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Welcome address

Welcome to the second 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

May 15-16, 2012, Warsaw, Poland

SENERES Workshop on energy generation from biomass and clean coal technologies - combustion and gasification problems

On the 15th and 16th of May 2012 the first SENERES thematic Workshop has been organised in the Institute of Power Engineering in Warsaw. The workshop has covered the following issues:

1. Energy generation (centralized) from biomass with main focus on:

- corrosion, slagging and fouling
- ash quality
- fuel quality
- fuel upgrading



including aspects of R&D and commercialization strategies for new biomass-based technologies.

2. Energy generation from biomass with the focus on:

- FB biomass gasification-based CHP
- product gas cleaning
- prime movers
- system efficiencies

3. Clean coal technologies (incl. CCS) with the focus on:

- corrosion, slagging and fouling
- NOx emissions

The workshop speakers were prof. Jaap Kiel, dr Mariusz Cieplik, dr Lydia Fryda and dr Christiaan van der Meijden (ECN, Petten, The Netherlands) and Weihong Yang (KTH, Stockholm, Sweden).

The main objective of this Workshop was to exchange scientific information - in particular to facilitate knowledge transfer between SENERES and research community in the area of energy generation from biomass and clean coal technologies.

The first part of the workshop has covered a general overview and then has focused on a special technological topic (biomass upgrading), the development of ECN as an R&D institute as a typical example for the European Bioenergy R&D scene and the upcoming general concept of a Biobased Economy.

The workshop on biomass application in the centralised power generation was aimed at giving an overview of the technical bottlenecks to be dealt with when co-firing biomass in the current coal-fired power generating infrastructure. Primary focus was on the differences in the chemical composition (both inorganic as well as the organic matrix) and hence physical and chemical processes defining the fate of mineral matter, as well as combustion behaviour of biomass versus coal. Next to giving examples of mineral matter behaviour and distribution studies in full-scale co-firing situation, much attention was given to laboratory-scale predictive research, including examples of experimental as well as numerical dynamic combustion simulation tools and results. Furthermore biomass upgrading impact on its basic combustion behaviour has been discussed as well.



The workshop on biomass gasification was aimed to give a overview of the technology and the state of the research and demonstration progress in this field. Focus is given on biomass gasification technologies, gas cleaning, gas usage (gas engines, etc.) and system efficiencies.

The workshop on Clean Coal Technologies was aimed to give a complete picture of the state of the research and demonstration progress in this field. The main technological advances in the field of Clean Coal Technologies were presented, while special attention is given on the integration of biomass into the advanced coal conversion technologies that has led to concepts like BE-CCS (BioEnergy CCS), and EU projects like BOFCOM.

The workshop was further focused on the recent research progress on emissions formation (especially NOx), ash formation, slagging and fouling issues during solid fuels combustion under oxyfuel conditions, including the biomass co firing aspect. Results and conclusions from relevant ECN activities has been be presented and discussed during the third part.

The last part of the workshop was devoted to biomass pre-treatment for larger percentage of cofiring and fuel switch in coal fired power and CHP plants.



June 4 - 5, 2012, Krakow, Poland

Presentation of the project SENERES during the WIRE2012 Conference

During the WIRE2012 conference, which took place in Krakow June 4-5, the SENERES project was presented. The SENERES poster was serving as an example of FP7 REGPOT project. The aim of the conference was to demonstrate main challenges and barriers to innovation in regions. More than 300 people took part in the Week of Innovative Regions in Europe.



June 12, 2012, Faenza, Italy

Visit of SENERES's representatives in the ISTECC Faenza.

Director of the Institute of Power Engineering dr Jacek Wańkiewicz and SENERES coordinator dr Andrzej Slawinski, representatives of SENERES centre, have visited the Institute of Science and Technology for Ceramics ISTECC of National Research Council of Italy at Faenza on 12 June, 2012.

ISTECC is one of seven SENERES project strategic partners providing research on innovate ceramic materials and processes. ISTECC research focuses on the optimization of energy processes using ceramic appliances designed and manufactured by ISTECC. The short visit of SENERES's representatives in ISTECC has allowed to recognize its broad scope of research work and modern advanced laboratories.

June 12-13, 2012, Bologna, Italy

Meeting of the Executive Committee of the European Energy Research Alliance (EERA)

The 15th meeting of the Executive Committee of the European Energy Research Alliance (EERA) was held in Bologna on 12-13 of June, 2012.

