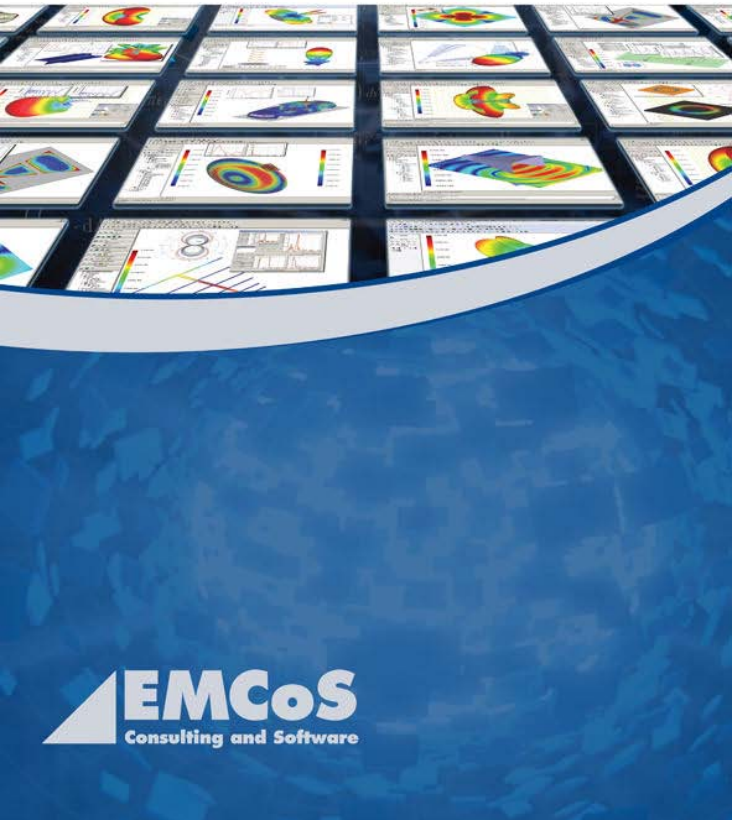
EMCoS 10th Anniversary Users' Meeting

7 October 2011, Nuremberg, Germany



It is a great pride and pleasure to announce that in 2011 we have celebrated our 10th year in business!

To commemorate this together with our loyal customers and partners, on October 7 we have organized a social event and a technical session to share and exchange latest EMC simulation techniques and issues, development plans and application strategies of EMCoS products.

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List of Session Attendees

EMCoS	Roman Jobava
	Ekaterina Yavolovskaya
	Anna Gheonjian
	Sophia Iosava
EM Consulting and Software Europe	Snizhana Palamaryuk
Audi AG	Christoph Ullrich
	Hicham Tazi
	Matthias Ficon
	Ralf Eichner
	Christian Lippert
	Eduardo Schittler Neves
Daimler AG	Martin Aidam
	Andreas Ludwig
Renault S.A.S.	Xavier Bunlon
	Imad Chahine
	Peniamin Matossian
CASSIDIAN	Wolfgang Poisel
Mazda Motor Corporation	Yasushi Hamada
PSA Peugeot Citroën	Marco Klingler
BMW Group	Johannes Hippeli

Ford Motor Company	Richard Kautz
AVL Trimerics GmbH	Wolfram Meyer
	Wolfgang Röhrner
NEXIO	Madjid Mahmoudi
Hochschule Biberach	Bernd Burghardt
VIRE Technologies	Zhang Jinwen
	Qian Chen
Hollywell Electronic System Co.	WeiZhong Fang
	JianHua Zhou
JSOL Corporation	Takashi Yamada
	Akinori Shiga

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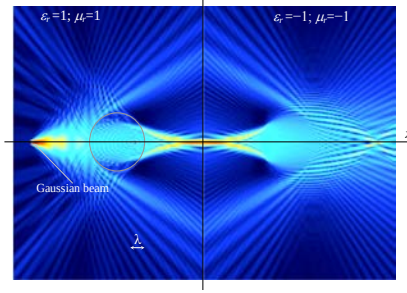
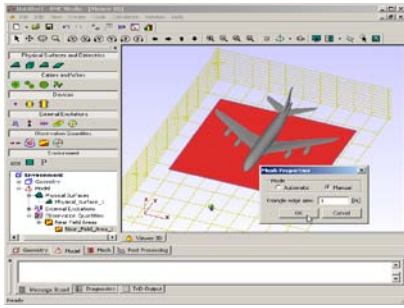
Welcome Addresses
EMCoS Company History and Development

