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Conference of Environmental
and Climate technologies

10–12 May 2017

Riga, Latvia

Conference Programme

Conference Topics

Renewable Energy
Green Transport Systems
Biofuels and Alternative Fuels
Smart Energy and Zero Carbon Technologies
Pollution Prevention
Resilience
Heat and Power Generation, incl. District Heating and/or Cooling

Energy and Carbon Markets
Energy Management, Policy and Economics
Bioeconomy and Low Carbon Development
Energy and Environmental Modelling
System Approach Integration in Energy Sector
Energy Efficiency Improvement
Resource Efficiency, Circular Economy and Ecodesign

Organised by:



About CONECT

CONECT – International Scientific Conference of Environmental and Climate Technologies – is organised by the Institute of Energy Systems and Environment, Riga Technical University.

Its main aim is to acquaint researchers with achievements in the area of energy systems and environmental engineering and to give the scientists, PhD students and professionals an opportunity to present and publish the results of their research.

The conference proceedings will be published at **Energy Procedia** and indexed by **SCOPUS**. Selected papers will also be recommended for publication in a scientific journals indexed by **SCOPUS**.

Venue

The conference will take place in Riga, Latvia, at the Faculty of Power and Electrical Engineering of the Riga Technical University, from 10–12 May 2017.



Free Wi-fi Access is provided
in all conference rooms.

User: viesis.viesis
Password: Viesis2017

Conference language

The official conference language is English.

Conference Hours

Registration at the lobby of the Faculty of Power and Electrical Engineering of the Riga Technical University, Azenes iela 12/1.

Wednesday, 10 May from 9:00–10:00
Thursday, 11 May from 8:30–9:00

Guidelines

Oral presentations

All presenters are kindly asked to come to the Conference Rooms 10 minutes before the sessions in order to upload and check their presentations. A Technical Assistant and a Session Chair will be available at the Rooms to provide the assistance.

Duration of each oral presentation in plenary session is 15 minutes and 5 minutes for questions and discussions. Duration of each oral presentation in other sessions is 12 minutes and 3 minutes for questions and discussions.

Poster presentations

There are two poster sessions scheduled:

- SESSION I – on Wednesday, 10 May from **16:15** till **18:00**
- SESSION II – on Thursday, 11 May from **16:45** till **18:00**

Suggested size of the posters is A1 (594 mm × 841 mm). Authors are requested to put their posters to the panels at least 2 hours before the poster sessions. Authors need to participate in the poster session to present their poster and answer questions.

Scientific Committee / Editorial Board of the CONECT 2017:

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- D. Baranenko, ITMO University, Russia
- J. Gusca, Riga Technical University, Latvia
- S. N. Kalnins, Riga Technical University, Latvia

WEDNESDAY, 10 MAY Faculty of Power and Electrical engineering, Azenes iela 12/1, audience 116

9.00–10.00 Registration
10.00–10.10 Conference opening

Plenary Session I

Moderators **G. Bazbauers, Riga Technical University, Latvia**
I. Weidlich, HafenCity University Hamburg, Germany

10.10–10.30 Biotechnomy challenges in RTU, Latvia, Europe
D. Blumberga, Riga Technical University, Latvia

10.30–10.50 Future sign detection in smart grids through text mining
C. Park, **S. Cho**, Korea Energy Economics Institute, South Korea

10.50–11.10 Flue gas treatment multicriteria analysis
J. Selivanovs, **E. Vigants**, I. Veidenbergs, D. Blumberga, Riga Technical University, Latvia

11.10–11.30 Making communities resilient to disasters: focus on the Critical Infrastructures
F. Romagnoli, Riga Technical University, Latvia

11.30–11.50 A review on interactions between energy performance of the buildings, outdoor air pollution and the indoor air quality
P. Spiru, P. L. Simona, University of Galati, Romania

11.50–13.00 Lunch, cafeteria Azenes iela 12/1 1st floor

Bioeconomy

Moderator **J. Gusca, Riga Technical University, Latvia**

13.00–13.15 System dynamics model of research, innovation and education system for efficient use of bioresources
G. Bazbauers, S. Allena-Ozolina, Riga Technical University, Latvia