The Executive Committee accepted Erkki KM Leppävuori (CEO of VTT, Finland) as a new EERA chairperson.

The meeting discussion concerned the future model of EERA and strengthening of EU competitiveness.

IEn was represented by IEn director dr Jacek Wańkiewicz and SENERES coordinator dr Andrzej Sławiński.



Researchers Recruitment

The following second round of calls has been published (deadline 31.07.2012). The third round will be launched soon (August 2012).

Call for Experienced Researcher in the area of energy generation from biomass

Institute of Power Engineering (IEn, Warsaw, Poland) has launched an international call for applications to fill a research and development position in the area of energy generation from biomass. The call is open to any candidate that fills requirements for the position. However, only outstanding candidates with excellent R&D achievements record and leadership capabilities will be considered. The Polish nationals having left the country are particularly encouraged.

Place of work:

Instytut Energetyki (Institute of Power Engineering), 36 Augustówka Street, 02-981 Warsaw, Poland

Dimension of regular post: 1

Number of position of work: 1

Agreement on definite time: up to 2 years stay

Gross salary: 60 000 Euro/year

Characteristics of the positions:

The experienced researcher will be employed in the FP7 project SENERES Sustainable Energy Research and Development Centre. The researcher will lead and guide team of young scientists and engineers developing at least one of the following areas and topics:

- ❖ Biomass gasifier-engine CHP systems, in respect to their design, operation, emissions, efficiency and economics
- ❖ Biomass firing and co-firing with coal:
 - biomass pretreatment, e.g. torrefaction,
 - fouling and slagging processes, chloride corrosion (evaluation, decreasing of negative impact, e.g. chemical additives),
 - measurements of particulate emissions (PM), NOx and other compounds formed during the incomplete combustion of biomass (CO, OGC, PAHs),
 - numerical modeling of the biomass combustion process.

It is generally expected that successful candidates after the co-funded initial period would become a permanent staff of IEn.

Requirements related to the position:

- ❖ PhD degree in the relevant research fields combined with minimum 3 years of experience or expertise of a minimum 8 years (combined) research in the area of energy generation from biomass and industrial demonstrations,
- ❖ Fluent English (basic knowledge of Polish is always welcome),
- ❖ Proven track record of professional accomplishment, preferably demonstrated through a strong publications list
- ❖ An enthusiastic team player with the ambition to strengthen and expand the research of the new group.

Required documents and statements:

- ❖ employment application;
- ❖ curriculum vitae;
- ❖ copy of higher education diplomas, granting a degree or scientific title;
- ❖ abstract containing concise information about candidate's scientific research achievements to date and implementation, participation in national and international research projects, foreign languages,
- ❖ list of publications,
- ❖ other evidence of qualifications of the candidate (for example: certificates confirming knowledge of foreign languages, letters of reference)
- ❖ statement by the candidate on the use of full civil rights for the mind and conduct crime indictable offense, or the mind of Treasury;
- ❖ a statement of the candidate to consent to the processing of personal data for purposes of this contest.

Applications must be submitted in paper before:

July 31, 2012

Place of documents submission:

Instytut Energetyki - Instytut Badawczy, Mory 8,
01-330 Warszawa, Poland

postscript: Call for Experienced Researcher - Biomass

The evaluation procedure:

The applications will be assessed by an independent evaluation commission, whose responsibility will be to rank the different candidates for a given position according to their merits and potential.

The selected best candidates will be invited for an interview at IEn. Based on this assessment, and on interviews conducted with the best candidates, IEn will sign the corresponding contract with a successful candidate. Authors of rejected applications will not be notified.

Additional information:

instytut.energetyki@ien.com.pl

Call for Experienced Researcher in the area of clean coal technologies

Institute of Power Engineering (IEn, Warsaw, Poland) has launched an international call for applications to fill a research and development position in the area of clean coal technologies. The call is open to any candidate that fills requirements for the position. However, only outstanding candidates with excellent R&D achievements record and leadership capabilities will be considered. The Polish nationals having left the country are particularly encouraged.

