



conect

Conference of Environmental
and Climate technologies

12–14 October 2016

Riga, Latvia

Conference Programme

Conference Topics

Advanced Energy Technologies
Renewable Energy
Energy Efficiency Improvement
Heat and Power Generation & Systems
Energy Management, Policy and Economics
System Approach Integration in Energy Sector

Organised and supported by:



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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**.

Sponsors



Venue

The conference will take place in Riga, Latvia, at the Faculty of Power and Electrical Engineering of the Riga Technical University, from 12–14 October 2016.

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



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, 12 October from 9:00–10:00
Thursday, 15 October from 9:30–10:00

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 Thursday, 13 October from **11:40** till **13:00**
- SESSION II – on Thursday, 13 October from **15:15** till **17:30**

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.

Information about Riga

Riga is a modern European capital with more than 800 years of history and rich cultural life, a city with its own distinctive aura, charm and style. The city is well known for its architectural and cultural values, skilful labour and developed infrastructure. Riga is Latvia's largest centre of education and science. This is confirmed by a large number of cultural events, international exhibitions, scientific conferences and corporate events that every year takes place in Riga.

For more info visit:

<https://www.liveriga.com/en/>

<http://www.riga.com/>

<http://www.virtualriga.com/>

Faculty of Power and Electrical engineering

Azenes iela 12/1, room 116

Section: Environmental and Climate Technologies

Section chairman: Prof. Dagnija Blumberga, Riga Technical University, Latvia

Scientific committee: D. Blumberga, Riga Technical University, Latvia

C. Luttropp, Royal Institute of Technology, Sweden

I. Veidenbergs, Riga Technical University, Latvia

T. Laukkanen, Aalto University, Finland

P. Lindblad, Uppsala University, Sweden

A. Blumberga, Riga Technical University, Latvia

A. Cappelli, La Sapienza - University of Rome, Italy

K. Valters, Riga Technical University, Latvia

P. Baltrenas, Vilnius Gediminas Technical University, Lithuania

G. Bazbauers, Riga Technical University, Latvia

V. Martinaitis, Vilnius Technical University, Lithuania

A. Siirde, Tallinn Technical University, Estonia

M. Klavins, University of Latvia, Latvia

S. N. Djomo, Aarhus University, Denmark

M. Rosa, Riga Technical University, Latvia

Z. Khabdullina, Rudny Industrial Institute, Kazakhstan

F. Romagnoli, Riga Technical University, Latvia

D. Baranenko, ITMO University, Russia

J. Gusca, Riga Technical University, Latvia

S. N. Kalnins, Riga Technical University, Latvia

Program at a glance:

	Wednesday, 12 October	Thursday, 13 October
9.00	Registration	
10.00	Opening ceremony. Plenary session I (<i>room 116</i>)	Plenary session II (<i>room 116</i>)
11.00		Coffee break
11.20		
11.40		
11.50	Coffee break	Poster session I (<i>1st floor hall</i>)
12.00		
12.15	Session I: Effective solutions for energy efficiency in buildings (<i>room 116</i>)	
12.50		
12.30		
13.00	Lunch	
14.00	Session II: Effective solutions for energy efficiency in buildings (cont.) (<i>room 116</i>)	Session IV: Progress in Biotechnology (<i>room 116</i>)
15.00		Coffee break
15.15	Coffee break	Poster session II (<i>first floor hall</i>)
15.30		
15.50		
16.00	Session III: Advances in energy systems (<i>room 116</i>)	
16.50	Discussion (<i>room 116</i>)	
17.30		
18.00		
19.00	Opening dinner (<i>restaurant "Klīversala", Mūkusalas ielas 3, Rīga</i>)	Closing event

Wednesday, 12 October

9.00–10.00 Registration

10.00–10.10 Conference opening

Plenary session I

Chairmen: Gatis Bazbauers, Julija Gusca, Riga Technical University, Latvia

10.10–10.30

Why Biotechnomy is actual for Latvia. Research Achievements in VASSI

D. Blumberga, A. Blumberga, G. Bazbauers, A. Gravelsins, Riga Technical University, Latvia

10.30–10.50

Sustainability of a renovation design in historic building: GBC HB energy and environmental rating system applied on Liceo Canova in Treviso

T. Dalla Mora, M. Baggio, C. Tinterri, A. Righi, F. Cappelletti, F. Peron, P. Romagnoni, University IUAV of Venice, Italy

10.50–11.10

District Heating Tariff Component Analysis for Tariff Benchmarking Model

U. Sarma, G. Bazbauers, Riga Technical University, Latvia

11.10–11.30

Experimental study on performance characteristics of the triple fluids heat exchanger with two kinds of coolants in electric-driven air conditioning system for fuel cell electric vehicles

H-S. Lee, H-B. Jeon, J-P. Won, T-K. Lim, Thermal Management Research Center, Korea

Y-C. Kim, Korea University, Korea

Y-C Park, Cheju national University, Korea

K-C. Cho, Hwa Sung Thermo Co. LTD, Korea

11.30–11.50

Integration of Decentralized Thermal Storages within District Heating (DH) networks

