

**THE INSIDES OF
ELECTRIC MOBILITY.
BE A PART.**

**5-6 OCT 2017
ICPE SOLAR PARK**

313 Splaiul Unirii, 030138 BUCUREȘTI

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ELECTRIC VEHICLES INTERNATIONAL CONFERENCE & SHOW

5-6 OCTOBER 2017
Icpe Solar Park, București, România

**THE INSIDES OF
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Thursday - 05.10.2017

Location: Icpe Solar Park, 313 Splaiul Unirii, 030138 București

Time	Icpe.Club	SHOWROOM	MAIN HALL	ALL ELECTRIC	Outdoor Icpe Solar Park	
09:00 - 09:30	Briefing & Reception					
09:30 - 10:00	Opening plenary (details on page 4)					
10:00 - 10:30						
10:30 - 11:00	E-mobility Experience (details on page 4)					
11:00 - 11:30	Coffee Break					
11:30 - 12:00	Tutorials					
12:00 - 12:30						
12:30 - 13:00						
13:00 - 13:30	Lunch					
13:30 - 14:00						
14:00 - 14:30					Launching ATTITUDE 4	Launching EV SHOW
14:30 - 15:00		S1	S2	S3	ATTITUDE 4 - Art Exhibition Visit	EV SHOW Electric Vehicles DEMO TEST & Icpe Solar Park VISIT
15:00 - 15:30						
15:30 - 16:00						
16:00 - 16:30						
16:30 - 17:00						
17:00 - 17:30				Poster Session		
17:30 - 18:00						
18:00 - 18:30					ATTITUDE 4 AWARDS	
18:30 - 19:00						
19:00 - 19:30						

CONFERENCE PAPERS SECTIONS:

S1 - Electric Vehicles

S2 - Infrastructure for electric mobility

S3 - Policies and strategies in the field of electric mobility



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Friday - 06.10.2017

Location: Icpe Solar Park, 313 Splaiul Unirii, 030138 București

TIME	HALL	WORKSHOP	Presented by	OUTDOOR
09:00 - 10:00	H2	What ANSYS Can Do for Autonomous Vehicle Development	TENSOR	EV SHOW Electric Vehicles DEMO TEST & Icpe Solar Park VISIT
	H3	AVER Part of AVERE	AVER	
10:00 - 11:00	H1	Companies Open Presentation	SCAME PHOENIX CONTACT	
	H2	Bulgarian Electric Vehicles Association	BAEPS	
	H3	Icpe European Projects	Institutul de Cercetări Electrotehnice	
11:00 - 12:00	H1	ELECTRA Publishing House and EEA – Electrotehnică, Electronică, Automatică Review – A Partner for E-Mobility	SSIcpe	
	H2 + OUTDOOR	Integrated Regional Platform for E-mobility	ELDRIVE	
	H3	GO ELECTRIC e-mobility cluster	AVER	

H1 – SHOWROOM

H2 – MAIN HALL

H3 – ALL ELECTRIC



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Thursday - 05.10.2017

OPENING PLENARY

9:30 – 10:30

Moderator

Cornel JIVAN

Technical Director Icpe

Virgil RACICOVSCHI	CEO - Icpe
Puiu Lucian GEORGESCU	Minister – Ministry of Research and Innovation
Marius Sorin-Ovidiu BOTA	Senator - Romanian Parliament
Glad VARGA	Deputy – The Chamber of Deputies
Adrian CURAJ	Director - UEFISCDI
Bert WITKAMP	Former Secretary of AVERE
PMB	Bucharest City Hall
Valentin NĂVRĂPESCU	Prorector - UPB
Adrian FĂTU	Counselor - Primăria Sectorului 3
Adrian BADEA	President - AOSR
Aristide CARANDA	General Director - CARANDA BATERII
Codruț NICOLAU	Director - Patria Bank
Zoli TOTH	General Director – Star Management
Mihai NEACȘU	President - AVER
Ionel POPA	President - SSICPE

E-Mobility Experience

10:30 – 11:00

Demis GHINDEANU	GetPony
Andrei MOROIANU	80edays

Tutorials

11:30 – 13:00

Moderator

Valentin NĂVRĂPESCU

Liviu POPESCU	T1 – Autonomous driving and driverless cars	Renault
Bert WITKAMP	T2 – European EV scene and outlook	AVERE
Mihai NEACȘU	T3 – Icpe 60 years by electric way	Icpe