Place of work:

Instytut Energetyki (Institute of Power Engineering),
36 Augustówka Street, 02-981 Warsaw, Poland

Dimension of regular post: 1**Number of position of work:** 1

Agreement on definite time: up to 2 years stay

Gross salary: 60 000 Euro/year

Characteristics of the positions:

The experienced researcher will be employed in the FP7 project SENERES Sustainable Energy Research and Development Centre. The researcher will lead and guide team of young scientists and engineers developing at least one of the following areas and topics to oxy-fuel technologies:

- ❖ coal combustion in modified atmospheres

(CO₂/O₂/H₂O) in various scales: laboratory (single particle, drop tubes) and semi-industrial (0.5 MWth furnace) in respect to heat transfer, burnout, gaseous emissions, corrosion, slagging and fouling,

- ❖ multicomponent FTIR gas measurements (nitrogen and sulphur compounds, HCl, HF, hydrocarbons),
- ❖ 3D PIV, LIF and ES measurements in semi-industrial facility.

It is generally expected that successful candidates after the co-funded initial period would become a permanent staff of IEn.

Requirements related to the position:

- ❖ PhD degree in the relevant research fields combined with minimum 3 years of experience or expertise of a minimum 8 years (combined) research in the area of clean coal technologies and industrial demonstrations
- ❖ Fluent English (basic knowledge of Polish is always welcome),
- ❖ Proven track record of professional accomplishment, preferably demonstrated through a strong publications list
- ❖ An enthusiastic team player with the ambition to strengthen and expand the research of the new group.

Required documents and statements:

- ❖ employment application;
- ❖ curriculum vitae;
- ❖ copy of higher education diplomas, granting a degree or scientific title;
- ❖ abstract containing concise information about candidate's scientific research achievements to date and implementation, participation in national and international research projects, foreign languages,
- ❖ list of publications,
- ❖ other evidence of qualifications of the candidate (for example: certificates confirming knowledge of foreign languages, letters of reference)
- ❖ statement by the candidate on the use of full civil rights for the mind and conduct crime indictable offense, or the mind of Treasury;
- ❖ a statement of the candidate to consent to the processing of personal data for purposes of this contest.

Applications must be submitted in paper before:

July 31, 2012.

Place of documents submission:

Instytut Energetyki - Instytut Badawczy, Mory ,

01-330 Warszawa, Poland

postscript: Call for Experienced Researcher – clean coal technologies

The evaluation procedure:

The applications will be assessed by an independent evaluation commission, whose responsibility will be to rank the different candidates for a given position according to their merits and potential. The selected best candidates will be invited for an interview at IEn.

Based on this assessment, and on interviews conducted with the best candidates, IEn will sign the corresponding contract with a successful candidate. Authors of rejected applications will not be notified.

Additional information:

instytut.energetyki@ien.com.pl

Call for Experienced Researcher - SOFC systems

Institute of Power Engineering (IEn, Warsaw, Poland) has launched an international call for applications to fill a research and development position in the area of μ -CHP/SOFC systems development. The call is open to any candidate that fills requirements for the position. However, only outstanding candidates with excellent R&D achievements record and leadership capabilities will be considered.

Place of work:

Instytut Energetyki (Institute of Power Engineering), 36 Augustówka Street, 02-981 Warsaw, Poland

Dimension of regular post: 1

Number of position of work: 1 or more

Agreement on definite time: up to 2 years stay

Gross salary: 60 000 Euro/year

Characteristics of the positions:

The experienced researcher will be employed in the FP7 project SENERES Sustainable Energy Research and Development Centre. The researcher will lead and guide team of young scientists and engineers developing the μ -CHP/SOFC system in a cross-functional environment comprised of design, sourcing/selection/fabrication of components, construction, and testing activities. It is generally expected that the successful candidates after the co-funded initial period would become permanent staff of IEn.

Requirements related to the position:

- ❖ PhD degree in the relevant research fields combined with minimum 3 years of experience or

expertise of a minimum 8 years (combined) research in one of the following research area

- μ -CHP/SOFC (1-2 kWe) system design, construction and testing,
- control system design and implementation for the μ -CHP/SOFC,
- design, construction, sealing and testing of SOFC stacks,
- components design, construction/selection for the μ -CHP/SOFC,
- SOFC cell fabrication
- Fluent English (basic knowledge of Polish language is always welcome),
- Proven track record of professional accomplishment, preferably demonstrated through a strong publications list
- An enthusiastic team player with the ambition to strengthen and expand the research of the new group.