- 13.15–13.30 Opportunities for bioenergy in the Baltic Sea Region
S. Silveira, **D. Khatiwada**, S. Leduc, F. Kraxner, B. K. Venkata, V. Tilvikine, V. Gaubyte, F. Romagnoli, E. Tauraite, S. Kundas, D. Blumberga, K. Peterson, K. Utsar, E. Vigants, A. Kalinichenko, KTH Royal Institute of Technology, Sweden
- 13.30–13.45 Prioritization methodology for the determination of national targets
E. Cilinskis, Z. Indzere, D. Blumberga, Riga Technical University, Latvia
- 13.45–14.00 Pre-treatment and utilization of food waste as energy source by bio-drying process
M. Mohammed, I. Ozbay, A. Karademir, M. Isleyen, University of Kocaeli, Turkey
- 14.00–14.15 Bioeconomy mapping indicators and methodology
D. Blumberga, I. Muizniece, L. Zihare, Riga Technical University, Latvia
- 14.15–14.30 The environmental sustainability of biogas production with small sized plant
G. Tomasoni, M. Collotta, University of Brescia, Italy
- 14.30–15.00 Coffee break

Climate Technologies

- Moderators** **D. Blumberga, Riga Technical University, Latvia**
A. Volkova, Tallinn University of Technology, Estonia
- 15.00–15.15 Low carbon municipalities
M. Rosa, Riga Technical University, Latvia
- 15.15–15.30 Carbon dioxide emission factors for oxy-fuel CFBC and aqueous carbonation of the Ca-rich oil shale ash
L. Loo, B. Maaten, A. Konist, A. Siirde, D. Neshumayev, T. Pihu, Tallinn University of Technology, Estonia
- 15.30–15.45 Evaluation of the electrical performance of photovoltaic panels after dust accumulation: The first case study in the eastern Nile region in Egypt
K. Menoufi, A. Ali Farghali, M.H. Khedr, University of Lleida, Spain

- 15.45–16.00 Results from ecosystem approach in climate change mitigation and adaptation: case study from pilots in 7 countries
S. N. Kalnins, Riga Technical University, Latvia
- 16.00–16.15 Analysis of performance degradation of domestic Monocrystalline photovoltaic systems for a real-world case
S. A. Tabatabaei, **D. Formolo**, J. Treur, VU University Amsterdam, Netherlands
- 16.15–18.00 **Poster session I, lobby in front of audiences 115–116**
Moderator D. Jaunzems, Riga Technical University, Latvia
- 20.00 Welcome event, B-bārs, Doma laukums 2, Riga Old Town

THURSDAY, 11 MAY Faculty of Power and Electrical engineering, Azenes iela 12/1, audience 116

- 8.30–9.00 Registration
9.00–9.20 Conclusions about 1st day sessions

Plenary session II

- Moderators A. Blumberga**, Riga Technical University, Latvia
G. K. Schuchardt, FFI, Fernwärme Forschungsinstitut in Hannover e.V., Germany
- 9.20–9.40 ESCO in dwelling buildings. Horizon 2020 project experience
C. Rochas, Riga Technical University, Latvia
- 9.40–10.00 Estimation of climate change impact on energy consumption in a residential building in Kaunas, Lithuania, using HEED Software
A. Sabunas, A. Kanapickas, Vytautas Magnus University, Lithuania
- 10.00–10.20 Expected potential of bound and recycled backfill material in low temperature district heating networks
I. Weidlich, M. Grajcar, Hafencity University Hamburg, Germany
- 10.20–10.40 Resilience of critical infrastructures: probabilistic case study of a Latvian municipality district heating network
M. Feofilovs, F. Romagnoli, Riga Technical University, Latvia

- 10.40–11.00 Methodological approach to determining the effect of parallel energy consumption on district heating system
E. Latosov, A. Volkova, A. Siirde, J. Kurnitski, M. Thalfeldt, Tallinn University of Technology, Estonia
- 11.00–11.20 Extraction of carbon dioxide from gas mixtures with amines absorbing process
Yu. Ivanov, O. Pyatnichko, H. Zhuk, L. Onopa, **M. Soltanibereshne**, Gas Institute of NAS Ukraine, Ukraine
- 11.20–12.30 Lunch, cafeteria Azenes iela 12/1 1st floor