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Thursday - 05.10.2017

CONFERENCE PAPERS SECTIONS

S1 – Electric Vehicles

14:30 – 18:00

Location: Showroom

Moderators
Grigore DANCIU
Kamen VASSILEV

1	<p><i>The way to Engineering EV Wireless Charging: Dacia Electron</i></p> <p>Andrei Marinescu, I. Dumbrava, A. Vintilă, D. G. Marinescu, D. Neagu, V. Nicolae and A. Radu</p>	<p>Abstract—Wireless power transmission is a special concern of electrical engineering with major implications in the life of society. It is manifested both in the scientific field through the large number of congresses and prestigious journals publications as well as in various practical applications ranging from medical care to robotics, communications and military technique. After a latency of more than 100 years since Tesla's inventions, advances in microelectronics and power electronics have led to the capitalization of this field. Now is the time when different wireless power transmission techniques are used starting from powers in the order of some W to powers of tenths of kW. This paper presents for the first time details about the 3.7 kW equipment for the wireless battery charging for Dacia Sandero Electron EV. There is a very special interest for such systems because it is part of the preparations for the next generation of driverless EV cars.</p>
2	<p><i>Fast-Tracking Advanced Driver Assistance Systems (ADAS) and Autonomous Vehicles Development with Simulation</i></p> <p>Sandeep Sovani, Frederic Bocquet and Cristina Oprea</p>	<p>Abstract—Developing Advanced Driver Assistance Systems (ADAS) and autonomous vehicles is a challenge without precedence. Whole new engineering fields – such as artificial intelligence – need to be developed, yet time-to-market is short with intense competition. Development of Advanced Driver Assistance Systems (ADAS) and Autonomous Vehicles that requires vastly more test cases and operating scenario evaluations as compared to systems on today's vehicles. Estimates indicate that billions of miles of road testing will be necessary to ensure safety and reliability of ADAS and autonomous vehicles. This seemingly impossible task can only be accomplished with the help of engineering simulation. Engineering simulation is the tool needed to accomplish this prohibitively expensive, time-consuming task. With the speed and cost economy of engineering simulation, ADAS and autonomous vehicle engineers can virtually evaluate thousands of test cases, scenarios and design parameters, in the cost and time needed for a single physical test. With simulation thousands of driving scenarios and design parameters can be virtually tested with precision, speed and cost economy. The proposed paper will describe six specific areas where simulation is essential in the development of autonomous vehicles and advanced driver assistance systems. It also provides examples and substantiates the benefits of simulation while identifying the tools needed for ADAS and autonomous vehicle simulation. The presented simulation platform provides high-fidelity simulation tools with deep capabilities to bring accuracy and confidence to ADAS and autonomous vehicle simulations. The single platform addresses six primary simulation needs in ADAS and autonomous vehicle development: 1. Driving Scenario System Simulation 2. Software and Algorithm Modeling and Development 3. Functional Safety Analysis 4. Sensor Performance Simulation 5. Electronics Hardware Simulation 6. Semiconductor Simulation</p>
3	<p><i>Digital system for rotational direction detection using a FPGA</i></p> <p>Aurel-Ionuț Chirilă, Ioan-Dragoș Deaconu, Sabina-Teodora Drăghici and Valentin Năvrăpescu</p>	<p>Abstract—In the paper it is presented a designing algorithm for decoding the data provided by a two-channel incremental encoder in order to identify the rotation direction. Such information is useful when monitoring the operation status of various driving devices found within a vehicle. The resulting digital circuit is implemented on a FPGA (Field-Programmable Gate Array), which can be easily included as a programming block into the architecture of an ASIC (Application-Specific Integrated Circuit), part of a vehicle controller unit for components operation supervising.</p>

