

# EE-VERT

Energy efficient vehicles  
for road transport



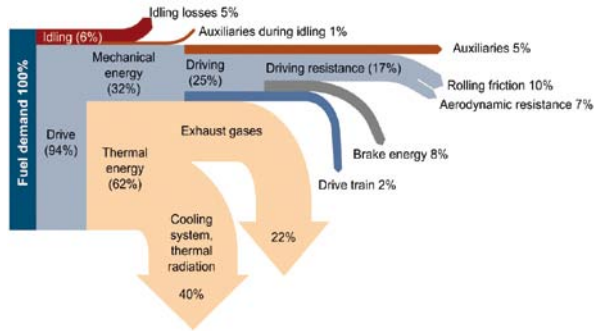
## Motivation and Objectives

Present day vehicles have a certain number of features and constraints that make it difficult to optimise the use of electrical energy. Some examples:

- A single electrical power bus (the power net) with the generator, the battery and all consumers connected continuously to this bus
- Electrical power generated and consumed continuously irrespective of operating conditions
- Many other auxiliaries consume power continuously
- Some "islands" of technology already deployed that change this model e.g. regenerative alternator, EPAS, electrified auxiliaries (especially in hybrid electric vehicles)
- New functions e.g. stop-start exceeding the capabilities of the present architecture

The objectives of the project are the following:

- Reduction of 10% in CO<sub>2</sub> on NEDC through co-ordinated energy generation and consumption
- Technologies and processes developed in the project are applicable to vehicles with conventional powertrain as well as hybrid electric vehicles
- Life cycle assessment methods are used to evaluate the environmental impact of the new technologies compared to existing vehicles



## Project Plan, Milestones and Deliverables

### Project plan

- WP1: Requirements for energy management
- WP2: Components
- WP3: System
- WP4: Demonstrators
- WP5: Dissemination and exploitation

### Milestones plan

- Month 12: concept selection
- Month 24: critical technology review
- Month 36: technologies incorporated into vehicle demonstrator

## Technical Approach

- Electrical power used for energy transfer between systems
- Electrical power generation scheduled according to when it can be generated with low energy losses
- Energy recovered from other sources (e.g. regenerative braking, waste heat, solar cells) and placed in short-term or long-term storage depending on present and predicted demand
- Requires changes in electrical architecture to permit integration of multiple generation, actuation and storage devices with different optimal operating voltages and usage profiles

## Achievements

- WP1: State-of-the-art, mission profile, and requirements specification reports delivered
- WP2: Power generation concepts outlined and first simulation models created
- WP3: Agreement on tools and processes

## Organisational Information

Budget	6.7 M€	Funding	3.62 M€
Duration	36 months	Start	January 2009
DG	Research	Priority Area	Sustainable Surface Transport
Coordinator	Dr David Ward, MIRA Ltd	Contact	david.ward@mira.co.uk
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