

### Italian Test site: Testing & Assessment activities

DEMONSTRATIONS  
AREA

*The implementation of the Italian test site has given rise to key results for potential widespread adoption of dynamic WPT systems for electromobility. The test site is a tangible example of what means to set-up & manage this kind of complex infrastructure*

#### Overview

The Italian test site has given the opportunity to test a complete infrastructure based on dynamic inductive charging systems. The two implemented prototypes allowed to test not only the charging system as a single element but its interaction with several actors that can be involved in the construction, maintenance and management of these kind of systems. The two implemented prototypes integrate all the aspects related to the real integration in the road pavement, the connection with the electric grid, the communications with an ICT infrastructure able to control the vehicles that are approaching the charging lane verifying that the charging process was successful.

#### Partners involved

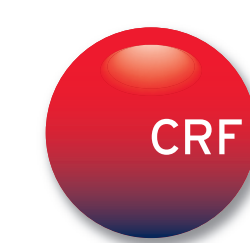
TECNOSITAF S.p.A.



POLITECNICO  
DI TORINO

saet<sup>g</sup>group

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#### Charging process performances

The performances of SAET and POLITO charging systems have been extensively tested in order to verify:

- the effectiveness of the charging during the vehicle motion;
- the capability to transfer power in a continuous way also in case of vehicle misalignment;
- the ability to communicate in a fast and robust way with the ICT infrastructure.



#### POLITO system

Maximum average transferred power = 5.2 kW

Maximum efficiency = 81%

Maximum test speed = 50 km/h

Maximum manageable misalignment = 30 cm

Compliance with actual standard for

EMF exposure verified for passengers and people in proximity of the vehicle



#### SAET system

Maximum average transferred power = 9 kW

Maximum efficiency = 66%

Maximum test speed = 30 km/h

Maximum manageable misalignment = 30 cm

Compliance with actual standard for

EMF exposure verified for passengers and people in proximity of the vehicle

Both systems have been directly embedded in the road pavement providing information about the techniques and the materials giving also useful data for the system integration and life cycle assessment.

#### Criticism & Potential Improvement

The systems received some criticism with respect to their performance and there were suggestions for further improvement or deeper investigation in some aspects. Some relevant examples are:

- Improvement of the robustness of the communication protocol for the on-ground communications;
- Minimize effects of electromagnetic compatibility which affect the quality of the signals for the control of the charging lane together with the study of a more robust displacement of power and signal cables;
- Research of less expensive and more robust capacitors for the coil compensation;
- Improvement of components displacement for maintenance and energy distribution.

## Final Event & Demonstration | 21-22 June 2018 Italy

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#### Consortium

#### Project facts

Duration: 48 M

DG / Unit: Research and Innovation

Budget: 9 M€

Funding: 6.5 M€

*This project has received funding from the European Union's FP7 for research, technological development & demonstration under GA no 605405*



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