4	<p><i>Simulation of lithium-ion batteries from a electric vehicle perspective</i></p> <p>Florin Dragomir, Otilia Elena Dragomir, Adrian Oprea, Liviu Olteanu, Nicolae Olariu and Viorel Ursu</p>	<p>Abstract—Electricity as energy vector for vehicle propulsion offers the possibility to substitute oil with a wide diversity of primary energy sources. This could ensure security of energy supply and a broad use of renewable and carbon-free energy sources in the transport sector which could help the European Union targets on carbon-dioxide emissions reduction. Electric cars and hybrid cars contain roughly the same type of traction batteries. A lithium-ion battery or Li-ion battery is a type of rechargeable battery in which lithium ions move from the negative electrode to the positive electrode during discharge and back when charging. Lithium-ion batteries use an intercalated lithium compound as one electrode material, compared to the metallic lithium used in a non-rechargeable lithium battery. This paper simulation a model of a lithium battery pack. For electric vehicles, the driver needs to know how much he will travel before the vehicle's batteries require a recharge. This paper expands upon the general structure of the typical cell electrical equivalent circuit model presented in prior literature. The paper show a practical method for evaluating the electrical equivalent circuit parameters using pulse discharge experimental data to create lookup tables with cell temperature and SOC as independent variables.</p>
5	<p><i>Constructal Optimization of an Elemental PEMFC Used in the Electric Vehicles</i></p> <p>Ioana Ionică, Alexandru M. Morega and Mircea Modreanu</p>	<p>Abstract—An important part of the electric vehicle is the electric power supply. Several types of sources are known, one of which is the Fuel Cell (FC). Its applications range from rockets to household applications. More recently it was suggested that interconnecting the car provided with FC with the home network or even with the power distribution system might solve their recharging problem. On the other hand, for cars parked over 90% of the time it might be desired to use the power produced by the FC for domestic or commercial purposes thus covering more than half of the initial investment in the purchase of the vehicle. Another advantage is the quite high efficiency of the FCs as compared to other practical conversion methods. Although, theoretically, the isothermal efficiency of reactions in the FC can reach 80%, practically it is about 50-60%, still significant. This paper presents several constructive solutions of an elemental Proton Exchange Membrane FC.</p>
6	<p><i>Energy Storage Systems in the Field of Transport</i></p> <p>Liviu Neag and Nicolae Dobos</p>	<p>Abstract—Power storage systems are increasingly used in the production, transport and use of electricity, with significant benefits in these areas. Energy consumption varies over time, energy sources are difficult to adapt to these variations, energy storage systems are an economical solution. New sources of electricity generation (photovoltaics, wind, etc.), new types of consumers (electric vehicles, battery charging stations, etc.) require the use of electrical energy storage systems. There are different storage systems depending on: energy storage mode, power capacity (from a few Wh to dozens of MWh), power (kW), purpose, consumer characteristics. The paper presents several electrical energy storage systems in the field of electric public transport, the purposes for which it is used, the particularities depending on the application, the advantages of the applications. Some solutions presented can be applied to electric vehicles in general, others are specific to urban public transport. Urban public transport is an important consumer of electricity and this type of transport will increase in the years to come. Appropriate measures can contribute to reducing energy consumption, increasing safety in use, using renewable sources (especially photovoltaic panels). Power storage systems are an important solution for these purposes.</p>
7	<p><i>Traction Control Analysis of Electric Vehicles</i></p> <p>Andrei Bortoi and Grigore Danciu</p>	<p>Abstract— In present the increase of mobility necessity combined with the targets to reduce pollution (emissions, noise, etc.), and the dependence to fossil fuels, strongly supports the development of electric (EV) and hybrid vehicles (HEV). In this context, the present paper presents the main particularities of the traction systems of these vehicles, making a comparison with the classical internal combustion engines (ICE) based vehicles. This analysis is supported by numerical simulations using Matlab-Simulink models developed by the authors.</p>
8	<p><i>A step forward towards e-mobility adoption: VW Beetle and fiberglass boat converted into EVs</i></p> <p>M.G. Neacsu, V.S. Stanciu, G.V. Risnoveanu, S.S. Matei and C. Nicolescu</p>	<p>Abstract—Within the electric mobility concept, the transportation sector found the possibility to reduce the greenhouse gas emissions. Although the reduction of emissions is a target for EU, the transportation sector is mainly dependent on fossil fuels like petroleum or natural gas. Nowadays, the most used power source for land and water vehicles propulsion is the internal combustion engine, but in the latest years, a considerable effort is made towards propulsion obtained from renewable energy. Unfortunately the transition from internal combustion engines to electric motors is made with "baby steps". This paper presents the conversion of a Volkswagen Beetle into a full electric car and the conversion of the fiberglass boat into a full electric boat. The power source used to obtain electrical propulsion is based on today's state-of-the-art technology, lithium battery cells which are monitored by a battery management system (BMS). The parameters of the main components used during the conversions are presented in detail.</p>

9	<i>Design and Validation of a 2.5 kW Electric Naval Propulsion System with Rim Driven Propeller</i> B.D. Varaticeanu , P. Minciunescu, C. Nicolescu, S.S. Matei and M.G. Neacsu	Abstract —The paper describes the design and the experimental validation of an electric naval propulsion system with rim driven propeller. The electric naval propulsion system is submerged in water providing an effective cooling for the electric machine and thus achieving a high power density. The proposed slotless design of the permanent magnet (PM) machine allows a convenient way to protect the motors' active parts against water. For accurate prediction of PM machine electromagnetic performances, finite element method (FEM) was used.
10	<i>Optimization and Validation of a 10 kW Permanent Magnet Brushless Motor for Small Electric Vehicles</i> B.D. Varaticeanu , P. Minciunescu, C. Nicolescu and S.S. Matei	Abstract —This paper describes the choice and the design optimization of an industrial purpose permanent magnet brushless synchronous motor to be used in a small electric vehicle conversion. The suitable stator configuration for high torque density combined with reduced cogging torque and reduced torque ripple is analyzed. Finite element analysis is used to evaluate the performance of different electric motor configurations. An experimental validation of the motor configurations characteristics was made. The measured values of the back electromotive force and torque are compared with the numerical predicted values.
11	<i>Electric Bus - The Approach of ICPE Saerp</i> Emil Tudor , Ioan Strainescu, Cătălin Goia, Beniamin Enache, Valentin Lupu, Ionut Vasile, Adrian Dascalu, Doru Braslasu, George Mitroi and Andrei Bojoga	Abstract —ICPE SAERP is the leader of the Romanian market of drives for electric traction used in public transport. Based on our trolleybus and tram experience, we've focused to the electric bus with a particular approach: the electric bus can be charged using the trolleybus network.
12	<i>Evaluation of path errors for electric robots in a swarm</i> Damian Gorgoteanu, Cristian Molder and Daniel Constantin	Abstract - Mobile platforms in a robot swarm system require accurate position in order to compute iterative steps in a global path planning algorithm. This presentation describes a comparative evaluation of paths generated from the encoders placed on the two DC motors of each mobile robot and from two optical vector-flow sensors such as those used in computer optical mice.

