# 高科技廠房全年能源消耗計算軟體之開發驗證與推廣

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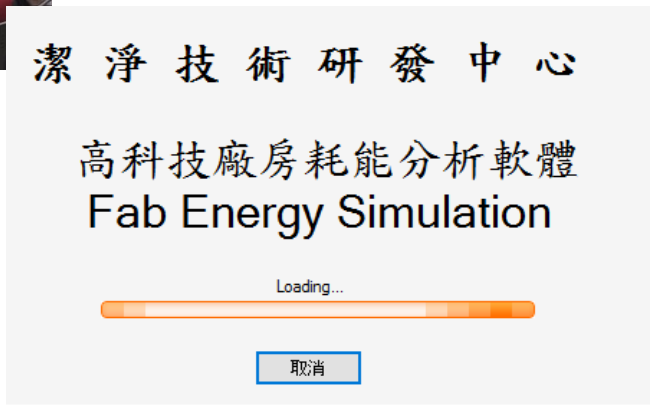
- 內文 此計畫運用高科技廠房耗能分析軟體簡稱FES，在建新廠或擴廠前的耗能分析來以作為改善的依據。此軟體已和實際廠房做了驗證，在未來也會持續去各公司做推廣。

因為軟體之撰寫本身具有市場智慧財產權。不需申請專利。



在之前的國科會一般型計畫中，本研究室已開發出具全功能(含Fab空調系統及包含耗能製程設備)特性的高科技廠房全年能源消耗計算軟體(Fab Energy Simulation,簡稱FES)，經與實際廠房進行驗證之後發現誤差小於5%。FES對於廠務系統用電乃利用Energy Conversion Factors (ECF)的概念，去計算廠務設備的耗電量。但由於計算各次系統所需要的參數多，許多運轉參數需要實際安裝量測儀器紀錄才能進行較精準的計算，對於初設時未安裝量測儀器之廠房有其困難度。因此本研究將配合廠務系統專業施工廠商對高耗能科技廠房的廠務系統做耗能資料收集與分析，並找出效率不佳的設備提出改善方案，同時在分析與資料收集的過程中將FES軟體的使用方法技轉與合作廠商，作為廠務系統節能推廣之用。此外，本計畫擬將收集8家廠商廠務系統的運轉資料建構一各系統的能源轉換系數(ECF)資料庫，作為未來節能改進的參考。此外，在FES軟體經過實際廠房分析與驗證之後，將公開于業界使用(於北中南科學園區同業公會說明發表)，期能使Fab 節能推廣更加深廣。

# Development and verification of High Tech. Fab Energy Simulation (FES) Software

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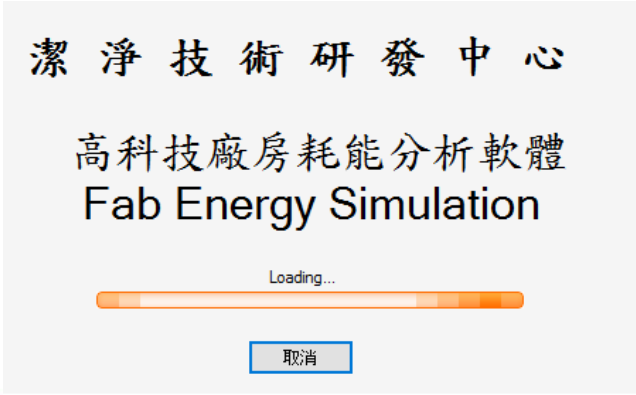
- Content This project apply High Tech. Fab Energy Simulation (FES) software to improve the energy consumption of a new plant or expansion plant. This software has been verified with the actual plant, We will promote it to other companies in the future.

Because the software itself has written intelligence property rights, so It did not apply for a patent.



In the previous NSC's general plan, the laboratory has developed a full-fledged (including Fab air-conditioning system with energy-consuming process equipment) features of high-tech plant annual energy consumption calculation software (Fab Energy Simulation, referred to as FES ), After verification with the actual plant found that the error is less than 5%. FES for the plant system uses the concept of Energy Conversion Factors (ECF) to calculate the power consumption of plant equipment. However, since many parameters are required to calculate each system, many operating parameters need to be actually installed to measure instrument records to make more accurate calculations. It is difficult for a factory to install a measuring instrument initially. Therefore, this study will cooperate with the professional manufacturer of the factory system to collect and analyze the energy consumption data of the plant system of the high-energy-consuming science and technology plant and find out the equipment with poor efficiency to propose the improvement plan. Meanwhile, in the process of analysis and data collection The use of FES software technology transfer and cooperation with manufacturers, as the factory system to promote the use of energy conservation. In addition, the project intends to collect operational data from eight manufacturers' factory systems to construct a systematic energy conversion coefficient (ECF) database as a reference for future energy conservation improvements. In addition, after the FES software has been analyzed and verified by the actual plant, it will be released to the industry for use (published by the North Central South Science Park Hsiang Association), which will make Fab energy promotion more extensive.