

# EnergyWits

## 智能

# 9

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# 照明系統簡易更新方法

## Lighting Retrofit in a Simple Way

在香港，除了新落成的現代建築物外，大部份的建築物仍採用能源效益比較低的T8光管甚至較為「圓胖」的T12光管。我們建議用能源效益較高的T5光管來替代這些舊式的光管。但若不想把整套照明系統更換，業主可考慮下列3項照明系統更新科技。這3項新科技包括「隨裝隨慳」、「亮度調正」和「光源導向」都是一些簡單而有效的光管更新方法。

### 「隨裝隨慳」

這科技適用於一些用舊式鎮流器即電磁鎮流器的照明系統。「隨裝隨慳」科技透過「仿電子鎮流器」、T5光管和簡單的安裝步驟（一般不須要改裝內部線路），去節約能源。「仿電子鎮流器」是一個電子元件，其作用與電子鎮流器相似，但必需與一個電磁鎮流器串聯運作，才能生效。

下面的圖表取材自一個應用了「隨裝隨慳」科技的個案，列出在不同階段所測量的照明亮度水平結果。

In Hong Kong, other than the recently-built modern buildings, most of the buildings are still using the "less energy efficient" T8 fluorescent tubes or even the "fat" T12 tubes. It is recommended to replace these "old-fashioned tubes" by more energy efficient T5 tubes. However, if total replacement is not desired, building owners may consider the following three types of lighting retrofit technologies. The three technologies that are emerging from the market including "Plug and Enhance" (PnE), "Light Level Abatement" (LLA) and "Re-direction" (RD), are all simple and effective lighting retrofitting approaches.

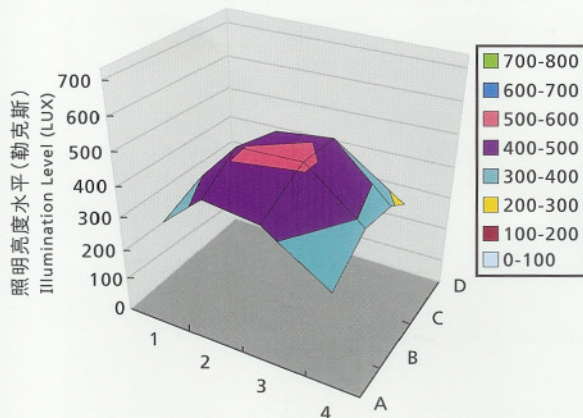
### Plug and Enhance (PnE)

This technology is suitable for cases where existing lighting is equipped with "old-fashioned" electromagnetic ballasts. PnE technology reduces energy input through simple installation steps, quasi-electronic ballasts (QEBs) and T5 tubes. Normally no wiring modification is required. QEB is an electronic device which, when operating in series with an electromagnetic ballast (EMB), will effectively function as an electronic ballast (EB).

The graphs below show the lighting level measurements taken in one case where PnE technology was applied:

更新前的表現

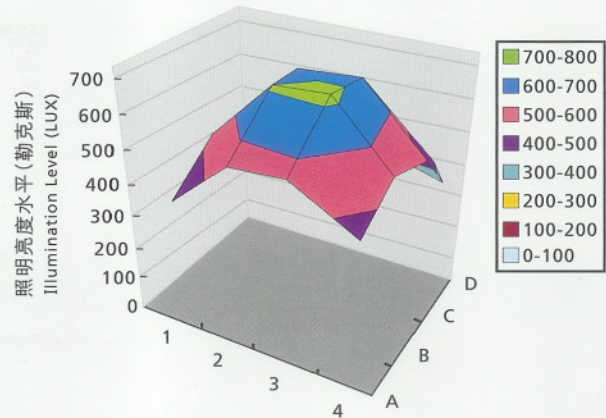
Performance Before Retrofit



平均照明亮度水平: 448 勒克斯 照明設備總功率: 514 瓦  
Average Lighting Level: 448 LUX Lighting Power: 514 W