Thursday - 05.10.2017
CONFERENCE PAPERS SECTIONS
S2 – Infrastructure for electric mobility

14:30 – 18:00

Location: Main Hall

Moderators
Mihai MARICARU
Shuki WOLFUS

1	<p><i>Promoting battery energy storage systems to support Electric Vehicle charging strategies in Smart Grids</i></p> <p>Adrian Toni Radu, Mircea Eremia and Lucian Toma</p>	<p>Abstract—In this paper an optimal strategy for electric vehicle (EV) charging is proposed to achieve the best network operating conditions, with the help of battery energy storage systems (BESS), while integrating photovoltaic power plants (PV). The electric vehicles can both participate in demand response (DR) and serve as energy storage facilities. They can respond to DR signals, such as price variations or direct control messages by modulating their power consumption, thus providing necessary flexibility to the grid operator. The simulations are performed on a test network, and the mathematical model has been implemented in Microsoft's CPLEX tool. The results have shown that in order to cope with the challenges generated by a large number of EVs, coordination of the EV charging not only reduces the difference between the peak and valley of the load demand, but also generates a number of favorable factors and improving the network operation.</p>
2	<p><i>On the Procedures for Optimal Wireless Energy Transfer Systems</i></p> <p>Mihai Iordache, Dragos Niculae, Lucian Ene, Cristian Sandu and Lavinia Bobaru</p>	<p>Abstract—In this study is described a set of constraints applied to a wireless power-supply system (emitter and receiver) for operating in optimal conditions. These constraints regard both geometrical aspects and operational conditions of the system. There is also presented the performance optimization in the power wireless transfer. Starting from the equivalent scheme of a wireless power transfer system sinusoidal behavior, there are generated the system performances (the delivered active power or the system efficiency) in full symbolic and/or symbolic-numeric forms, obtaining an appropriate frequency space representation based on the complex or Laplace modified nodal equations (MNE) or/and Laplace state variable equations (SVE). In order to obtain the optimal values of the system parameters, that provide the maximum performances, there are used the MATLAB procedures which minimize these objective functions. These equations are combined with some measurements performed on the real system and an unconstrained minimization algorithm for some scalar and/or vector functions of multiple variables provided by MATLAB Optimization Toolbox. The algorithm is suitable to compute optimal circuit parameters, which guarantee the minimum and maximum values of the performance quantity. Linear or small-signal nonlinear circuits can be treated in this manner. This study has also highlighted some aspects regarding the conditions that have to be accomplished by a power supply system that uses wireless technologies, for an optimal transfer of energy. The proposed optimization techniques were tested and validated with simulation data on some illustrative examples.</p>
3	<p><i>Lightweighting and passive safety for urban electric vehicle</i></p> <p>Javier Romo, Esteban Cañibano and Juan Carlos Merino</p>	<p>Abstract—This paper shows the development followed for three different structures of urban light electric vehicles. The first one is based in a Carbon Fiber Reinforced Plastic (CFRP) structure, the second one is a multi-material solution including aluminum, magnesium and structural thermoplastic joined by electromagnetic forces and the third one is based on the use of advanced high strength steel. For the three vehicles the design criteria has been to fulfill the frontal and lateral crash tests required for conventional vehicles (M1 category): the ones included in the regulation and the ones made by Euro NCAP</p>

