

University of Bologna – ITALY

Integrated research group on
Electric Powertrain and Electric Vehicles

GREEN VEHICLES 2015 - GV-8-2015

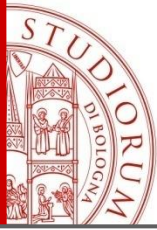
Topic: Electric vehicles' enhanced performance and integration into the transport system and the grid

Project proposal:

From plug to shafts. Definitive electric powertrain integration

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Brussels, Info Day on the EGVI PPP - 21 October 2014

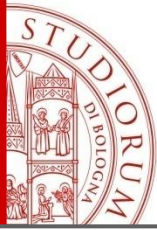


PROJECT PROPOSAL

From plug to shafts. Definitive electric-powertrain integration

TARGETS

- **Zero power wiring harness**
- **Quasi-zero control wiring harness**
- **After crash, maximum electrical safety for occupants and rescue team**
- **Management of low cost cells and 'next generation cells'**
- **Cost-benefit assessment and prioritization of vehicle safety**



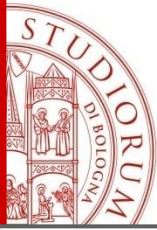
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BASIC IDEAS 1/2

SYSTEM

- **All-in-one box for the powertrain components.**
- **Mechanical, electrical and thermal integration among powertrain components**
- **Multilevel end-user interface to vehicle through web interface and portable smart devices**
- **Concepts demonstrated by transforming existing car in EU segment A**



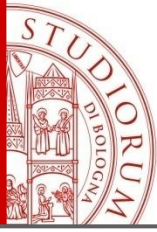
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BASIC IDEAS 2/2

BMS

1. **Exploitation of miniaturization in BMS peripherals for individual cell OV, OC, TEMP monitoring and protection**
2. **Standardization of BMS interface, for application on different cell technology and cell shape**
3. **Mainly oriented to management of cells characterized by high dispersion of cell parameters values**
 - **low cost cells IonLi cells**
 - **next generation cells,**
 - **small and very small cell size (from 18650)**
4. **Standardization of the integration between BMS with traction system and charging system**



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PARTNER SEARCH (list not completed)

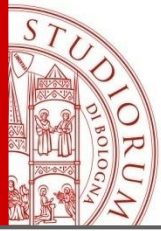
RESEARCH CENTER, UNIVERSITY:

- **Microelectronics for BMS peripherals**
- **EMC analysis and tests**
- **Functional safety**
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INDUSTRY:

- **Drive-by-wire (braking and steering)**
- **Battery assembly**
- **Power electronic components**
-

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UNIBO PAST CURRENT/PAST PROJECTS

Current FP7 project



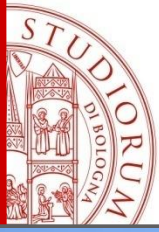
Full electric cars



Powertrain



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