操作500小時後的表現

Performance After 500+ Hours

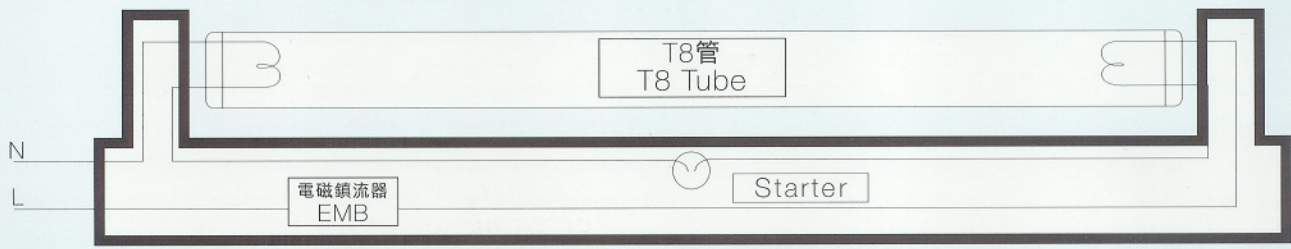
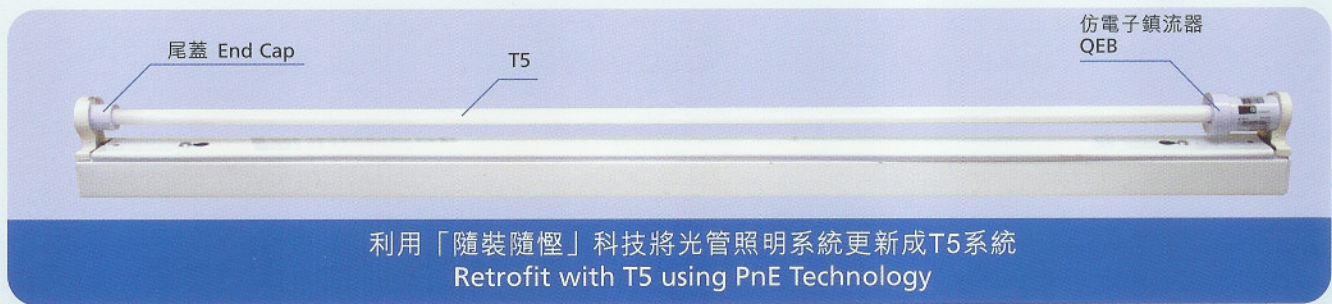


平均照明亮度水平: 526 勒克斯 照明設備總功率: 342 瓦  
Average Lighting Level: 526 LUX Lighting Power: 342 W

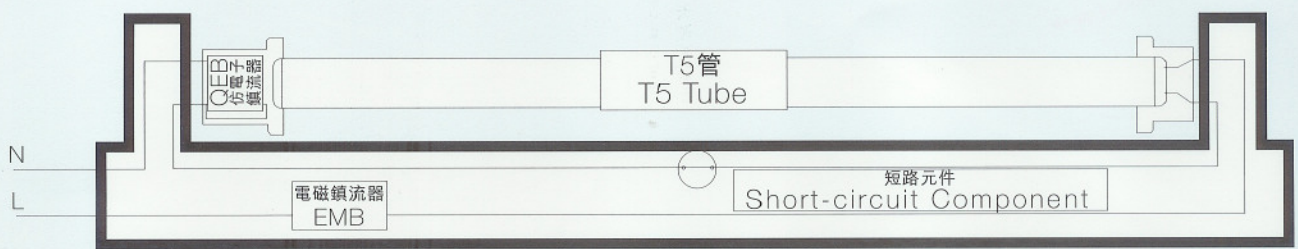


「隨裝隨慳」科技可節省照明所須能源約18%至33%。投資回本期約在1.8年至3.5年間

PnE technology can save lighting energy by 18% to 33%. The payback period for PnE devices lies between 1.8 and 3.5 years.



傳統的T8管和電磁鎮流器裝置  
Conventional T8 Tube and Electromagnetic Ballast



「隨裝隨慳」科技的電路圖  
Circuit Diagram for PnE Technology