4	<p><i>Method for Calculating Coupling Coefficients in Dynamic Energy Transfer for Electric Vehicles</i></p> <p>John Linden, Yasha Nikulshin, Shuki Wolfus, Hanan Rumbak, Oren Ezer and Yosi Yeshurun</p>	<p>Abstract—Optimizing primary and secondary coil configurations for Dynamic Wireless Power Transfer (DWPT) in Electric Vehicles (EV) requires means for accurate calculation of the mutual inductance in an array of coils. Based on finite element simulation method, we present a quick and accurate method for calculating the energy transfer capabilities of a given DWPT array. By switching on and off every coil and driving them with a constant current ramp rate, mutual inductances and a coupling coefficient matrix of the whole configuration is calculated. This method allows relatively easy optimization and up-scaling of DWPT systems to multiple arrays of primary and secondary coils.</p>
5	<p><i>The urban electric bus, a sustainable solution to increase energy efficiency of public transport and reduce atmospheric pollution in the cities</i></p> <p>István CSUZI and Botond CSUZI</p>	<p>Abstract — Analyzing the values of public transport systems energy indicators and metropolitan air pollution together with the branch specific economic forecasts, the authorities and suppliers can estimate future trends. To reduce the urban usage of personal automobiles it is needed to increase the proportion of electric public transport vehicles (Tramways, Trolleys, Electric buses), also it needs to increase the urban mobility satisfaction by increasing attractiveness and accessibility of networks, growing essentially the number of trips by public transport, all together can insure us more livable cities</p>
6	<p><i>E-light vehicles in European cities: starting from "Ele.C.Tra.-Electric City Transport" experience, ready to take up new challenges</i></p> <p>Raluca Frincu, Francesco Edoardo Misso and Cino Repetto</p>	<p>Abstract—The sector of e-light vehicles (E-LVs) suffers from an unfortunate positioning, squeezed between the e-car and e-bike market, and it has difficulty in expressing its competitive edge. On the other hand, e-light vehicles are an effective and eco-sustainable solution to overcome urban mobility problems, by replacing internal combustion engine vehicles (ICE) or creating new services. Being aware of this, the European Commission showed great interest in a few exploratory projects: among such projects, Ele.C.Tra.-Electric City Transport Project, IEE Programme 2012, represents a paradigmatic experience that provided several useful suggestions. Taking inspiration from what Ele.C.Tra.-Electric City Transport carried out, a new Horizon 2020, ELVITEN Project, will start in November 2017 and develop 8 pilot cases in Europe to ease the e-light vehicle use in urban areas concretely. Simultaneously, Ele.C.Tra.-Electric City Transport partners are continuing promotion of e-light vehicles in urban areas at local and international level, also in Romania thanks to RELIANS, former partner.</p>
7	<p><i>Current Study of Design and Construction of Transmission Wireless Electromagnetic Energy to a Mobile Device</i></p> <p>Sandu Cristian, Bibirica T. Catalin, Ene Lucian Vasile and Mihai Iordache</p>	<p>Abstract—This paper describes how to realize a wireless energy transfer system used for mobile phones using electrically separated circuits. To carry out this study we used different types for wireless power transfer circuits: the first circuit works at a frequency of 128 kHz and the second one works at a frequency of 1.7MHz. All circuits were made with an electronic software design program and after that they were physically created. The inductors used in these circuits were created from different materials and are of different types.</p>
8	<p><i>Resonant energy transfer – a good chance for electric vehicles</i></p> <p>Cristian Morari and Mihai Badic</p>	<p>Abstract—The paper deals with general principles of electromagnetic power transfer and the evolution from inductive power transfer to resonant power transfer. One of the basic issues of the subject is coil's quality factor and magnetic coupling coefficient, respectively. Optimization of these parameters implies calculation and optimization of mutual inductance. The paper presents a calculation algorithm relative to the evaluation of the mutual inductance and the experimental setup used.</p>
9	<p><i>Smart grid developments in system engineering</i></p> <p>Octavian Adrian Tabara</p>	<p>Abstract—Smart grid is a recent term, which refers to control and optimization of the electrical network. Smart grid comprises different elements: power generating stations, high voltage transmission lines and other type of lines. Development in this field is an ongoing domain, in a continuous evolution. This article outlines the importance of control systems for computer-aided design. The concept of control system architecture is also detailed. Discussion about design stage is present. Because of term complexity, numerous domains are use in description. Various points of view are use to describe details of system management. A software used to control energy parameters in wind farms is also present.</p>
10	<p><i>Analysis of memristive nonlinear circuits</i></p> <p>Alexandra Ionescu, Alina Orosanu, Andrei Dragomir, Andrei Rosu and Mihai Iordache</p>	<p>Abstract—This article presents a substantial review of nonlinear memristive circuits based on Zdeněk BIOLEK model alongside an innovator design developed within the Hewlett-Packard laboratories. HP realized a physical implementation of memristors by placing two layers of titanium dioxide between two electrodes. The first layer is partially doped with oxygen gaps and behaves like a semiconductor and the second layer of pure titanium dioxide acts as an insulating layer. Furthermore, this paper describes a possible use of memristors in logic gates construction, the analysis being carried out in LTSpice program using state equations and formulas describing the boundary effects. Two memristors connected in series having opposite polarities are used to implement the logic gates. Such devices are used in this case only to ensure the switching phenomenon and not to store logic states, similar to already existing CMOS logic circuits. The LTSpice models of the memristor and memristive logic gates are designed in such a way that it enables easy modification of the nonlinear relations describing the boundary effects by changing the initial parameters. Hence memristors have a high potential for innovation in the electronics industrial applications, especially because these devices can remember the stored information even though they no longer have a voltage supply.</p>



