

Contents

- Welcome address
- SENERES Events
- Call for Proposals
- Important Events
- INTENES
- Recently Published

Welcome address

Welcome to the sixth issue of the SENERES Newsletter. SENERES is the project founded within frames of FP7 Capacities RegPot Programme. The main objective of the SENERES project is to reinforce and develop research and demonstration potential of the Institute of Power Engineering (Poland) and to set up the **Sustainable Energy Research and Development Centre SENERES** focused on high efficient low-carbon energy technologies: energy generation from biomass, clean coal technologies and fuel cells.

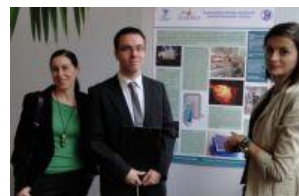
The SENERES Newsletter is a source of periodical information about SENERES project activities. It disseminates results of SENERES Centre research work and the Centre's development. It also delivers the most important information about the development of research, events and possibilities of research funding in SENERES thematic area.



SENERES Events

December 1, 2012 , Warsaw, Poland

On Saturday, 1st of December 2012, the ceremony of awarding scholarships of the German Environmental Foundation (Deutsche Bundesstiftung Umwelt, DBU), for the best Polish graduates from broadly understood field of environmental protection, took place. The event was organised in the Journalist House, located at Foksal Street in Warsaw. The Minister of the Environment - Marcin Korolec and the Minister of Science and Higher Education prof. Barbara Kudrycka, Ph.D. Eng., took patronage over the undertaking.



The number of important guests were present on the ceremony: professor Maciej Nowicki, the former Minister of the Environment and the founder of the scholarship program, Ph.D. Eng. Fritz Brickwedde Secretary General of DBU, Anna Nowicka, The Chairman of the



Nowicki Foundation (the institution that used to be responsible for the scholarship program), scholarship holders and a number of other prominent guests.

The idea of SENERES project was presented during the event. Graduates, investors and entrepreneurs, Agata Lew the chairman of HEMECO-SYSTEM and Ph.D. Agata Goździk the manager of EDUSCIENCE, IGF PAN project, were particularly interested in SENERES project.

More information is available on the website: <http://www.sds.org.pl>.

Closure of Call for Experienced Researchers within SENERES WP2

The last call for Experienced Researchers within SENERES WP2 was closed with the end of year 2012. Several candidates have expressed their interest in conducting research in the Institute of Power Engineering (IEn, Warsaw, Poland) in the following areas:

- ❖ energy generation from biomass
- ❖ SOFC systems

All received applications were carefully analysed and job application meetings settled. The candidates have already participated in job interviews and the names of Experienced Researchers employed in IEn will be announced soon.

6th of February 2013, Warsaw, Institute of Power Engineering, SENERES scientific seminar

On the 6th of February 2013 there was organized a Scientific Seminar entitled: "Materials, processes and fuels for Solid Oxide Fuel Cells" within SENERES project realisation. The seminar was an excellent opportunity to exchange ideas and learn about some scientific experiences and achievements presented by researchers from the Institute of Power Engineering as well as other European research centres:

- ❖ Piotr Plaza, TU Delft/Faculty 3mE, Department of Process & Energy, Energy Technology Section, Delft, The Netherlands, Optimisation of Coal/Biomass/Waste Fuel Blends to Minimise Slagging and Fouling – Model Development and Validation,
- ❖ Dr Irene Malpartida Garcia, Departamento de Ingeniería Química, Universidad de Málaga, Spain, Multicomponent FTIR-MS-GC gas measurements: Operando system,
- ❖ Dr Yevgeniy Naumovich, University of Aveiro, Department of Materials and Ceramic Engineering, Portugal, Oxide materials for high temperature solid state electrochemical devices: properties, conditions and requirement,
- ❖ Dr Carlo Resini, Genoa, Italy, Heterogeneous catalysis for the Fuel Cells development,
- ❖ Dr Janusz Jewulski, Fuel Cells Laboratory, The technologies for high efficiency, low emission, clean energy generation with fuel cells,
- ❖ Dr Izabela S. Pięta, Fuel Cells Laboratory, Catalytic fuel preprocessing for high temperature fuel cells.