- Georgia: Historical Perspective
- Electrical Engineering in Georgia
- LAE: Laboratory of Applied Electrodynamics
- EMCoS: EM Consulting and Software
- Live Presentation of Software





Roman Jobava

EMCoS, Georgia

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EMCoS – EMC Simulation Technologies and Recent Developments

Anna Gheonjian, Ekaterina Yavolovskaya
EMCoS, Georgia

Abstract
Starting from the company foundation and up to now EMCoS makes contribution to solution of the most challenging engineering problems and development of advanced computational techniques. Following the latest trends in engineering technologies our recent developments are focused on several key topics:

- EMC simulations in HV/EV powertrain systems
- Modelling of cable harness in complex environment
- Analysis of PCB EMC on system level
- Automotive antenna simulation techniques, including FVTD modelling of compact ultra-wideband antennas
- High frequency techniques for simulation of optimal antenna placement on big platforms like aircrafts, satellites, ships etc.

An overview of EMCoS' progress in abovementioned directions, as well as main ideas for further research and development were discussed.

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How Simulation Changed the Antenna Development Process

Abstract

Over the last years new simulation techniques have been introduced and the user interface of EMC Studio has constantly been updated. More and more complexity was added to the models and therefore opened new ways of analyzing automotive antennas.

We will show how challenges in antenna development spawned some of these new simulation techniques or tools that helped create the increasingly complex simulation models. As the implementation of these functionalities gave new insights into various aspects of the antenna design, this reflected on the development process itself.

We will give a short overview of this interweaved evolution and give some examples of how the antenna development process was changed due to advances in electromagnetic simulations.

Christoph Ullrich, Hicham Tazi

Audi AG, Germany

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Simulation of EMC Problems in Electronics Systems in Daimler AG

Abstract

The presentation shows the EMC simulation at Daimler AG. At first a quick summary of the current status of the simulation activities will be given. In the following we will discuss the challenges for EMC simulation with the increasing integration of HV components into the vehicles.

The application of simulation for future HV systems requires an extension and improvement of the well known methods. Model generation of components as frequency dependent impedance and a noise source will be shown. The specific requirements for the electromagnetic description of the screened cables and connectors will be described. The application of EMC simulation of HV systems in the vehicle will be discussed. The presentation will finish with a future forecast.

Martin Aidam, Andreas Ludwig

Daimler AG, Germany

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Automotive EMC simulation at Renault: a short review of modeling and process issues

Abstract

EMC simulation has been used at Renault for 10 years, and EMCoS products since the end of 2007. In this presentation we will show the way we handle the simulation process at the full car scale, the main bottlenecks we still need to overcome, and some examples of benefits we can get from such simulations.

We will also give a glimpse at recent promising results showing how we can use simple equivalent circuit models of embedded devices including information on susceptibility thresholds, thus enabling to foresee actual failure of a function from simulation.

Xavier Bunlon, Imad Chahine, Peniamin Matossian

Renault S.A.S., France

EMCoS 10th Anniversary Users' Meeting
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Impacts of connector aging on the emission levels of global and separate shielded 3-phase power cables

Abstract

High voltage links in automotive power trains require shielding in order to comply with emission requirements (validation / homologation).

In the case of 3-phase UVW cables, different shielding solutions can be found, in particular, global or separate shielding. This presentation will provide some results on the impacts of connector aging for both types of solutions.

Marco Klingler, Ariel Lecca, Salah Benhassine

PSA Peugeot Citroën, France

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Windshield antenna performance analysis with EMC-STUDIO

Abstract

In the past, Mazda developed the sensitivity performance of the windshield antenna for the radio reception system by the try-and-error procedure with the actual prototype vehicle.

However, with this process, we cannot achieve our development within the shortened development period. Therefore, we need to transform the actual prototyping process into virtual prototyping process. Mazda developed the virtual visualization technology for the windshield receiving performance with CAE.

This report shows the comparison between actual measurement characteristics and CAE with regard to impedance, directivity and gain.