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11	<p><i>Advanced Modular Photovoltaic System for Plug-in Small Electric Vehicles (PsEV)</i></p> <p>Bogdan-Alexandru Onose, Mihai Aurelian Hanek, Gabriel Vataselu and Lucian Nicolae Demeter</p>	<p>Abstract—The paper presents an advanced modular photovoltaic system designed for Small Electric Vehicles (PsEV) electricity supply in remote applications. The concept is based on the modularity of the PV power supply system (PVbox) that can be multiplied in order to fully cover the electricity demand of each application. Based on that the interconnection between multiple PVboxes is done via an Intelligent Connection System (ICS) specially designed for this application. During the design phase the adaptability of the system was the primary focus that determined the PVbox to work as an off-grid system with the battery storage capacity included and an on-grid back-up (in available). The idea was to make the PVbox compact and lightweight, thus maximizing the PV power output of the system. Another key factor was the development of an innovative energy management system to cover the possibility of supplying a wide range of plug-in small electric vehicles (PsEV). An in-depth analysis was made to refine the PV system solution in order to maximize the system potential with the results presented below. The results of the paper show that the advanced modular photovoltaic system for plug-in small electric vehicles (PsEV) can be a good alternative for off the grid and remote applications.</p>
12	<p><i>Development of a novel remanufacturing architecture for lithium-ion battery packs</i></p> <p>Achim Kampker, Heiner Heimes, Christoph Lienemann, Daniel Grauel and Martyn Jones</p>	<p>Abstract—The City of Murcia, has already taken the decision to break through with the fuel engine transport era and boost electro mobility, to start taking the first steps towards this shifting, Murcia has launched its "E-mobility strategy".</p>



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CONFERENCE PAPERS SECTIONS

S3 – Policies and strategies in the field of electric mobility

14:30 – 17:00

Location: All Electric

Moderators

Dragoș DEACONU

Nicolae OLARIU

1	<p><i>Modelling and simulation of the energy demand and large scale integration of the electrical vehicles in EnergyPLAN model – case of Romania</i></p> <p>Sándor BARTHA, Tin PUSIC, Robert ANDERLUH, Goran KRAJACICI and Boglárka VAJDA (Luminita Vlaicu)</p>	<p>Abstract—The present work is focused for the modelling, analysing, and evaluating of the obtained results from the simulation of the electric vehicles demand with "EnergyPLAN". The models have developed for creating an optimal structure of the energy supply for electrical vehicles useful in Romanian energy system. For reducing greenhouse gas emissions and for decarbonizing the economy in the following period the optimal solution can be realised with implementing the electrical vehicles in all levels of the transport sector. With plug in electrical vehicles (EV), it is possible to reduce and eliminate 100% of the fossil fuels and in this way, many jobs will be create in decarbonisation of economy. EVs in generally has high power (10 kW) connection, with important flexibility in time and duration of the charging. For modelling of the energy, demand of the EVs reference case in "EnergyPLAN" model has been established. The models are using to evaluate the optimal energy mix structure where different intermittent and non-intermittent renewable energy sources are integrated. The modelling and calculation methods are presented for one case for 10,000 electrical cars, second case for 100,000 EVs, and third case with 1,000,000 electric vehicles. In generally assuming an average car efficiency of 5 km /kWh, each car has one electrical demand around 4 MWh/year /EVs—in case than one car drive around 20,000 km/year.</p>
2	<p><i>Urban Ecological Transport - A Priority of the Human Society in Crowded Urban Centers</i></p> <p>Adriana Mariana Bors, Cristina Mihaela Balaceanu and Iosif Lingvay</p>	<p>Abstract—The local, regional or global problems created by chemical, physical, noise, microbiological and, not least, electromagnetic environmental pollution are particularly complex. Due to their diverse nature, chemicals are indispensable to areas of great importance such as transport, agriculture, industry, etc. Chemistry and state-of-the-art technology can make our lives more comfortable but not better in terms of health. Pollutants released into the environment during combustion (SO₂, NO_x, PM₁₀, CO₂, heavy metals) can affect all the components of the environment, the life of the animal, plant, and of man. Removing coal from the energy mix is a solution that would bring enormous benefits to people's health. The paper presents an assessment of the harmful emissions produced by coal-fired power plants and those produced by urban transport. Thus, an intercomparison of the level of concentrations of these harmful emissions from industrial sectors - energy and transport, the degree of dispersion of these harmful emissions in delimited areas as well as the noxious effects is a picture of the risk associated with the manufacture and use of chemicals, which may be diminished by using "green chemistry" processes and technologies. This pathway is one of the important alternatives to the sustainable development of the world in conditions of population growth without sacrificing the quality of the environment.</p>