Energy. Systems. Generation. End user

Moderator **C. Rochas, Riga Technical University, Latvia**

- 12.30–12.45 Energy efficiency in historical buildings. Horizon 2020 project experience
A. Blumberga, Riga Technical University, Latvia
- 12.45–13.00 Life cycle assessment of a Building Added Concentrating Photovoltaic system (BACPV)
K. Menoufi, D. Chemisana, J. I. Rosell, University of Lleida, Spain
- 13.00–13.15 Heat transfer analysis by use of lens integrated in building wall
R. Vanaga, R. Purvins, A. Blumberga, I. Veidenbergs, D. Blumberga, Riga Technical University, Latvia
- 13.15–13.30 Dynamic characteristics of smart grid technology acceptance
C. Park, H. Kim, **T. Yong**, Korea Institute of S&T Evaluation and Planning, South Korea
- 13.30–13.45 Energy policy for energy intensive manufacturing companies and their impact on energy efficiency improvements
K. Locmelis, D. Blumberga, U. Bariss, Riga Technical University, Latvia
- 13.45–14.00 Sensitivity analysis of the conception of small scale district heating networks on the thermal conductivity of the surrounding soil
G. K. Schuchardt, I. Weidlich, FFI, Fernwärme Forschungsinstitut in Hannover e.V., Germany
- 14.00–14.15 Performance evaluation of Passive Heat Barrier system in Latvian climatic conditions
M. Zamovskis, A. Blumberga, Riga Technical University, Latvia
- 14.30–15.00 Coffee break

Environmental problems. Solutions

Moderators	F. Romagnoli, Riga Technical University, Latvia S. N. Kalnins, Riga Technical University, Latvia
15.00–15.15	Analysis and characterization of biomethanation input composition and reaction boundaries J. Gusca, I. Kuznecova, Riga Technical University, Latvia
15.15–15.30	Comparative review and discussion on P2P electricity trading C. Park, T. Yong, Korea Energy Economics Institute, South Korea
15.30–15.45	A study of weathered coal spectroscopic properties J. Krumins, Z. Yang, Q. Zhang, M. Yan, M. Klavins, University of Latvia, Latvia
15.45–16.00	Novel tools to study socio-technical transitions in energy systems L. Timma, A. Blumberga, G. Bazbauers, D. Blumberga, Riga Technical University, Latvia
16.00–16.15	Symbiosis between industrial systems and public services facilities for boosting energy efficiency B. Marchi, S. Zanoni, L. E. Zavanella, University of Brescia, Italy
16.15–16.30	Compaction in a confined deforming reservoir T. A. Jelmert, T. Toverud, Norwegian University of Science and Technology, Norway
16.30–16.45	Low-cost PM monitors as an opportunity to increase the spatiotemporal resolution of measurements of air quality M. Rogulski, Warsaw University of Technology, Poland
16.45–18.00	Poster session II, lobby in front of audiences 115–116
Moderator	A. Kamenders, Riga Technical University, Latvia
19.00	Social dinner, restaurant Neiburgs, Jauniela 25, Riga Old Town

FRIDAY, 12 MAY *Faculty of Power and Electrical engineering, Azenes iela 12/1*

12.00–13.00	Lunch, cafeteria Azenes iela 12/1 1 st floor
13:00	Conference technical tour or Social event Technological Tour to landfill “Getlini EKO” or Riga Old Town Tour

