

JRC support to EVS

European Commission – DG Joint Research Centre
Institute for Energy and Transport



www.jrc.ec.europa.eu

*Serving society
Stimulating innovation
Supporting legislation*

JRC - Who are we and what do we do?

JRC is the European Commission's in-house science service. It provides the science for policy decisions, to ensure that the EU achieves its Europe 2020 goals for a productive economy as well as a safe, secure and sustainable future.

The JRC plays a key role in the European Research Area and reinforces its multi-disciplinarity by networking extensively with leading scientific organisations in the Member States, Associated Countries and worldwide.

Science-based input to EU legislation and standardisation

JRC



Scientific-based
Support



EU Legislation
Standardisation



Sustainability Competitiveness



Innovation
Jobs & Growth



Institute for Energy and Transport (IET)



Petten, NL

~ 375 Staff:
285 Petten, 90 Ispra



Ispra, IT

Mission:

To provide support to EU policies and technology innovation related to:

- Energy - to ensure sustainable, safe, secure and efficient energy production, distribution and use and
- Transport - to foster sustainable and efficient mobility in Europe

⇒ Independent of private, national, financial or commercial interests

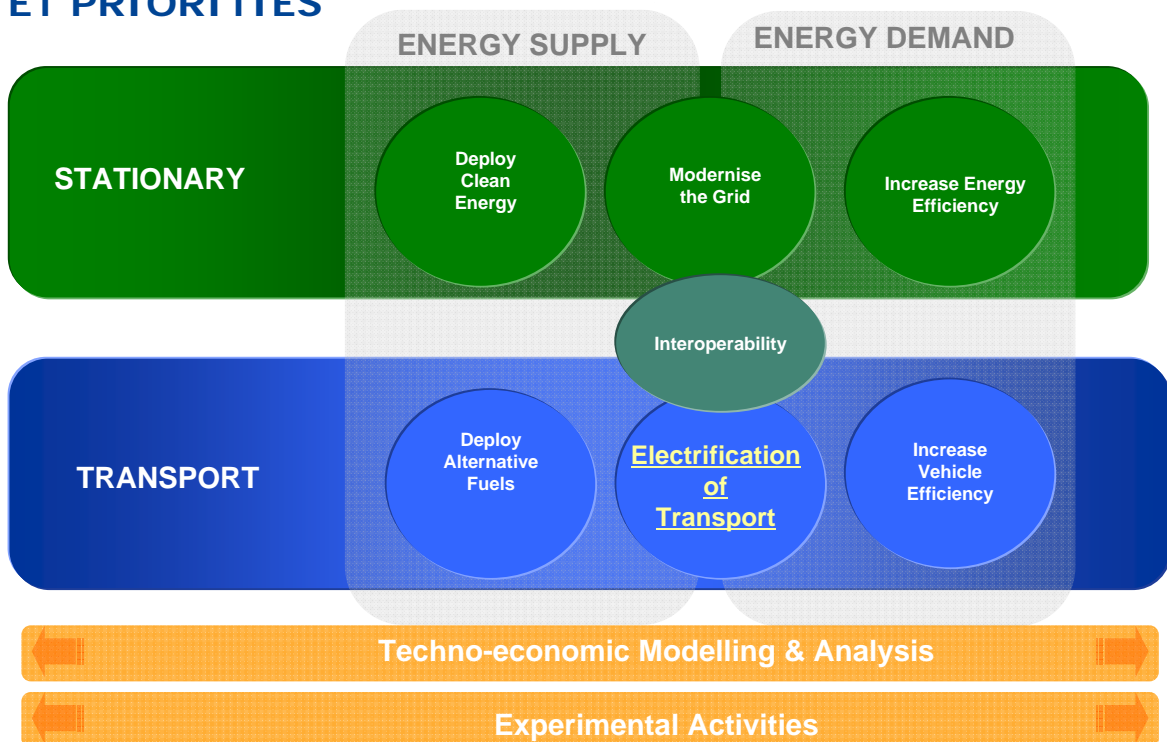


IET Main Competence Areas

- Renewable energy
- Sustainable & safe nuclear energy
- Security of energy supply
- Energy techno/economic assessment
- Bioenergy including biofuels
- Hydrogen storage and safety
- Fuel cell performance
- Clean fossil fuels
- Sustainable transport
- Energy efficiency



IET PRIORITIES





JRC-IET – Support to Electrification of Transport

Frame – Letter of Intent with US DoE (Nov. 2011)



Letter of Intent

Co-operation between the
United States Department of Energy
and

the Joint Research Centre of the European Commission
on Electric Vehicle - Smart Grid Interoperability Centres



EC JRC-IET

DOE ANL

For over ten years, the United States and the European Union have sought to expand scientific collaboration across the Atlantic through their Science and Technology Agreement. Signed in 1997, this Agreement serves as a broad framework for cooperation, enabling some of our most distinguished scientists and best research institutions to collaborate on a wide range of scientific topics and initiate new joint programs. The Agreement encourages cooperation in areas where the United States and the European Union (EU) are doing some of the most advanced research in the world on energy and transport technology.