Yasushi Hamada, Marie Tsurunaga

Mazda Motor Corporation, Japan

Social Event – Get Together

Technical sessions were followed by free discussions in a relaxed atmosphere

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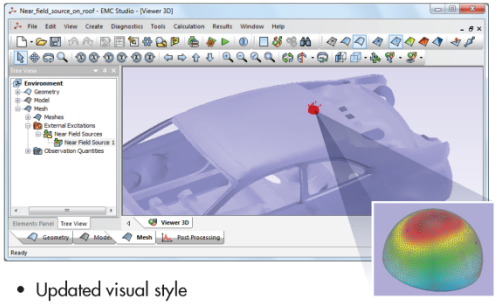
EMCoS Products Upcoming Release Announcements

EMC Studio v7.0

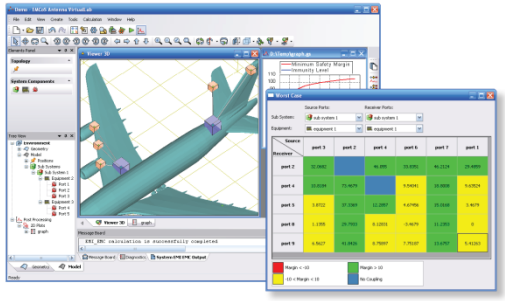
Coming in February 2012



- Updated visual style
- Substantial improvement of glass antenna construction process
- Multitask - fast fullwave solution of model optimization/tuning problems
- Flexible definition of infinite ground plane location
- Advanced control of sources and field calculation parameters to provide correlation between simulation model and measurement setup
- Special Near Field Source GUI for flexible combination of components in system simulations
- ACA decomposition for fast analysis of high frequency problems
- Support of binary calculation input and output to save disk space and processing time
- Improved accuracy for wires in Low Frequency Magnetic Field solver
- Ferrite cores support in Low Frequency Magnetic Field solver
- Fast iterative solutions for low frequency problems
- Improved calculation of stochastic bundles and advanced tools for its analysis
- Calculation of magnetic induction B for more convenient comparison of simulation results with measurements
- Visualization of force lines for more informative analysis of near fields
- Library of MATLAB scripts for advanced data processing

EMCoS Antenna VLab v1.5.2

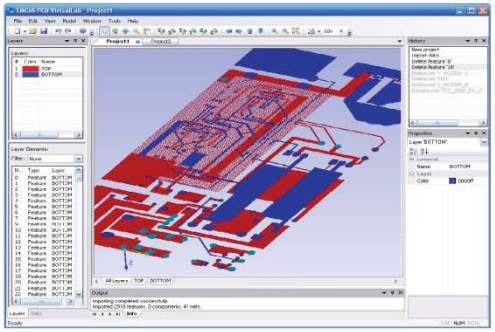
Coming in October 2011



- EMI estimation in complex RF environments containing large amount of transmitters and receivers
- Estimation of in-band and out-of-band interference for all transmitter/receiver pairs in the model
- Parametric models for common antenna types such as dipoles, whips, parabolic dish, horn, spiral, etc. and corresponding field pattern visualization
- Expandable system component libraries with common models that can be shared among multiple projects
- Modeling of spurious emissions and harmonics of transmitters and receivers is performed according to MIL-STD characteristics
- Provides convenient CAD tools for fast geometry pre-processing
- Support of a variety of CAD formats including ACIS SAT, IGES, STEP, CATIA, NASTRAN
- Computes separate narrow band and broadband EMI margins for a more complete assessment of interference problems
- Computation and visualization of coupling lines between transmitter/receiver pairs
- One-to-one and many-to-one analysis to predict the effects of multiple emitters on selected receivers
- Matrix view for displaying worst-case results in traffic-light colors format (Green-Yellow-Red)

EMCoS PCB VLab v1.0

Coming in November 2011



- Import of PCB data from ODB++ format
- Import of multiple CAD formats (ACIS, IGES, STEP, CATIA V4 & V5)
- 3D Viewer for visualization of complex PCB data, tools for working with nets, layers, excitations and dielectrics
- Multi-project environment and customizable interface
- Parasitic RLC extraction on Printed Circuit Boards and arbitrary geometry objects
- Creation of equivalent parasitic circuits for System Simulation and Signal Integrity analysis
- Export of simulation model to EMC Studio for full EMC analysis
- Full support of 64-bit platform
- Transmission line technique for analysis of Signal Integrity and Radiated EMI