

LED照明與系統節能技術研發計畫

執行單位

財團法人工業技術研究院

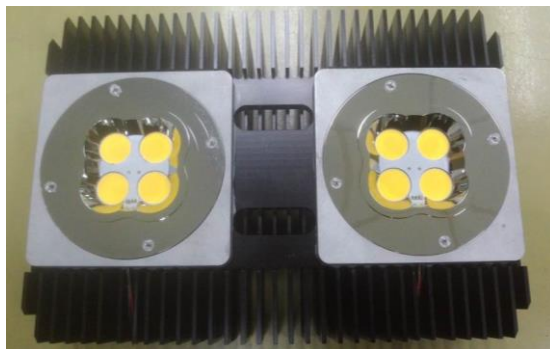
計畫主持人

簡國祥

- 引導國內LED產業切入高功率LED照明模組開發，並透過場域示範應用，驗證其效能，提升產品競爭力。以及以高性價比智慧系統與創新利基應用產品，為國內產業奠定高值化LED照明系統的基礎，並透過推廣LED照明普及，實現照明節能與壯大我國LED照明產業。

● 專利佈局

- 研發高效率照明電源轉換電路技術與高效率功因修正技術21件獲證；智能型光源控制技術34件獲證；無線感測技術共3件獲證；手持裝置照明系統智慧控制技術共3件獲證。
- 開發高性能熱傳技術，脈衝型多管式熱管3件獲證；光學設計技術1件獲證3件申請
- 多項獲證專利已分別有授權應用實績。



開發模組化超高功率LED燈具技術 (薄型化光學元件與多層式低熱阻)



開發無閃爍LED電源供應器，Percent Flicker 1.08%，效率86%@30W



推動全臺設置LED路燈及室內LED智慧照明補助推廣

LED照明與系統節能技術研發計畫

執行單位：財團法人工業技術研究院
所屬部會：經濟部能源局

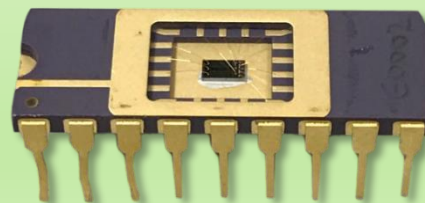
本計畫係配合我國推動照明節能政策，強化LED照明模組與系統優勢，以內需市場提升產業能力。包含：(1)建構產業發展環境，推動照明節能措施，(2)開發高功率LED光源模組，引導高強度LED照明應用，(3)以人性化照明考量出發，在商業及醫護等場域發展低成本高效率之智慧健康照明燈具與控制系統技術，協助產業在利基市場建立品牌與通路。各年度規劃之各項研發重點工作項目：研擬LED照明產品規格、照明指引、規劃推動照明節能政策；開發散熱技術、高功率及高光學品質LED模組與應用；發展高性價比智慧照明系統、智慧化電源技術，以及健康人性化照明燈具與光環境研究。



全臺設置LED路燈共126.8萬盞，滲透率56.4%，為全球第一個全面淘汰水銀路燈國家。帶動產值百億元，並促使相關產品行銷全球



場域示範，以超高功率LED燈取代HID燈，節能50%



超微型LED智慧電源，
AC輸入效率94.2%@9W



智慧型開道器

Research and Development of LED Lighting and Lighting System Efficiency Technology

Execution Unit

Industrial Technology Research Institute

Project Director

Chien, Kuo-Hsiang

- The project leads the Taiwan's LED industry into the development of high-power LED lighting modules and demonstrates the effectiveness through environmental demonstration enhancing the competitiveness of such products. As well as by cost-effective intelligent control system and innovative niche application products, we set up the solid foundation for high-value LED lighting system to domestic industries. And we realize the energy-saving lighting technology, finally, expand the LED lighting industry in Taiwan with wide promotion.

● Patent portfolio

- ✓ Research and development of high-efficiency lighting power conversion circuit technology, high-efficiency power factor correction technology, etc. with 21 certified; intelligent light source control technology with 34 certified; wireless sensing technology with 3 certified; hand-held lighting control system with 3 wisdom Certified.
- ✓ Development of high-performance heat transfer technology, pulsed multi-tube heat pipe, etc. with 3 certified; optical design technology with one certified 3 applications.
- ✓ A number of certified patents have been authorized to conduct the actual performance.



Development of modular ultra-high-power LED lamp technology (slim optical components and multi-layer low thermal resistance)



Development of ultra-low flicker LED power supply



To promote the establishment of whole Taiwan's LED lights and indoor intelligent lighting system promotion

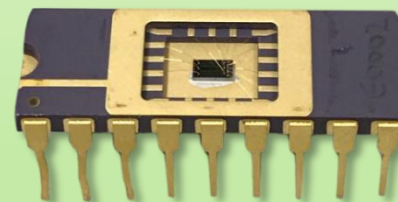
This project, in conjunction with Taiwan's promotion of energy-saving lighting policies, strengthens the advantages of LED lighting modules and enhances the industrial capacity in Taiwan's domestic market, such as: (1) building an industrial development environment and promoting lighting energy conservation measures; (2) developing high-power LED light source modules to lead the application of high-intensity LED lighting; (3) developing commercial and healthcare environments with high efficiency of smart lighting as well as control system technology, to help establish sales channel in the niche market. Major R & D projects to be planned in each year: formulating LED lighting product specifications, lighting guidelines, planning and promotion of lighting energy-saving policies; developing LED modules and applications of heat dissipation technology, high-power and high optical quality; developing intelligent lighting system with high cost performance, wisdom power technology, and healthy-humane lighting environment.



Field demonstration to replace HID lamps with ultra-high-power LED lights saves 50% of electricity



At present, the total number of LED street lamps installed in Taiwan is 1,268,000 with a penetration rate of 56.4%, making it the first country in the world to completely eliminate mercury street lights. The project drives the entire output value of NT\$10 billion, and promote the development of related products worldwide



Integrated circuit design of LED power supply, AC input efficiency 94.2% @ 9W



smart gateway