Required documents and statements:

- ❖ employment application;
- ❖ curriculum vitae;
- ❖ copy of higher education diplomas, granting a degree or scientific title;
- ❖ abstract containing concise information about candidate's scientific research achievements to date and implementation, participation in national and international research projects, foreign languages,
- ❖ list of publications,
- ❖ other evidence of qualifications of the candidate (for example: certificates confirming knowledge of foreign languages, letters of reference)
- ❖ statement by the candidate on the use of full civil rights for the mind and conduct crime indictable offense, or the mind of Treasury
- ❖ a statement of the candidate to consent to the processing of personal data for purposes of this contest

Applications must be submitted in paper before:

July 31, 2012

Place of documents submission:

Instytut Energetyki - Instytut Badawczy, Mory 8, 01-330 Warszawa, Poland

postscript: Call for Experienced Researcher - SOFC systems

The evaluation procedure:

The applications will be assessed by an independent evaluation commission, whose responsibility will be to rank the different candidates for a given position according to their merits and potential. The selected best candidates will be invited for an interview at IEn. Based on this assessment, and on interviews conducted with the best candidates, IEn will sign the corresponding contract with a successful candidate. Authors of rejected applications will not be notified.

Additional information:

instytut.energetyki@ien.com.pl

Call for Proposals

The below mentioned Calls will be published on the 10th of July 2012:

- ❖ FP7-ENERGY-2013-1: a general call focusing on research with a long-term horizon;
- ❖ FP7-ENERGY-2013-2: a general call focusing on research with a short-term horizon and on demonstration;

Additionally energy-related Calls for Proposals are planned to be published on the 10th of July 2012:

- ❖ FP7-SMARTCITIES-2013: a call in the framework of the SET-Plan Smart Cities and Communities Initiative;
- ❖ FP7-ENERGY-2013-IRP: a call to support integrated research programmes in the energy field;
- ❖ FP7-FISSION-2013: a call focusing on nuclear fission research;
- ❖ FP7-2013-NMP-ENV-ICT-EeB: a cross-thematic call on Energy-efficient Buildings in the context of the EU Recovery Plan;
- ❖ FP7-2013-OCEAN: a cross-thematic call on marine and maritime research including an energy relevant topic;
- ❖ FP7-ERANET-2013-RTD: a joint call on ERA-NETs.

The call information is available on the following website:

http://ec.europa.eu/research/conferences/2012/energy_infoday/infoday_energy_en.htm

Important Events**July 19, 2012, Congress about „Insurance in energetics”**

The seminar will concern the minimization of risk and costs of insurance associated with this risk. The meeting will be held on the 19th July in Warsaw.

More information is available on the website:

<http://scc.com.pl/konferencje/en/ube/zaproszenie>

July 26-27, 2012, Szczecin, Green blocks – big and small biomass investments

On 26-27 July the "Green Blocks - big and little biomass investments," conference will be held in Szczecin. During the conference SC Experts Consultancy / PowerMeetings.pl will share with experience from the process of conducting investment both in Professional Energetics and in Enterprises of the thermal power industry. An important topic will be financial investment, that is how to raise funds necessary for conducting investment.

More information is available on the website:

<http://scc.com.pl/konferencje/en/dlr/>

August 23, 2012, Katowice, Workshop Cogeneration - Today and Tomorrow. Prospects of the development. The Planned changes to the law.

On the 23rd of August in Katowice there will be organised the workshop "Cogeneration - Today and Tomorrow. Prospects of the development. Planned changes to the law".

In the course of this workshop among others the following issues will be discussed:

- ❖ current and designed decisions and EU directives;
- ❖ directions of changes and supplements to the system of the support;
- ❖ cogeneration in the draft of the new energy law;
- ❖ principles of using the system of supporting today and tomorrow;
- ❖ accounting for the duty;
- ❖ other regulations supporting the cogeneration.

More information is available on the website:

<http://scc.com.pl/konferencje/en/kog/zaproszenie>

September 6, 2012, Warsaw, Workshops/ Information days for potential beneficiaries of the programme Polish- Norway research cooperation.

The aim of the Polish-Norwegian Research Programme is to reduce economic and social differences and to promote bilateral cooperation through popularization and support of scientific research. The Programme will prioritize funding for research and development in the following areas:

- ❖ environment,
- ❖ climate change, including polar research,
- ❖ health,
- ❖ social sciences, including the issues of migration,
- ❖ mainstreaming gender equality and promoting work-life balance.

