PROJECT

P-MOB

Integrated Enabling Technologies for Efficient Electrical Personal Mobility

Funding: European (7th RTD Framework Programme)

Duration: May 2010 - Apr 2013

Status: Complete

Total project cost: €4,351,761

EU contribution: €2,788,000

Call for proposal: FP7-2010-ICT-GC

CORDIS RCN : 95088

Background & policy context:

The P-MOB project aimed at breaking the link between the growth in transport capacity and increased fatalities, congestion and pollution. Transport is responsible for 73% of total oil consumption in EU, it is a major source of pollution and greenhouse gas emissions and the chief sector driving future growth in world oil demand. Most continents have an increasing dependence on primary energy. The demand on increased safety, reduced noxious and green house emissions has the following expectations: less than 30 000 fatalities in EU in the 2010, radical reduction of both CO2 and NOx aiming at zero local emissions.

Transport will be faced with the following:

- People and goods will increase their need of mobility by some 35% per decade for at least 3-4 decades
  - The number of megalopolis is increasing and most of the traffic will be urban
  - Urban centres are more and more congested and closed to traffic; 1% of our GDP is wasted in congestion
  - Mobility is related to invariants such as: people move 1 hour a day
  - The average speed, since it has measured the first time in 1923, is stable in the range 35-40km/h
  - people tend to relate mobility to a mental freedom and as many as 90% of km are run with a single occupant
  - In the EU 1 million more cars are on the road every 50 days and globally the number of vehicles is projected to 2 200 million in 2050.

The emerging markets require at most low cost and environmentally compatible vehicles. P-MOB addresses the above challenges proposing: a novel concept of fully electrical personal mobility, reduction of system complexity concentrating on the essentials, advanced systems integration including solar cells, e-motor and magnetic torque control of the wheel, power-energy management, distributed pack of accumulators, technologies to sell-buy electricity by adaptable vehicle to grid connections. On an average day in South EU the propose vehicle is aiming at 20 km/day by using solar energy only.

Objectives:

This proposal addresses the development of key enabling technologies for Light Electrical Vehicles having embedded photovoltaic (PV) on the body. The P-MOB project aims to break the link between the growth in transport capacity and increased demand on oil, fatalities, congestion and pollution. On an average day in South EU the proposed vehicle is aiming to exceed 20 km/day by solely utilising solar energy.

The following will be amongst the novel opportunities (or challenges) the automotive sector will face in the future:

- Mobility needs will increase some 35% per decade for at least 3-4 decades. The habits and needs of young drivers, in advanced societies in particular, are changing. However, whilst it is recognised that new models of mobility may be on the horizon, the size of the new economies is such that the

current global trend will continue for several decades.
- The number of megalopolis is increasing and most of the traffic will be urban.
- Urban centres are increasingly congested and/or closed to traffic; 1% of our GDP is wasted in handling congestion.
- Mobility is ultimately dependent on invariants, such as i) people move one hour a day with an average speed that has remained relatively constant (since it was first measured in 1923) in the range 35-40km/h; ii) people tend to relate mobility to a mental freedom and, according to the US Bureau of transportation, as much as 90% of the 'km driven' are with a single occupant.
- In Europe alone, a million additional cars are on the road every 50 days and, globally, the number of vehicles is projected to increase from 900 million in 2007 to 2200 million by 2050.
- Emerging markets primarily require low cost and environment compatible vehicles.
- The P-MOB project addresses the above challenges by proposing: a novel concept of fully-electric personal mobility addressing the needs of urban mobility whilst also encompassing characteristics suitable for extra urban mobility;
- reduced system complexity (a common car can have more than 50 processors, actuators and sensors) with a focus on the key essentials;
- advanced systems integration including thin film solar cells;
- e-motor and electromagnetic torque control of the wheel;
- integrated power-energy management;
- distributed battery-supercapacitor pack;
- technologies to facilitate 'sell-buy electricity' by adaptable vehicle to grid connections.

Mobility is currently based on

Parent Programmes:

FP7-ICT - Information and Communication Technologies

Institute type: Public institution

Institute name: European Commission

Funding type: Public (EU)

Lead Organisation:

Centro Ricerche Fiat - Societa Consortile Per Azioni

Address:
Strada Torino, 50
10043 ORBASSANO (TO)
Italy

Organisation Website:
http://www.crf.it

EU Contribution: €397,440

Partner Organisations:

Interactive Fully Electrical Vehicles Srl

Address:
Via Carle
12048 Sommariva Del Bosco Cn
Italy

Organisation Website:
http://www.ifevs.com

EU Contribution: €71,850

The University Of Sheffield

Address:
Firth Court Western Bank
Sheffield
S10 2TN

United Kingdom

Organisation Website:
http://www.sheffield.ac.uk

EU Contribution: €476,200

Magnomatics Limited

Address:
Park House Bernard Road - Sheffield
Sheffield
S2 5BQ
United Kingdom

Organisation Website:
http://www.magnomatics.com

EU Contribution: €166,000

Mazel Ingenieros, Sociedad Anonima

Address:
Avenida Can Amat
8630 Abrera
Spain

Organisation Website:
http://www.mazel-ingenieros.com

EU Contribution: €340,000

Siemens Ag

Address:
Wittelsbacherplatz 2
80333 MUENCHEN
Germany

Organisation Website:
http://www.siemens.com

EU Contribution: €535,000

Integra Renewable Energies Srl

Address:
Via Dei Missaglia
20142 Milano
Italy

Organisation Website:
http://www.integrare.it

EU Contribution: €159,220

Poli Model Srl

Address:
Strada Carignano
10024 Moncalieri
Italy

Organisation Website:
http://www.polimodel.it

EU Contribution: €642,290

Technologies:

EV support technologies
Embedded photovoltaic (PV) cells for EVs

Development phase: Research/Invention

Documents:
Presentation (Final report)

STRIA Roadmaps: Transport electrification

Transport mode: Road transport

Transport sectors: Passenger transport

Transport policies:
Decarbonisation, Deployment planning/Financing/Market roll-out, Environmental/Emissions aspects

Geo-spatial type: Other