Call for Proposals

Call for proposals for FP7-ERA CHAIRS-PILOT

"ERA Chairs" is a new measure to bridge the research and innovation divide in Europe. These grants are intended to help develop research excellence in EU Member States, Associated Countries and regions. Universities or other eligible research institutions with currently low levels of participation in the Framework Programme, with a demonstrated potential and a concrete plan for research excellence, will be selected by the Commission to appoint outstanding research leaders: the "ERA Chairs" and his/her research team. This will permit these institutions to develop the level of excellence required to successfully compete internationally and effectively widen participation.

The deadline for the application: 30.05.2013

More information is available on the website

http://ec.europa.eu/research/participants/portal/page/call_FP7?callIdentifier=FP7-ERACHairs-PilotCall-2013&specificProgram=CAPACITIES#wlp_call_FP7

Joint programming Coordination 2013

On the 18th of December 2012 the call with the identifier FP7-JPROG-REGIONS-2013, Specific Programme PEOPLE was published. The call indicative budget is 2 million EUR.

The deadline for the application: 19 March 2013 at 17.00, Brussels local time

More information is available on the website:

<http://ec.europa.eu/research/participants/portalplus/static/desktop/en/calls/fp7-jprog-regions-2013.html#/programme/CAPACITIES>

ICT PSP – Policy Support Programme 7

The call, with the identifier CIP-ICT PSP-2013-7 was published on the 22nd of December 2012. The indicative budget of the program is 125,7 EUR million.

The deadline for the application: 14 May 2013 at 17.00, Brussels local time

More information is available on the following website:

<http://ec.europa.eu/research/participants/portalplus/static/desktop/en/calls/cip-ict-psp-2013-7.html#/programme/CIP>

Call For Proposals 2013 For Actions Under The Programme “Intelligent Energy – Europe”

The objective of the Program is to contribute to sustainable and competitive energy for Europe. The call identifier is: CIP-IEE-2013.

The deadline for the application: 8th May 2013, 17:00 (Brussels local time)

More information is available on the following website: http://ec.europa.eu/energy/intelligent/files/call_for_proposals/call_2013.pdf

Important Events

March 6-7, 2013, Warsaw, 4th International Renewable Energy Congress greenPOWER 2013

The first edition of the Congress was organized in 2009. It proved to be a success so the decision about organizing the next one was made. The aim of the greenPower Congress is mainly to serve as a place for all interested stakeholders to discuss the development of renewable energy sources. It includes strategies of the development of wind, sun, biomass, small hydro and geothermal sources.

More information is available on the website: <http://www.kongresgreenpower.pl/idm,258,green-power-congress-description.html>

March 21-22, 2013, Katowice, Biomass Forum – Poland, Europe, World regulations, obtaining, logistic, use

The event will serve as a platform of sharing knowledge not only about the legislations concerning traditional biomass energy market but also about the newest solutions in this area. The possibility of obtaining biomass from see resources will be also indicated. The event will be a great opportunity to establish contacts with the suppliers, manufacturers, logistic companies and other companies delivering new technology solutions. The event will finish with an evening banquet.

More information is available on the website: <http://scc.com.pl/konferencje/en/bkat/pl/>

April 23-25, 2013, Berlin: The 6th Energy Storage Forum – Europe 201

The forum will involve 50 speakers from energy sector, coming from 17 different countries. All the speeches will concern the innovation in the energy storage technology.

