

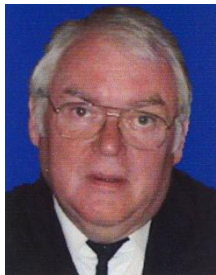
Electromobility+ Information Event

Brokerage Session
13 January 2011





- ✓ *J & A Brunner GbR* is a Small-sized Enterprise (SME) which 2 founders and 5 employees, registered at Wuppertal, Germany under number 2005-03336.
- ✓ In our team works professional programmers, mathematicians, engineers, one professor and telecommunications engineers.
- ✓ We have wide experience in mathematical modeling and prototyping of nonlinear dynamic analog/digital semiconductor devices, high-speed switches, inverters, DC/DC converters, modulators and RF/Microwave Systems.



Josef Brunner,
Project Manager

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- **Project idea:** Design of high-efficient and compact DC/DC converters and inverters for electric vehicles (CONVEL).
- **Objectives:**

The CONVEL project aims to computer –modeling, demonstration and experimental development of high-efficient and compact DC/DC converters and inverters for electric / low carbon vehicles

- **Existing partnership :** IMST GmbH, Germany

www.imst.de



- ✓ Actual electrical vehicles are based on batteries and supercapacitive power assistance system in parallel to the batteries. In such a system, the batteries will be used as energy storage devices while the supercapacitors absorb any power fluctuation.
- ✓ A DC/DC converter connect the supercapacitors to the batteries and is used to adapt the fluctuating supercapacitor voltage to the fixed batteries voltage.
- ✓ The converter needs to be compact as possible and with high efficiency.
- ✓ Efficiency of the converters, operating under high power constraints (acceleration – braking), the minimum losses of power and minimization of the nonlinear distortions of pulse output waveforms in them, play an important role for the reliability and safety of the electric vehicles.

Our skills:

- ✓ mathematical modeling of the nonlinear dynamic and high-speed pulse signal circuits, such as pulse amplifiers, high-speed switches, inverters, DC/DC converters modulators, triggers etc. by means of our novel method for the time-domain computer-simulation ;

(A. Brunner : Meshfree Wavelet-Galerkin Method for Steady-State Analysis of Nonlinear Microwave Circuits, [Meshfree Methods for Partial Differential Equations V Lecture Notes in Computational Science and Engineering](#), 2011, Volume 79, 249-263, DOI: 10.1007/978-3-642-16229-9_16.

- ✓ development of high-speed switches, inverters, DC/DC converters, modulators and triggers (10 patents and 7 publications).

Topics: Key Dimension **5b** of the Electromobility+ call

Thank You