G. K. Schuchardt (néé Bestrzynski), FFI, Fernwärme Forschungsinstitut in Hannover e.V., Germany

11.50–12.15 Coffee break

Session I: *Effective solutions for energy efficiency in buildings*

Chairmen: Andra Blumberga, Riga Technical University, Latvia

Georg K. Schuchardt, FFI, Fernwärme Forschungsinstitut in Hannover e.V., Germany

12.15–12.30

Advanced polycarbonate transparent systems with aerogel: solar and thermal characterization

M. Zinzi, ENEA Casaccia Research Centre, Italy

E. Moretti, F. Merli, University of Perugia, Italy

E. Carnielo, University of Roma TRE, Italy

12.30–12.45

Using a calibrated building energy simulation model to study the effects of improving the ventilation in a school

H. Bernardo, E. Quintal, F. Oliveira, University of Coimbra, Portugal

12.45–13.00

Biomimicry inspired development of climate adaptive building shell with ground heat utilisation: analysis results

M. Zamovskis, R. Vanaga, A. Blumberga, Riga Technical University, Latvia

13.00–14.00 Lunch

Session II: *Effective solutions for energy efficiency in buildings (cont.)*

Chairmen: Michele Zinzi, ENEA Casaccia Research Centre, Italy

Dagnija Blumberga, Riga Technical University, Latvia

14.00–14.15

Design of experimental investigations on the effect of flow rate and PCM placement on thermal accumulation

M. Dzikevics, V. Kirsanovs, D. Blumberga, I. Veidenbergs, Riga Technical University, Latvia

14.15–14.30

Environmental performances of a timber-concrete prefabricated composite wall system

T. Dalla Mora, S. Fortuna, F. Peron, P. Romagnoni, University IUAV of Venice, Italy

14.30–14.45

Experimental investigation of thermal performance of a new solar air collector with porous surface

V. Oruc, A. G. Devecioğlu, Dicle University, Turkey

14.45–15.00

New measurement procedure for U-Value assessment via heat flow meter

P. Ruggeri, F. Peron, M. Scarpa, M. Celebrin, M. De Bei, University IUAV of Venice, Italy

15.00–15.15

Influence of Properties of Materials to Energy Efficiency of Historical Buildings

R. Purviņš, E. Kamendere, A. Blumberga, Riga Technical University, Latvia

15.15–15.30

Optimal Arrangement of Photovoltaic Panels Coupled with Electrochemical Storages

A. Carbonari, M. Scarpa, University IUAV of Venice, Italy

15.30–15.50 Coffee break

Session III: *Advances in energy systems*

Chairmen: Gatis Zogla, Riga Technical University, Latvia

Silvija Nora Kalnins, Riga Technical University, Latvia

15.50–16.05

Holistic methodology to assess the transition to 4th generation district heating systems

J. Ziemele, L. Timma, A. Kubule, D. Blumberga, Riga Technical University

16.05–16.20

Improvement of district heating network energy efficiency by pipe insulation renovation with PUR foam shells

V. Masatin, A. Hlebnikov, E. Latošov, A. Volkova, Tallinn University of Technology, Estonia

16.20–16.35

Reduction of Energy Costs and Traffic Flow Rate in Urban Logistics Process

O. F. Gorcun, Kadir Has University, Turkey

16.35–16.50

Energy policy on electricity consumption in industries

K. Locmelis, U. Bariss, D. Blumberga, Riga Technical University, Latvia

16.50–18.00 Discussion

19.00 Opening dinner

Thursday, 13 October

9.30–10.00 Registration

Plenary session II

Chairmen: Hermano Bernardo, University of Coimbra, Portugal

Edgars Vigants, Riga Technical University, Latvia

10.00–10.20

Life cycle cost analysis for BESS optimal sizing

B. Marchi, M. Pasetti, S. Zanoni, University of Brescia, Italy

10.20–10.40

A comparative study of fuel use and income analysis of potato production with bacteria-antagonists in Leningrad region of Russia

D. A. Baranenko, E. I. Kiprushkina, V. S. Kolodyaznaya, ITMO University, Russia

10.40–11.00

Measuring community disaster resilience in the Latvian context: an apply case using a composite indicator approach

M. Feofilovs, F. Romagnoli, Riga Technical University, Latvia

11.00–11.20

Sustainable National Policy Planning with conflicting goals

E. Cilinskis, R. Vesere, A. Blumberga, D. Blumberga, Riga Technical University, Latvia

11.20–11.40 Coffee break

11.40–13.00 **Poster session I**

Chairman: Julija Gusca, Riga Technical University, Latvia

13.00–14.00 Lunch

Session IV: *Progress in Biotechnology*

Chairmen: Denis Baranenko, ITMO University, Russia

Sarma Valtere, Riga Technical University, Latvia

14.00–14.15

Seaweed cultivation laboratory testing: effects of nutrients on growth rate of *Enteromorpha intestinalis*