More information available on the following website: <http://www.energystorageforum.com/europe/blog/conference-news>

April 24-25, 2013, Vienna, Austria, 3rd annual European Algae Biomass Conference

The conference aim is to accelerate the Commercialisation of Algal Biomass Through Applied R&D and Business Strategy. The conference will bring together senior executives from industry and academia so they can discuss the latest commercial and technical developments, challenges and research breakthroughs in the field of algae research.

More information is available on the website: <http://www.wplgroup.com/aci/conferences/eu-eal3.asp>

13-16 May 2013, Thessaloniki, Greece, 6th International Conference on Clean Coal Technologies

The conference is organised by the following units: The IEA Clean Coal Centre, Aristotle University of Thessaloniki, the University of Western Macedonia, the National Technical University of Athens, and the Centre for Research and Technology Hellas, Chemical Process & Energy Resources Institute. The reason for organization an event is concern of increasing use of coal resulting from an increased energy demand – the projections say that the energy demand will increase of 50 % by 2030, with fossil fuel being still dominating. The conference will be devoted to different clean coal technologies, and associated topics:

- ❖ developments in carbon capture
- ❖ zero emissions technologies
- ❖ utilisation of low grade coals

More information is available on the website: <http://www.cct2013.org/ibis/CCT2013/home>

INTENES - New IEn project proposal for FP7 People Programme

IEn has submitted the new FP7 proposal INTENES "Highly Efficient Integrated Energy Systems Training Network" The proposal has been



prepared for FP7-PEOPLE-2013-ITN call with deadline November 22, 2012.

The main objective of the project is to establish a transnational training mobility network focused on highly efficient integrated energy systems (for example CHP) based on

- ❖ **biomass** - combustion, coal co-firing, gasification technologies for electricity and heat production,
- ❖ **clean coal technologies** - technologies with improved efficiency of coal output, processing and recycling as well as with reduced negative environmental impact for instance coal combustion and gasification with near zero CO₂ emission and flue-gas cleaning,
- ❖ **fuel cells** - intrinsically clean technologies of energy electro-chemical conversion using not only hydrogen but also other fuels as natural gas, methanol and coal

The network will support career development of 11 early-stages researchers and 4 experienced researchers by offering them a joint research training programme including research work in several research-development-demonstration projects as well as summer schools, specialized training courses, seminars and other activities. The individual, personalized projects as the main training activity will allow them to get scientific and technological knowledge. The projects will be complemented by additional training modules addressing entrepreneurship, project management, financing, IPR, ethical aspects and other key areas. The network will attract young people to research career and will open perspectives for their future employment in research institutions.

The consortium partners are full partners Institute of Power Engineering (Poland) the project coordinator, ECN (The Netherlands), EDF R&D (France), IFRF (Italy), KTH (Sweden), TU Delft (The Netherlands), sunfire GmbH (Germany) and PGE GiEK S.A. (Poland) as an associated partner. In the case of the proposal success it would be a good opportunity for development of SENERES research areas and existing capacities.

