About the EURAMET EMPIR Project MICEV

Inductive charging is a **wireless charging technology** that will be widely used with electric vehicles (EVs) in the near future. This offers many advantages over traditionally fuelled and current EVs such as charging whilst in motion, smaller batteries, high autonomy, and high-efficiency power transmission, all leading to the **reduction of CO_2 and fossil fuel consumption.**

The project MICEV aims to advance inductive/wireless power transfer (IPT/WPT) for EV charging by developing **metrological techniques for measuring WPT efficiency and reliable demonstration of compliance with existing safety standards for human exposure.**

Training course organised
by

PTB

INRiM
ISTITUTO NAZIONALE
DI RICERCA METROLOGICA

in the framework of the
EURAMET EMPIR Project MICEV

Participation in person or by webinar
NO FEE

Online registration at
https://www.micev.eu/training-and-seminars/training
within November 18th, 2019

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EURAMET

WCV 2019

Wireless Charging of Vehicles

Measurements, modeling, and human exposure

November 27th, 2019
Physikalisch-Technische Bundesanstalt (PTB)
Braunschweig
Germany

TRAINING COURSE

Chair: Florian Schilling, PTB

09:00 Welcome by Electrical Energy Measuring Techniques Dept., PTB, Braunschweig, Germany

09:10 Introduction
Mauro Zucca, INRIM, Torino, Italy

09:20 *Electric vehicles and their charging. The point of view of a car manufacturer*
Björn Bergqvist, Volvo Car Corporation, Gothenburg, Sweden

09:40 Questions and answers

Chair: Ilaria Liorni, SPEAG - Schmid & Partner Engineering AG

IPT systems, technologies, and standards

09:45 *Introduction on charging systems and stations*
Rubén Acerete, Research Centre for Energy Resources and Consumption, CIRCE, Zaragoza, Spain

10:00 *A charging systems for minibus: the Victoria Platform*
Rubén Acerete, CIRCE

10:15 *A dynamic IPT system for private transports: the PoliTO Charge While Driving*
Vincenzo Cirimele, Dept. of Energy "G. Ferraris", Politecnico di Torino, Italy

10:30 *Regulatory framework for wireless charging of electric vehicles*
Fabio Freschi, Dept. of Energy "G. Ferraris",

Chair: Fabio Freschi, Politecnico di Torino

Modeling the electrical system (converters)

11:15 *Electromagnetic modelling of coupled coils for Wireless Power Transfer systems*
Antonio Maffucci, Università di Cassino e del Lazio Meridionale, Cassino, Italy

11:35 *Behavioral modeling of wireless power systems*
Nicola Femia, Università di Salerno, Italy

11:55 Questions and answers

Chair: Oriano Bottauscio, INRIM

Electrical measurement and efficiency

12:00 *Development of a Power Measurement Unit (PwMU) for measurements at charging stations*
Mauro Zucca, INRIM

12:20 *Development and verification of a standard measuring system for electric power in the frequency range from DC to 150 kHz*
Matthias Schmidt, PTB

12:40 *On site measurements. Some considerations*
Gabriella Crotti, INRIM

13:00 Questions and answers

13:10 Lunch

Chair: Peter Ankarson, Research Institute of Sweden (RISE)

Numerical dosimetry, exposure in real cases and uncertainty in numerical dosimetry

14:10 *In silico Safety Exposure Assessment: Methodologies and Tools to perform Numerical Dosimetry (within Sim4Life environment)*
Ilaria Liorni, SPEAG, Schmid & Partner Engineering AG, Zürich, Switzerland

14:30 *Exposure levels in and around electric vehicles: what we are learning from the MICEV project*
Oriano Bottauscio, INRIM

14:50 *Assessment of human exposure from inductive power transfer systems with stochastic approaches*
Lionel Pichon, Laboratoire de Génie Electrique et Electronique de Paris (GeePs), Paris, France

15:10 Questions and answers

15:20 Conclusions and remarks

15:40 Course end

Programme