May 10 Poster session I		
P1.1	I. Pakere , J. Ziemele, D. Blumberga	DH company in prosumers role
P1.2	E. Antane , D. Blumberga	Optimisation of resources flows in pellet manufacture
P1.3	I.V. Breido, A.M. Zyuzev, A. A. Kalinin	Methods of studying electric-hydrodynamic heater
P1.4	T. Prodanuks , V. Vitolins, I. Veidenbergs, D. Blumberga	Comparison of theoretical and practical energy efficiency values in indirect contact gas condensing unit
P1.5	V. Kazulis , I. Muizniece, D. Blumberga	Ecodesign analysis for innovative bioproduct from forest biomass assessment
P1.6	C. Park , T. Yong	Prospect of Korean nuclear policy change through text mining
P1.7	R. Azis , G. Bazbauers, A. Blumberga	The role of forest biotechnology industry in the macroeconomic development model of the national economy of Latvia: a system dynamics approach
P1.8	M. M. Fawzy, V. Kazulis , I. Veidenbergs, D. Blumberga	Levelised cost of energy analysis of cofiring solid, liquid and gaseous fuel
P1.9	M. Melvere , K. Ivanovs, J. Pubule, D. Blumberga	Use of round goby processing waste in bioeconomy
P1.10	A. Mukashev, A. Pugovkin , S. Kuprekov, N. Petrova, S. Abramchuk	Dynamic method of the heating devices efficiency measurement
P1.11	K. Ivanovs , D. Blumberga	Extraction of fish oil using green extraction methods: a short review
P1.12	E. Keirane , J. Gusca	Ecodesign methods for small scale boilers
P1.13	J. Krastina , F. Romagnoli, K. Balina	Techno-economic feasibility of seaweed based conversion systems: an LCCA perspective
P1.14	S. Varnagiris , D. Girdzevicius, M. Urbonavicius, D. Milcius	Incorporation of SiO ₂ and TiO ₂ additives into expanded polystyrene foam using physical vapour deposition technique
P1.15	M. Urbonavicius , S. Varnagiris, D. Girdzevicius, D. Milcius,	Hydrogen generation based on aluminum-water reaction for fuel cell applications
P1.16	D. Girdzevicius , M. Urbonavicius, S. Varnagiris, D. Milcius	Implementation of hydrogen plasma activation of Mg powder in two steps hydrogenation
P1.17	O. Miruk	Development of cellular structure composites for energy efficient construction
P1.18	Z. Jansone , I. Muizniece, D. Blumberga	Analysis of wood bark use opportunities
P1.19	A. Gravelisins , A. Blumberga, D. Blumberga, I. Muizniece	Economic analysis of wood products: system dynamics approach
P1.20	A. Lazdovska , Dz. Jaunzems	Case analysis in Latvia on involvement of end users in energy system

P1.21	L. Bozhko, A. Naizabekov	Problems in provision of human resources for industry-innovative development of Republic of Kazakhstan
P1.22	J. Viba, V. Beresnevics , M.Irbe, J. Dobelis	The control of blades orientation to air flow in wind energetic device
P1.23	E. Biseniece , A. Blumberga, R. Freimanis, R. Purvins	Test stand for research of hygrothermal behaviour of internal insulation
P1.24	P. Brazdausks , M.Puke, J. Rizhikovs, J. Pubule	Evaluation of cellulose content in hemp shives after salt catalyzed hydrolysis
P1.25	E. Latosov , A. Volkova	Corrosive effects of H ₂ S and NH ₃ on natural gas piping systems manufactured of carbon steel
P1.26	M. D. Aminu , V. Manovic	A workflow for building and calibrating 3D pre-injection and 4D geomechanics modelling to assess caprock and fault integrity for geologic CO ₂ storage
P1.27	A. Kalnbalkite , D. Blumberga, L. Zihare, I. Muizniece	Carbon storage in bioproducts
P1.28	M. D. Aminu , C. A. Rochelle, V. Manovic	Review of options for CO ₂ storage in geological media
P1.29	Z. Zalane , G. Dobeles, A. Volperts, S.Valtere	Synthesis and sorption properties of biomass based activated carbons and their application for supercapacitors
P1.30	A. Albatayneh , D. Alterman, A. Page, B. Moghtaderi	Temperature versus energy based approaches in the thermal assessment of buildings
May 11 Poster session II		
P2.1	U. Sarma , G. Bazbauers	An algorithm for calculation of district heating tariff benchmark
P2.2	K. Balina , F. Romagnoli	Seaweed biorefinery concept for sustainable use of marine resources
P2.3	D. Chomakhidze, K. Tskhakaia , D. Shamaevi	Twenty years' experience of the regulation of energy in Georgia
P2.4	T. Mols , A. Blumberga, I. Karklina	Evaluation of Climate Adaptive Building Shells: Multi-criteria analysis
P2.5	M. Eldermann, A. Siirde, J. Gusca	Integrated QFD methodology for selection of industry development scenarios
P2.6	T. Yong , C. Park	A qualitative comparative analysis on factors affecting the deployment of electric vehicles
P2.7	K. Spalvins , D. Blumberga	Production of fish feed and fish oil from waste biomass using microorganisms: overview of methods analyzing resource availability
P2.8	I. Elegbede , S. Matemilola, O. Fadeyi, F. Kie, A. Saba, F. Adekunbi, A. Lawal-Are, H. Fashina-Bombata	Risk analysis and Development of Algae Biofuel: A 'SWOT' analytical approach