Following consultations between William Kennard, U.S. Ambassador to the EU, and Dominique Ristori, Director-General of Joint Research Centre (JRC), and exploratory missions of U.S. Department of Energy (DOE) representatives to the JRC Ispra facilities, and of JRC personnel to DOE's Argonne National Laboratory, the JRC and DOE seek to cooperate on e-mobility, focusing on electric vehicle interoperability with charging and smart grid equipment, as follows:

Joint
Research
Centre



Interoperability

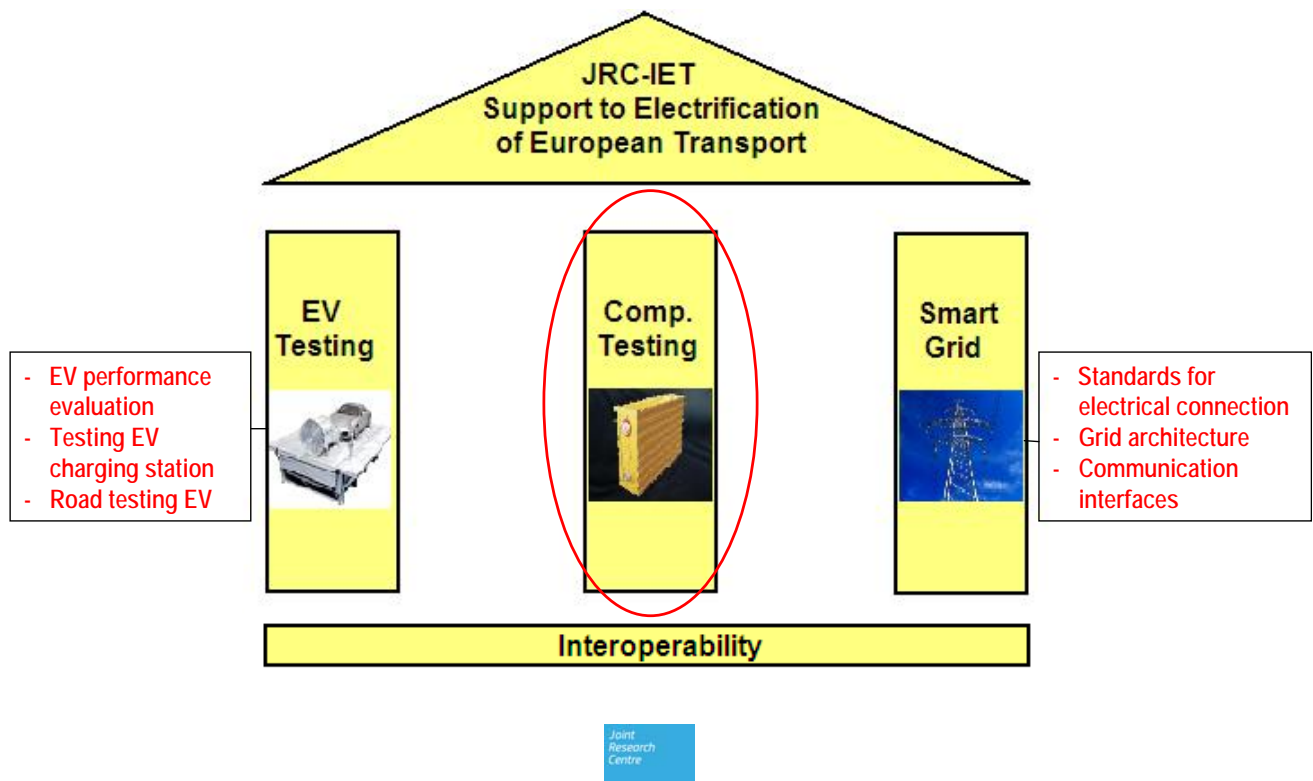
Letter of Intent JRC/DoE – November 2011



Goals:

- Support **standardization**, promoting a EU/US common approach
- Address the **interoperability** issues between e-vehicles & smart grids (including ICT)
- Provide **testing** facilities for electric vehicles and the related equipment
- Ensure a permanent link with US and EU car **industry**

Joint
Research
Centre



JRC-IET – EV Battery Testing:

Scope: safety and performance assessment

Activities:

- Identification of safety and performance issues
- Pre-normative research to establish/improve approaches and methodologies for assessment of safety and of performance
- Expert participation, on behalf of Commission, to relevant European and international standardisation and regulatory activities
- Underpinning research to improve understanding of factors affecting safety and performance

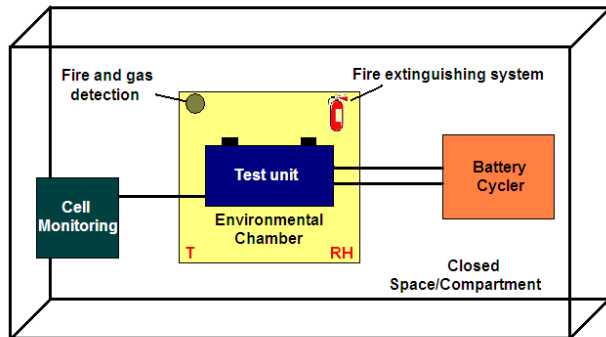
Main Customers:

- European Commission policy-DGs (ENTR, MOVE, ..)
- European and International Standards Organisations

Partners, stakeholders:

- European battery research community
- US-DoE, JARI, ...

Performance tests (cells, modules, packs)

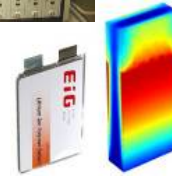


Diagnostics

Freq. Response



Cell/Module Teardown



IR Thermal Imaging

- Battery pack disassembly
- SEM/EDS analysis
- Computed tomographic scanning
- GC gas analysis
-

Safety assessment

Mechanical Abuse:

- Mechanical shock test
- Shock test
- Penetration
- Immersion
- Crush

Thermal Abuse:

- Radiant heat test
- Thermal stability
- Overheat/thermal runaway



Electrical Abuse:

- Short circuit
- Overcharge
- Over-discharge