

先進生質燃料應用研究與推廣計畫

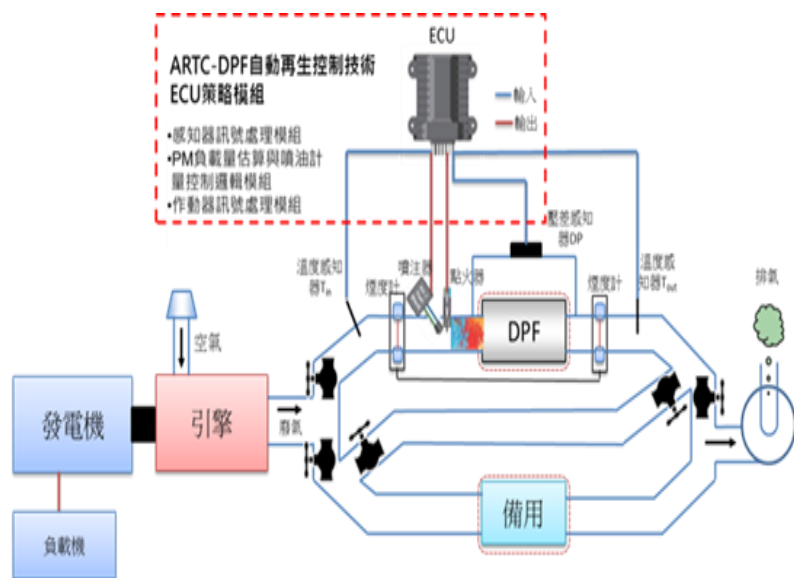
執行單位

財團法人車輛研究測試中心

計畫主持人

顧詠元 博士

- **無線通訊簡易式污染量測**：建立可移轉技術，未來能應用於運輸車隊即時量測碳排放量，協助車隊掌握碳排資訊，作為運輸車輛因應「溫管法」策略工具。
- **濾煙器(DPF)PM負載量估測與主動再生控制技術**：完成4件國內外專利申請，未來可提供柴油車輛作為PM污染減量需求策略工具。



濾煙器PM負載量估測與再生控制



無線通訊簡易式污染量測系統架構與實體圖

➤ 計畫簡介

- 本計畫進行傳統生質燃料(FAME)應用技術開發及車隊示範驗證，建構完善的使用環境與推廣應用，並投入本土先進HVO適用性環構評估，協助生質能政策推動。

➤ 技術介紹

- **無線通訊簡易式污染量測**：運用高溫型NO_x以及排氣流量感測器，透過化學計量演算，可快速量測車輛NO_x及CO₂排放值，並整合4G聯網技術，即時傳輸車輛動態資訊，如行駛里程、NO_x、CO₂排放值。
- **濾煙器(DPF)PM負載量估測與主動再生控制技術**：運用排氣流量、壓差、溫度感知與燃油燃燒器閉迴路自動再生溫度控制，實現DPF PM負載量估測與主動再生，技術內容包括：(1) DPF內PM負載量估測，(2)再生燃油流率估測，(3)DPF內灰分累積量估測。

➤ 衍生效益

- 輔導2家廠商(凱琦/宏記)通過SBIR計畫(共657.5萬)，推動2案業界合作案(共110萬)及2案技術移轉(共125萬)，研發成果總收入235萬元(收益率達19.75%)，促進投資生產達1,700萬元，增加就業人數2人。同時協助(喬台/凱琦)取得美國、澳洲與莫斯科等外銷訂單(共5,300萬元/年)

Research of Vehicles Applicability and Application using Biofuel

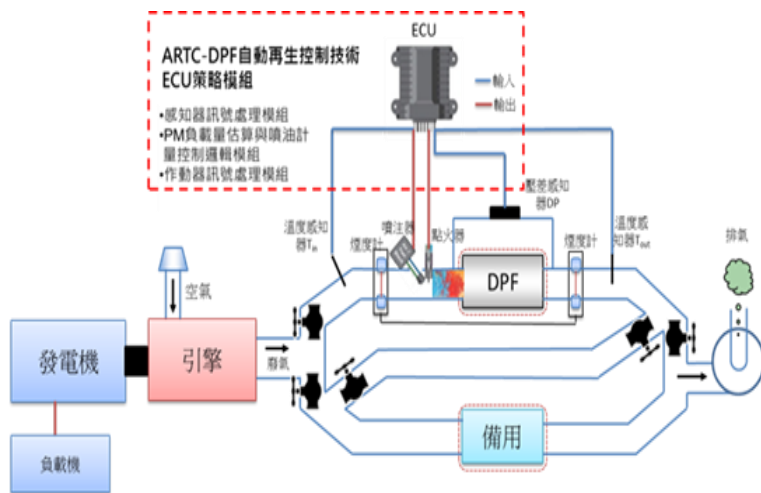
Execution Unit

Automotive Research & Testing Center

Project Director

Dr. Ku Yong-Yuan

- **Wireless transmit Simple Emissions Measurement System** : A transferable technology that can be applied to measure carbon emissions real time on vehicles have been established and that can be used to be a tool of “Greenhouse Gas Reduction and Management “.
- **Estimating Efficiency of a Particulate Filter** : Four domestic and foreign patents have been applied ,which can be used as PM pollution reduction tools.



Estimating Efficiency of a Particulate Filter



Simple Wireless Emissions Measurement System

➤ **Project profile**

- Focused on the development of traditional biodiesel fuel technology and verification of transportation, to construct a proper environment and application. At meanwhile, this project invest the evaluation of advanced HVO to assist the promotion of biodiesel energy policy.

➤ **Technology Introduction**

- **Simple Wireless Emissions Measurement System** : High Temperature Type NO_x and exhaust flowmeter have been used to measure the NO_x and to evaluate CO₂ emission, through 4G translation technology the vehicles information including mileage, NO_x, CO₂ emission can be collected real time.
- **Estimating Efficiency of a Particulate Filter** : Exhaust flowmeter, differential pressure sensor, temperature sensor and closed loop control strategies of regeneration temperature of burner have been implemented to evaluate DPF PM load and to achievement active regeneration. The core technologies including :(1) Evaluation of PM load of DPF(2) fuel consumption rate of regeneration (3) Evaluation of Ash residual of DPF.

➤ **Derivative benefits**

- Assisted 2 companies gained SBIR projects, to achieve 2 cooperation projects and 2 technology transfer projects. The total revenue of achievement of this project was 2.35 million, and it was expected that can increase investment up to 17 million and can increase 2 employees.