3	<p><i>Considerations about the local and global environmental impact of autonomy electric transport</i></p> <p>Iosif Lingvay, Adriana-Mariana Bors and Daniel Lingvay</p>	<p>Abstract— In order to substantiate some impact studies, the paper presents some considerations regarding the main factors determining the local and global impact on the environment of the autonomy electric transport in comparison with the classic traction by internal combustion engines. The main conclusion of the paper is that from the point of view of the local impact, autonomy electric transport- independent of contact lines, is quite advantageous, but from a global point of view, especially for geographic areas where the share of fossil and biomass energy resources is major, Hybrid systems with internal (optimized)/ electric traction (besides other advantages) can have a significantly reduced impact.</p>
4	<p><i>Mobile Intelligent Robot</i></p> <p>Florin Silivăstru, Constantin-Adrian Nanu and Valentin Năvrănescu</p>	<p>Abstract—In the paper it is presented a mobile intelligent robot is a robot that can store a particular memory and avoid objects that appear on its way to the destination. It is used to transport certain weights or materials from a fixed point to another predefined fixed point by the user. The robot makes a map of the area in which it operates, using the RPLIDAR A1M8 laser scanner that performs 360 degree camera scanning. The detection sensor has been simulated using a Sharp GP2Y0A02YK0F distance sensor that can detect objects from a distance of 20 cm to 150 cm, being used to perceive objects that are too close to the robot and can affect its integrity. Arduino TIAN was used for programming.</p>
5	<p><i>The state of policy measures and instruments that encourage the uptake of electric vehicles in Romania</i></p> <p>Daniela Mihaela Rat</p>	<p>Abstract—A global transition towards electric vehicles is taking place nowadays and it is a generally accepted notion that electric vehicles are not only a solution for future transport, but the most appropriate one to replace fossil fueled cars. The focus of this study is to inform on the extent and variation of Romania's electric vehicle promotion policies and to identify areas of improvement. Information has been collected from scientific literature, case studies and web-based data. Complementary views were also gathered via interviews with relevant stakeholders. These helped gain new information that is not officially available. Thus, a complete picture of the issue is obtained by discussing real world problems faced in the attempt of promoting electric vehicles as a new transport choice. In spite of the benefits that electric vehicles bring, there are several obstacles that need to be overcome first. This report intends to provide a perspective on the status and current developments of the electric mobility in Romania and is structured in two main parts. The first one is concerned with presenting the policies and instruments used for encouraging the purchase of electric vehicles in Romania, and the second one analyses barriers, identifies areas of improvement and presents potential solutions. The gradually increasing momentum behind electric vehicle adoption – both from the side of the consumer and from the side of the manufacturers – suggests that electrified power trains will play an important role in Europe's mobility going forward and Romania should also rally to this goal.</p>
6	<p><i>Solar UAV</i></p> <p>Popescu Razvan</p>	<p>Abstract—In theory solar powered aircrafts are viewed as a major step towards a longer flight, with respect to the safety laws applied in the aerospace authorities. The idea is to reduce the use of energy using the solar cells, thus trying to extend the night flight with the conventional battery system. The idea of trying to develop a future unmanned aerial vehicle (UAV) with an endurance flight of 24 hours per day, was realized after big companies invested in new research program for providing internet to remote parts of the world such as Aquila. This project summarizes the design and development of an unmanned aerial vehicle (UAV) that uses solar energy as a way of extending the endurance of the flight. The two-major achievement regarding the design, are presented as the aerodynamics performance design of the aircraft, and with to the aerodynamics performance, the solar power management system design. For the first achievement, the aerodynamics performance, the parameters such as mass, airfoil design and the propulsion system are managed in such way that the mass is parameterized as a function of the wing reference area with respect to the airfoil design and cruising speed. With the final results from the analysis of the parameters, a management plan for the energy consumption is calculated for the minimum of energy consumption of the aircrafts system. A solar-powered UAV is then built based on the optimized results. The solar power management system is designed with respect with the demand of energy consumption, thus making the solar system a support for endurance. The solar system management has to support the auto-pilot, thus making the solar charger control mandatory to include the maximum power point tracking technique.</p>