Recently published

- ❖ PV Aravind and Jong W de. *Evaluation of high temperature gas cleaning options for biomass gasification product gas for solid oxide fuel cells*, *Progress in Energy and Combustion Science*. Volume 38, Issue 6, December 2012, Pages 737–764
- ❖ Z Qu, Aravind PV, Boksteen SZ, Dekker NJJ, Janssen AHH, Woudstra N, Verkooijen AHM. *Three-dimensional computational fluid dynamics modeling of anode-supported planar SOFC*. *International Journal of Hydrogen Energy*. 2011;36(16):10209-20.
- ❖ Aravind P.V., Woudstra T., Woudstra N., and Spliethoff H.: *Thermodynamic evaluation of small-scale systems with biomass gasifiers, solid oxide fuel cells with Ni/GDC anodes and gas turbines*. *Journal of Power Sources*, 190(2): 461-475. 2010
- ❖ Ordorica-Garcia, G.; Nikoo, M.; Carbo, M.C.; Bolea, I.: *Technology Options and Integration Concepts for Implementing CO₂ Capture in Oil-Sands Operations*
- ❖ Rastko Jovanović, Boško Rašuob, Predrag Stefanovića, Dejan Cvetinovića, Bartosz Swiatkowski: *Numerical investigation of pulverized coal jet flame characteristics under different oxy-fuel conditions*. *International Journal of Heat and Mass Transfer*, 58, 1–2, March 2013, 654–662.
- ❖ Jakub Kupecki, Janusz Jewulski, Krzysztof Badyda: *Comparative Study of Biogas and DME Fed Micro-CHP System with Solid Oxide Fuel Cell*. *Applied Mechanics and Materials*, 267, 53-56 (2013).
- ❖ Published in *Journal of Canadian Petroleum Technology (Society of Petroleum Engineers)*, ECN-W--12-035 EN december 2012; 14 pag.;
- ❖ Best - Waldhober M. de; Dowd A.M.; Rodriguez M.; Straver K.; Jeanneret T.; Mastop E.A.; Paukovic M.: *Deliberating emission reduction options* ECN-O--12-037 december 2012; 116 pag.;
- ❖ Brouwer A.S.; Broek M.A. van den ; Seebregts A.J.; Faaij A.P.C.: *The flexibility requirements for power plants with CCS in a future energy system with a large share of intermittent renewable energy sources*. Presented at: 6th International Conference on
- ❖ GreenHouse Gas Control Technologies (GHGT-11), Kyoto, Japan, 18-22 november 2012.
- ❖ Best - Waldhober, M. de; Brunsting, S.; Paukovic, M.: *Public concepts of CCS: Understanding of the Dutch general public and its reflection in the media* ECN-W--12-050 November 2012; 0 pag.; Published in: *International Journal of Greenhouse Gas Control (Elsevier)*, November 2012, Ed.11, p.139-147.

- ❖ Brouwer A.S.; Broek M.A. van den ; Seebregts A.J.; Faaij A.P.C.: *The flexibility requirements for power plants with CCS in a future energy system with a large share of intermittent renewable energy sources*. Presented at: 6th International Conference on
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- ❖ Best - Waldhober, M. de; Daamen, D.D.L.; Ramirez-Ramirez, A.; Faaij, A.; Hendriks, C.; Visser, E. de: *Informed public opinion in the Netherlands: Evaluation of CO2 capture and storage technologies in comparison with other CO2 mitigation options* ECN-W--12-051 november 2012; 0 pag.; Published in: International Journal of Greenhouse Gas Control (Elsevier), September 2012, Ed.10, p.169-180.
- ❖ Itoaka, K.; Saito, A.; Paukovic, M.; Best - Waldhober, M. de; Dowd, A.M.; Jeanneret, T.; Ashworth, P.; James, M.: *Understanding how individuals perceive carbon dioxide* ECN-E--12-056 November 2012; 110 pag.; .
- ❖ Romeo Gimenez, Luis Miguel: *CO2 Capture: Integration and Overall System Optimization in Power Applications* ISBN: 978-3-642-27430-5, No. CP-0850. 2012
- ❖ Ristic, Dragisa: *Feasibility and NOx Reduction Potential of Flameless Oxidation in Pulverised Coal Combustion* Dissertation Universität Stuttgart, 2012.
- ❖ Dunnu, Gregory: *Characterisation of Solid Recovered Fuels for Direct Co-firing in Large-Scale PF Power Plants*, Dissertation Universität Stuttgart, 2012.
- ❖ Dunnu, G.; Panapoulos, K.D.; Karellas, S.; Maier, J.; Toulou, S.; Koufodimos, G.; Boukis, I.; Kakaras, E.: *The solid recovered fuel Stablat: Characteristics and fluidised bed gasification tests*; Fuel, Volume 93, March 2012, Pages 273–283, ISSN 0016-2361; DOI: 10.1016/j.fuel.2011.08.061; 2012