P2.9	E. Terehovics , I. Veidenbergs, H. Vigants, D. Blumberga	Methodology for energy balance in pellet production
P2.10	P. L. Simona , P. Spiru, I. V. Ion	Increasing the energy efficiency of buildings by thermal insulation
P2.11	I. Muizniece , D. Blumberga	Wood resources for energy sector in Latvia. Is it a sustainable solution?
P2.12	D. Blumberga , G. Vigants, V. Kirsanovs, I. Veidenbergs, M. Dzikevics	Fog unit versus electrical precipitator and filter
P2.13	A. Khabdullin , Z. Khabdullina, G. Khabdullina, S. Tsyruk	Development of software complex to optimise electricity supply systems driven for minimisation of load and power losses
P2.14	D. Lauka , D. Blumberga, A. Khabdullin, Z. Khabdullina, G. Khabdullina	Demand response analysis in municipal DH system
P2.15	A. Gancone , J. Pubule, D. Blumberga	Evaluation of agriculture ecoefficiency in Latvia
P2.16	K. Haine , D. Blumberga	Solar energy integration in the existing urban plan and long term. Performance case of study Ibenbadis, Constantine (Algeria)
P2.17	O. Kadnikova, G. Altynbayeva, A. Aidarkhanov, B. Shaldikova, B. Nurmuchambetova	Possibility analysis of developed technology for processing of sewing and knitwear waste
P2.18	M. Dzikevics , A. Ansone, I. Veidenbergs	Experimental investigation of flow rate impact on thermal accumulation system with PCM
P2.19	V. Kirsanovs , D. Blumberga, I. Veidenbergs, C. Rochas, E. Vigants, G. Vigants	Experimental investigation of downdraft gasifier at various conditions
P2.20	V. Ondrejka Harbulakova , A. Estokova, A. Luptakova, M. Kovalcikova	Investigation of slag-based concrete by mathematical analysis considering air pollution prevention
P2.21	L. Zihare , D. Blumberga	Insight into bioeconomy. <i>Solidago Canadensis</i> as a valid resource. Brief review
P2.22	A. Marsoui	Environmental assessment of natural dyes
P2.23	A. Ismaili M'hamdia, A. Zeroualeb, N. Idrissi Kandri, D. Blumberga, J. Gusca	Life cycle assessment of paper production from treated wood
P2.24	L. Zihare , D. Blumberga	Market opportunities for cellulose products from combined renewable resources
P2.25	H. Moora , I. Roos, U. Kask, L. Kask, K. Ounapuu	Determination of biomass content in combusted municipal waste and associated CO ₂ emissions in Estonia

P2.26	K. Pilzis , V. Vaisis, F. Romagnoli	Oil product spreading on the water surface limitation using air stream
P2.27	V. Zivelyte , S. Valtere, S. Vasarevičius	Comparison of natural in-situ bioremediation and ex-situ bioremediation for the hydrocarbons contaminated soil clean up
P2.28	E. Petrauskaite , D. Blumberga, K. Ivanovs	Experimental study of droplet biofilter packed with green Sphagnum to clean air from volatile organic compounds
P2.29	K. Klavenieks , K. P. Dzene, D. Blumberga	Optimal strategies for Municipal solid waste treatment – environmental and socio-economic criteria assessment
P2.30	A.Rodzkin	Life cycle assessment of biomass production for energy purpose from wetlands areas
P2.31	I. Polikarpova , M. Rosa	Energy reduction potential of the district heating company introducing energy management systems