

ASTOR

Assessment and Testing of Advanced Energy Storage Systems for Propulsion and Other Electrical Systems in Passenger Cars.

Objectives:

The key objective of project ASTOR will be the independent testing and commercial assessment of the potential prospects in the field of electrical energy storage to be used as vehicle traction power or supporting traction power. Energy storage systems for these applications are based almost entirely on the rechargeable electrochemical battery, with some work also on supercapacitors.

The work involved in project ASTOR will be related to the ongoing advancement of the energy storage technologies themselves leading to the need to develop improved testing and evaluation techniques. This is particularly so in the following cases, where the market requirement will be demanding very specific testing techniques:

- high power storage devices, such as those to be used in hybrid electric vehicle systems.
- 42 Volt systems for the main vehicle electrical supply system and so can include applications in conventional internal combustion engine powered vehicles.

In addition, previous work on safety testing has shown that more detailed work will be required to reach a better level of representation of the real accident and abuse conditions.

The originality of the work in project ASTOR will be in the detailed testing and commercial assessment activities, both of which are aimed at providing an independent measurement of energy storage systems in a way that represents automotive applications and use in service.

Description of work:

The ASTOR project concentrates specifically on a single key area of a technology that can have a very significant influence on clean vehicles of the future - namely the Electrical Energy Storage System. The key activities of project ASTOR can be summarised as follows:

- Identification of the most relevant and potentially successful energy storage systems, making use of prior knowledge within the consortium.

This judgement has led to the project proposal concentrating on 4 principal system types - advanced lead acid, nickel metal hydride, lithium (liquid & polymer electrolyte) and supercapacitor. Other system types will be covered in a general 'feasibility' activity.

- Provision of common specifications of system performance and test requirements, developed from those already available within the consortium.
- Procurement of suitable energy storage systems, specifying where possible systems that are representative of the vehicle application in term of size, packaging and control.
- Testing of modules and complete systems on benches for performance, durability and safety / abuse at recognised Test Institutes, again making use of prior knowledge within the consortium.
- Feasibility studies and limited testing of systems available in the longer term.
- Determination of selected systems total environmental impact from manufacture, through use and ongoing recycling.
- Commercial analysis studies and business study tours of pre-selected supplier activities, also outside Europe, in particular in the USA.
- Provision of data base.
- Set up of an information exchange link between European and US vehicle manufacturer concerning system performance, system test and safety requirements of advanced electrical energy storage systems.

All of the above actions will generate specific, measurable deliverables in the form of documented test procedures, test reports, study reports and commercial evaluation reports. The essential nature of the approach outlined in this project relies on its independence and therefore ability to compare, directly, different energy storage technologies and different supplier capabilities.

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