7	<p><i>Dynamic Windshield Sun Shade Assistance</i></p> <p>Andrei Dragomir, Alina Orosanu, Andrei Rosu, Alexandra Ionescu and Mihai Iordache</p>	<p>Abstract—Most of statistics currently show that almost every year a considerable number of accidents are happening due to weather conditions, and with a rate of nearly 78% [1] of them are due to the reflection of sunlight. The motivation of the paper is given by the desire to greatly reduce this percentage by providing assistance to the driver by keeping the conditions for optimum visibility both day and night [2]. This electronic system presented in the current article could be a standard feature in ADAS (Advanced Driver-Assistance Systems) in a few years due to integration of several systems that are already present in cars. The system is composed of four distinct entities: a high intensity light source position detection camera which detects any glare or sun reflexions through the windshield, an eye position detection camera that indicates the spot where the windshield must be shaded, the calculation module that contains the algorithms and commands which uses the inputs and generates the response of the system and the liquid crystal display which is the final user for the output and shades out the glares and reflexions. The present paper contains an overview of the system.</p>
8	<p><i>Localization Based Mobile Application for Shopping Malls</i></p> <p>Pinar Kirci, Deniz Zengin, Bedri Karademir and Metin Erzen</p>	<p>Abstract—This paper presents an application that will be used in shopping malls. It is an indoor positioning system (IPS) based mobile application. The main idea is providing a win win situation between the customers and stores. It will be utilized in the store or in front of the store with a check in at the store. Thus, the customer will easily reach many offers, product explanations of the considered store. Also, with visiting the stores the user will collect some reward points that will be used in their next shopping. In the project, main idea is to take advantage of shopping mall visiting of people and usage of smart phones together. The aim is to turn a profit with the mobile application. Also, the project may easily be adapted and work together with a new developing and remarkable transportation systems' solution Electric Vehicles (EVs).</p>
9	<p><i>Noile standarde ISO privind calitatea si impactul asupra mediului a fabricarii servomotarelor electrice, in contextul pietii globale</i></p> <p>Floarea VASILE</p>	<p>Abstract—Electrical servomotors manufacture involves a series of complex innovation processes, starting with the analysis of specific market demand that is marketing service concern. It is mandatory to keep under control through the requirements of the integrated management system for quality, environment, occupational health and safety. The new editions from 2015 to ISO standards 9001- quality management system and ISO14001- environmental management have two major new approaches: the organizational context analysis and risk-based thinking. Analysis of the organizational context means understanding the external and internal limits, as well as the interaction between these. This context means that the organization operates and implements all requirements (legal, technological, social, cultural, economic). Also it is important to respect the needs of relevant stakeholders. Risk is defined as the effect of uncertainty in relation to the expected result. The Organization must have an "actions plan of risks and opportunities treatment", so to create the proactive component of quality and environment management system.</p>

Thursday - 05.10.2017
Poster Session

17:00 – 18:00

Location: All Electric

1	Alexandru Stănescu, Nicolae Mocioi and Andrei Dimitrescu	Sulina – Environmentally friendly transport based on renewable sources
2	Lucian Nicolae Demeter, Valer Turcin, Mihai Hanek, Gabriel Vataselu and Bica Zorlescu	Modular solution for charging the batteries of electric bikes parked on public domain
3	Veronica Manescu (Paltanea), Gheorghe Paltanea, Horia Gavrilă, Iosif Vasile Nemoianu and Paul Cristian Andrei	Magnetic properties degradation due to the cutting procedures in the case of electrical steel used in energy efficient electrical machines
4	Gheorghe Paltanea, Veronica Manescu (Paltanea), Iosif Vasile Nemoianu, Horia Gavrilă and Paul Cristian Andrei	Influence of cutting technologies on the magnetic anisotropy of grain oriented electrical steel
5	Veronica Manescu (Paltanea), Gheorghe Paltanea, Paul Minciunescu, Paul Cristian Andrei, Mihai Maricaru and Catalin Grumeza	Soft magnetic composites used in the special electric motor magnetic cores
6	Nicola Ioana-Maria, Joga Aurora, Ceara Victoria and Boboc Cristian	Advanced Polymeric Materials Based on PBI/SiO ₂ Composite with High-Performances designated for PEM-Fuel Cells
7	A. Pană, F. Molnar-Matei, A. Băloi, A. Radulian, N. Mocioi and G. Dumitrescu	A Smart Solution For a Smart Grid: Unbalanced Reactive Power Compensation
8	Jaime Ruiz Huescar, Antonio Navarro Corchón and José Guillén Parra	How to set up an all-inclusive approach in e-mobility strategies: the case of Murcia
9	Carmen Mateescu and Ionel Popa	European Best Practices and Policies in Promoting Green Mobility
10	Mihai-Eugen Marin, Mihai Maricaru, Florin Constantinescu and Alexandru-Gabriel Gheorghe	Hardware and software approach for teaching automotive networks
11	Marian Velcea, Ioan Curta, Ioan Potlog and Corneliu Ion Moldovan	INSOLES FOR DRIVERS The Highlight of the Stimulant Effect of the Insoles Equipped with Passive Devices PEM –DSPA of High Frequency for Acupuncture Points Stimulus, using Bio-Well Device

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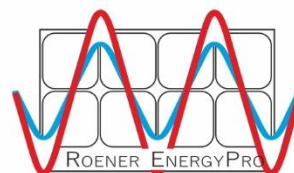
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