixture, it does not require highly qualified electricians to perform such retrofitting task. As such, without the complications

of wiring, no installation or recurrent maintenance costs are incurred. SAVE IT EASY® is patented in over 50 countries, its fixing method overcomes all constraints of the common electronic ballasts and provides a real solution for greater financial savings.

**Save It Easy® no wiring cost**



Save It Easy®



Save It Easy®



Save It Easy® - DIMMER



Save It Easy® - MOTION SENSOR

# Save It Easy® - the electronic ballast

Save It Easy® enhances FTL system efficacy with its electronic high frequency operation. As it consumes far less power and operate at near-optimal power factor, SAve It Easy® is capable of achieving up to

35% energy cost savings when compared with the use of standard type conventional electromagnetic ballasts. Where applicable, energy demand cost also decreases.

## Energy Savings of SAVE IT EASY® in Comparison with Standard Conventional Electromagnetic Ballasts

Common T8 FTL types	Total operating power with standard conventional electromagnetic ballast	Total operating power with Save It Easy®	Power savings with Save It Easy®	Power savings %
58 Watt	72 (67)*Watt	55.5 Watt	16.5 Watt	23%
36 Watt	46 (43)*Watt	34.5 Watt	11.5 Watt	25%
18 Watt	27 (24)*Watt	17.5 Watt	9.5 Watt	35%

\* Total operating power with low-loss electromagnetic ballast

Save It Easy® also provides other advantages for FTLs including:

- Extend lamp life due to lower operating current on the FTL electrodes
- Near optimal power factor
- Instantaneous starting of lamps without flickering
- Quiet operation – no audible noise
- No visible flicker during operation
- No stroboscopic effect because of high frequency operation
- Lower total harmonic distortion (THD)

**Energy saving up to 35%**

# Save It Easy® - your solution to easy savings

Plug & Save is the key characteristic of Save It Easy®. Without the employment of highly qualified and expensive electricians, the high initial and recurring installation costs are substantially reduced throughout the life cycle of the FTL system.

The fast and simple installation method of Save It Easy® drastically reduces installation time and effort. As a result, the disruption to normal working environment is greatly minimized.

Reversible Retrofit is another key feature of Save It Easy®. Unlike other common electronic ballasts, Save It Easy® are only add-on items to existing FTL fixtures but without any modification done to them. Therefore, such fixtures can be reverted back into its original form of operations, if and when so desired, by a simple and easy dismantle process. This provides an excellent mobility solution for redeployment of Save It Easy®.

## Plug & Save

## Reversible Retrofitting

# Further saving options

Save It Easy® - DIMMER is an optional attachment for the standard model of Save It Easy®. By simply plugging in the Plug & Save Dimmer, light output of the FTL can be adjusted to preset levels for further energy savings in areas where dimming is desirable. The Dimmers come in 2 models which enable on-board or remote dimming control.

Save It Easy® - MOTION SENSOR is an optional attachment for the standard model of Save It Easy®. The Plug & Save Motion Sensor is integrated with the Dimmer, which provide even more flexible ways to save energy.

## Dimmer & Motion Sensor

# Save It Easy® family

Save It Easy® is available for most commonly used FTL types such as T12, T10 & T8, which are interchangeable. In most common cases, T8 FTLs are recommended due to higher efficacy.

Save It Easy® - T5 is also available for T5 FTLs, which are smaller in diameter while providing even higher efficacy. In certain operating environment, they are even more efficient than T8 FTLs. Since T5 FTLs are not interchangeable with T12, T10 & T8 FTLs, T5 FTLs require complete new sets of specific fixtures.

Save It Easy® - T5 provides another Plug & Save innovative solution, which allows T5 FTLs to be adapted to existing common T12, T10 & T8 FTL

fixtures.

Save It Easy® - INLINE is a Plug & Save solution allowing longer and higher power FTL fixtures to use shorter and lower power FTLs for further energy savings. Save It Easy® - INLINE plugs into one end of shorter FTLs as extensions, allowing them to be fitted into longer fixtures. Optional dimmers are available for customized light output levels, delivering additional energy savings.

## Support T5, T8, T10 & T12 FTLs in any configurations

What you really want is a solution that delivers energy savings simply without the disruption to your operations, complicated rewiring installation work and high recurring maintenance costs.

Save It Easy® with its Patented Plug & Save technology is exactly what Reinig Inotec offers to answer your concerns with simple installation, no rewiring work and immediate energy saving of up to 35%. Just plug Save It Easy® to your standard FTLs and start saving today.

SAVE IT EASY®

INLINE - T8

INLINE - T5



## CALCULATION FORMULA

### 1. Energy Savings (kW) =

> Existing Wattage (kW) – Wattage with the use of SAVE IT EASY® (kW) x No. of fixtures

### 2. Annual Energy Savings (kWh) =

> Energy Savings (kW) x Total annual operating Hours (h)

### 3. Annual Energy Cost Savings (\$) =

> Annual Energy Savings (kWh) x Energy Cost (\$ / kWh)

### 4. Demand Savings (kVA) =

>  $\left( \frac{\text{Existing Wattage (kW)}}{\text{Power factor}} - \frac{\text{Wattage with the use of SAVE IT EASY® (kW)}}{\text{Power factor with the use of SAVE IT EASY®}} \right) \times \text{No. of fixtures}$

### 5. Annual Demand Cost Savings (\$) =

> Demand Savings (kVA) x Demand Cost (\$ / kVA / year)

### 6. Total Annual Financial Savings (\$) =

> Annual Energy Cost Savings (\$) + Annual Demand Cost Savings (\$)

## Example

Type of Fixtures used	: 36W T8 FTL
Ballast Type	: conventional electromagnetic ballast
Ballast power factor	: 0.50
Total No. of FTL	: 100
Existing Operating Power	: 46 W
Operating Power with Save It Easy®	: <b>34.5 W</b>
SAVE IT EASY® Power Factor	: 0.97
Annual Operating Hours	: 3,000 h (12 hours x 250 days)
Annual Energy Savings	: (0.046kW – 0.0345kW) x 3,000h x 100pcs <b>3,450 kWh</b>
Demand Savings	: ((0.046kW / 0.50) – (0.0345kW / 0.97)) x 100pcs <b>5.6 kVA</b>

## Save It Easy® - saving our environment

Total Reduction in CO<sub>2</sub> emission :

5.6kVA x 3,000 h x 0.662kg CO<sub>2</sub> / kWh\* = 11,122 kg CO<sub>2</sub> / year

Total Reduction in SO<sub>2</sub> emission :

5.6kVA x 3,000 h x 0.001073kg SO<sub>2</sub> / kWh\* = 18 kg SO<sub>2</sub> / year

\* Source : Total Emission Model of Integrated Systems GEMIS 4.14 - Öko-Institut (Institut für angewandte Ökologie Institute for Applied Ecology, a registered non-profit association based in Germany)

Save It Easy® complies to the following International Standards:

EN61347-1	: General Safety Requirements
EN61347-2-3	: Lamp Control Gear (Particular Requirements for A.C. – Supplied Electronic Ballast for Fluorescent Lamps)
EN60929	: Performance Requirements for A.C. – Supplied Electronic Ballasts for Tubular Fluorescent Lamps
EN55015	: Limits of Radio Disturbance of Electrical Lighting
EN61547	: EMC Immunity Requirements
EN61000-3-2	: Electromagnetic Compatibility (EMC) – Limits for Harmonic Current Emissions
EN61000-3-3	: Limitation of Voltage Fluctuations and Flicker in Low-voltage Supply



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Authorized Dealer:

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