The total Programme budget is EUR 43 329 412, out of which EUR 38 818 851 is for research projects selected on the basis of calls for proposals. The latter sum includes EUR 3 529 412 for research projects in the domain of mainstreaming gender equality and promoting work-life balance. Moreover, an allocation of EUR 2 352 941 shall be dedicated to the small grant scheme.

More information is available on the website:

<http://www.ncbir.pl/aktualnosci/art,1375,warsztatydzien-informacyjny-dla-potencjalnych-beneficjentow-programu-polsko-norweska-wspolpraca-badawcza.html>

17-18 October , Budapest, Hungary; The CEP® Clean Energy & Passive House Expo

Among the most important issues discussed will be the following: Low Energy Buildings, Passive House, Building Engineering, Intelligent Buildings / Building Automation, Protection of National Monuments.

More information is available on the website:

<http://www.cep-expo.hu/>

Horizon 2020

Horizon 2020 is a financial instrument implementing the Innovation Union, Europe 2020 flagship initiative aimed at securing Europe's global competitiveness. Running from 2014 to 2020 the EU's new programme for research and innovation is a part of drive to create new growth and jobs in Europe.

Horizon 2020 will combine all research and innovation funding currently provided through Framework Programmes for Research and Technical Development, the innovation related activities of the Competitiveness and Innovation Framework Programme (CIP) and the European Institute of Innovation and Technology (EIT).

The proposed support for research and innovation under Horizon 2020 will:

- ❖ strengthen the EU's position in science. This will provide a boost to top-level research in Europe.
- ❖ strengthen industrial leadership in innovation. This includes major investment in key technologies, greater access to capital and support for SMEs.
- ❖ provide big budget to help address major concerns shared by all Europeans such as climate change, developing sustainable transport and mobility, making renewable energy more affordable, ensuring food safety and security, or coping with the challenge of an ageing population.

Horizon 2020 will tackle societal challenges by helping to bridge the gap between research and the market by, for example, helping innovative enterprise to develop their technological breakthroughs into viable products with real commercial potential. This market-driven approach will include creating partnerships with the private sector and Member States to bring together the resources needed.

More information about Horizon 2020 is available on the website:

http://ec.europa.eu/research/horizon2020/index_en.cfm?pg=home&video=none

Recently Published

- ❖ Daniëls, B.W.; Tieben, B.; Weda, J.; Hekkenberg, M.; Smekens, K.E.L.; Vethman, P.; Costs and benefits of CO₂ - abatement measures; ECN-E--12-008, may 2012; 161;

<http://www.ecn.nl/docs/library/report/2012/e12008.pdf>

- ❖ Hagemann, M.; Coninck, H.C. de; Visser, E. de; Bakker, S.J.A.; Bilateral and multilateral processes between developed and developing countries and their progress towards achieving effective implementation of CCS; ECN-W--12-020, may 2012; p. 10.;
- ❖ Daza Montano, C.M.; Pels, J.R.; Fryda, L.E.; Zwart, R.W.R.; Evaluation of Torrefied Bamboo for Sustainable Bioenergy Production; ECN-M--12-013, may 2012; p. 11.; Presented at: World Bamboo Congress, Antwerp, Belgium, 10-15 april 2012.
- ❖ Eecen, P.J.; Bijleveld, H.; Sanderse, B.; Wind energy research developments of advanced design tools; ECN-V--12-008 EN may 2012; 5; Published in: Europhysics News (EDPS), 2012, Ed.March-April, p.18-21.
<http://www.ecn.nl/docs/library/report/2012/v12008.pdf>
- ❖ Ehinger, A.; Brink, R.W. van den; Persoglia, S.; EERA joint programme on CO2 Capture and Storage: Recent advances and the road ahead; ECN-L--12-017 may 2012; 28 Presented at: 2nd European Energy Conference, Maastricht, The Netherlands, 17 - 20 April 2012.
<http://www.ecn.nl/docs/library/report/2012/l12017.pdf>
- ❖ Galagan, Y.; Coenen, E.W.C.; Sabik, S.; Gorter, H.; Barink, M.; Veenstra, S.C.; Kroon, J.M.; Andriessen, R.; Blom, P.; Evaluation of ink-jet printed current collecting grids and busbars for ITO-free organic solar cells; ECN-W--12-011; april 2012; p. 7.; Published in: Solar Energy Materials & Solar Cells (Elsevier), 2012, Ed.104, 32-38.