

## **Current Research Activities - SERVE**

### **SERVE: Flex-diesel Engines with Sustainable Bio-fuels for Clean and Efficient On- and Off-Road Vehicle Engines**

This project is funded by the UK Government and the Technology Strategy Board (formerly known as DTI - Department of Trade and Industry) in collaboration with Jaguar Cars. Total Budget £2.12 million.

The technical approach of this project is based on the vision of the demand for diesel engines and of the capabilities of bio-diesel production within the next 2 decades and beyond.

While the next generation of cellulosic biomass-derived fuels will make an increasing impact, the first generation family of fatty acid esters will continue to be a major source of biofuel components. At the same time, the variety of fuel properties will become even wider as the decentralized production of biofuels continues to grow.

Studies in the project will be highly relevant to the overall priority of the call specifically concerning research on "understanding of how biomass fuels, and mixtures of fuels, behave in combustion and other thermal processes" and "their physical and chemical properties impact on the reliability and performance of practical equipment". Firstly, the research on the handling, combustion and aftertreatment of increasingly sustainable biodiesel blends in modern diesel engines will reveal how the combustion/emission processes and engine/vehicle components respond to various physical and chemical properties of different bio-fuel compositions. This will increase knowledge of how the fuels can be better formulated (including blending with a range of commercial diesel fuels) for the market. Secondly, technical solutions resulting from the unique expertise of the consortium will be explored to maximize the use of different biodiesels, by allowing the compression ignition engine to tolerate a variety of those fuels in a way comparable with the spark-ignition 'Flex-fuel' technology currently introduced.

Technical approaches for this project include:

- State of art and vision
- Fuel formulation, properties and spray characteristics
- On-board fuel pre-treatment and exhaust after-treatment
- Combustion and engine performance
- Vehicle testing

Partners for this project are:

- University of Birmingham
- Jaguar and Land Rover
- Green Fuels
- Johnson Matthey
- Shell