

Electromobility+ Information Event



Brokerage Session
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Hybrid Distributed Energy Storage System HYDES²

Hybrid Distributed Energy Storage System HYDES²

- This project is presented by MPcorporacion and WindInertia Technologies
 - Oliver Martinez Vitoriano (WindInertia R&D Director)
 - Eugenio Domínguez Amarillo (Windinertia CEO)
- MPcorporacion
 - Spanish LE Enterprise
 - Engineering and industrial services department
 - Engineering, industrial manufacture, maintenance and infrastructure experience.
- WindInertia Technologies
 - Spanish Technology Based SME
 - R&D enterprise in energy, control and power electronics



Hybrid Distributed Energy Storage System HYDES²

- **Focus**
 - Design & Development of a novel hybrid distributed energy storage system based on supercapacitors.
 - Supercaps energy management and control system based on a Patent of WindInertia. (Patent in process)
 - Design & Development of an energy management system to control “the energy to share” stored in supercaps
- **Advantages**
 - Integration of a full scale energy storage grid minimizing the cost an infrastructure
 - High speed energy storage system improving the electric vehicle grid integration (and V2G), minimizing the problem of high speed recharge in the grid
 - Provide a full scale energy storage system to achieve a full integration of renewable energies an other energy source into the grid.

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- **Deliverables**

- Points of storage with supercaps system, design and development (Mechanical, Power electronics, communications, etc)
- Infrastructure of grid integration
- Energy stored management algorithms (energy sharing, recharge energy, etc)
- ICTs

- **Partners**

- MPcorporacion (Industrial development partner)
- WindInertia (Technology development partner)



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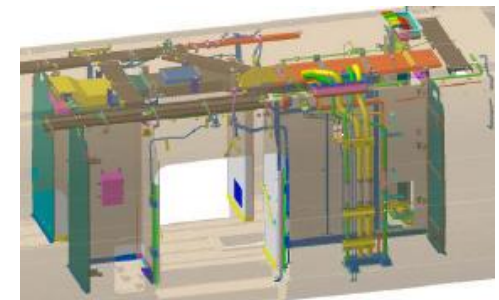
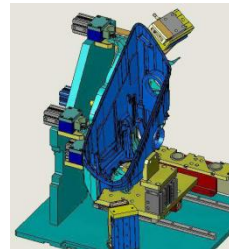
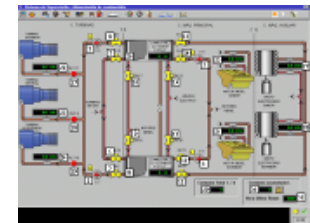
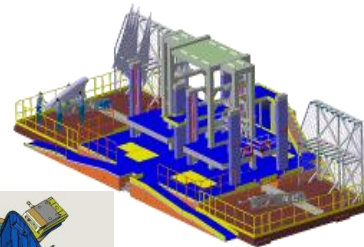
- Looking for:
 - **SME**
 - ICTs technologies developers
 - Management and decentralized control developers
 - Supercapacitors Manufacture Industry
 - Control and Comms research centres
 - **LE**
 - Electric grids infrastructure enterprises



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- **Skills**

- MPcorporacion (Industrial development partner)
 - Experience in industrial development in Aeronautics, Railway, Energy, Maintenance Plans
 - Industrial Manufacture Availability
 - Lean Manufacturing
 - Railway equipment
 - Automobile industry
 - Industrial Maintenance
 - Equipment safety
 - Vertical traffic equipment
 - Energy efficiency
 - Several national and international R&D Projects



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- **Skills**

- WindInertia (Technology development partner)
 - Own Technology in energy storage based on supercaps
 - High R&D Experience
 - Own technology in electronics control systems
 - Technology Based Enterprise
 - Patents in controls systems and storage systems
 - Own technology in energy efficiency



- **Previous projects**

- SOLARKIT High speed energy peak shaver integrating renewable energies (Based on supercaps)
- WINDAQ. Electric, environmental, and thermal magnitude acquisition system.
- Experience in electric and fuel cell cars.

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Key Dimensions

- **3. Strategic research on technical dimensions of the recharging systems**
 - **Technical models of battery recharge solutions:**
 - Direct effects of fast recharges on the electrical network
 - Acceptability by vehicles owners of partially charging their battery packs
 - **Managing the power grid**
 - Economic viability fast recharging equipments
 - Feasibility of providing fast recharging spots with their own primary storage device in order to avoid network unbalance when power is needed during fast recharge of a vehicle battery pack
 - Feasibility of providing all (fast and slow) battery recharging spots with their own primary intermediate electricity storage system in order to be able to store electricity during off-peak hours or when intermittent renewable sources provide much energy because of favorable weather conditions
 - Feasibility and advantages of utilizing vehicle batteries for storing energy in order to balance the grid and minimize the need to use highly carbonated electricity sources
 - Reward of the vehicle owner when his or her battery pack is used to store electricity by the utility company

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Key Dimensions

- **Recharging Stations**
 - Vehicle-infrastructure communication before, during and after the recharge. Both wireless and by-wire communications can be used, depending on the purpose.
 - Systems for recharging spots- slow and quick
- **5. Technology based Innovation**
 - **Energy Storage and management**
 - New supercapacitor materials and electrolyte
 - Design of efficient and compact converters and inverters

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