K. Balina, F. Romagnoli, L. Pastare, D. Blumberga, Riga Technical University

14.15–14.30

Intensification of higher alcohols biosynthesis — an advanced feedstock for biofuel production

T. Meledina, A. Sizov, I. Krupnov, ITMO University, Russia

14.30–14.45

Comparative LCA of three alternative technologies for lipid extraction in biodiesel from microalgae production

G. Tomasoni, M. Collotta, L. Busi, , M. Alberti, University of Brescia, Italy,

P. Champagne, W. Mabee, Queen's University, Canada

F. Romagnoli, Riga Technical University, Latvia

14.45–15.00

The monitoring of monthly, seasonal and yearly optimum tilt angles by Raspberry Pi card for Bilecik city, Turkey

A. Karafil, H. Ozbay, Y. Onal, M. Kesler, H. Parmaksiz, Bilecik Seyh Edebali University, Turkey

15.00–15.15 Coffee break

15.15–17.30 **Poster session II**

Chairman: Agris Kamenders, Riga Technical University, Latvia

19.00 Closing event

Poster session I		
P1.1	S. Dewi, F. Binarti, Atma Jaya Yogyakarta University, Indonesia	The effectiveness of light shelf in humid tropical urban context
P1.2	J. Gusca, D. Kalnins, F. Romagnoli, Riga Technical University, Latvia	Sustainability analysis of Latvian forestry
P1.3	I. Muzychenko, G. Jamalova, U. Mussina, KRNTU, Kazakhstan V. Kazulis, D. Blumberga, Riga Technical University, Latvia	Case Study of Lead Pollution in the Streets of Almaty
P1.4	I. Muizniece, I. Brauners, A. Gravelins, A. Blumberga, D. Blumberga, Riga Technical University, Latvia	Innovative products from the forest biomass. Analysis
P1.5	A. Khabdullin, Z. Khabdullina, G. Khabdullina, A. Khabdullin, Rudny Industrial Institute, Kazakhstan E. Terehovics, I. Veidenbergs, D. Blumberga, Riga Technical University, Latvia	Why Solar Electricity has High Future Potential for Kazakhstan Industries
P1.6	K. Runge, A. Blumberga, Riga Technical University, Latvia	Development possibilities of Biotechnology in Latvia. System dynamic model for high value added products of fishing industry
P1.7	I. Weidlich, G. K. Schuchardt (neé Bestrzynski), FFI, Fernwärme Forschungsinstitut in Hannover e.V., Germany	New approach for asset management in District Heating (DH) networks
P1.8	M. Zinzi, ENEA, Italy P. Ruggeri, F. Peron, A. Righi, IUAV University of Venice E. Carnielo, University of Roma Tre, Italy	Experimental characterization and energy performances of multiple glazing units with integrated shading devices
P1.9	J. Pubule, A. Gancone, M. Rosa, D. Blumberga, Riga Technical University, Latvia	Sectoral Greenhouse Gas Emission Reduction Possibilities. Why Broad Spectrum of Indicators are Applied
P1.10	V. Priedniece, T. Prodanuks, M. M. Fawzy, V. Kazulis, I. Veidenbergs, D. Blumberga Riga Technical University, Latvia	Biomass co-firing laboratory equipment
P1.11	A. Barisa, L. Poznaka, M. Rosa, Riga Technical University, Latvia	The methodology for the characterization of climate change impacts of transport systems in municipalities
P1.12	G. Battista, E. M. Pastore, University of Roma TRE, Italy	Using cool pavements to mitigate urban temperatures in a case study of Rome (Italy)
P1.13	G. Battista, University of Roma TRE, Italy	Analysis of convective heat transfer at building façades in street canyons

P1.14	A. Kamenders, L. Vilcane, K. Kass, Z. Indzere, Riga Technical University, Latvia	Developing indicators for district heating systems potential assessment
P1.15	O. Shindor, A. Svirina, Kazan National Research Technical University, Russia	Assessment of regional energy system failure risks by use of wavelet transform
P1.16	I. Pakere, D. Blumberga, Riga Technical University, Latvia	Energy efficiency indicators in peat extraction industry
P1.17	J. Kramens, M. Gedrovics, J. Gusca, Riga Technical University, Latvia	Sustainable development indicators for the selection of individual households combustion equipment
P1.18	T. Koppel, P. Tint, Tallinn University of Technology, Estonia A. Shishkin, N. Toropov, Riga Technical University, Latvia H. Haldre, Institute of Environmental Health and Safety, Estonia	Reflection and transmission properties of common construction materials at 2.4GHz frequency
P1.19	R. Soloha, D. Blumberga, I. Pakere, Riga Technical University, Latvia	Innovative solar thermal systems in district heating systems
P1.20	T. Koppel, I.Hussainova, Tallinn University of Technology, Estonia A. Shishkin, V. Mironov, J. Locs, Riga Technical University, Latvia H. Haldre, Institute of Environmental Health and Safety, Estonia	Microwave reflectance and transmittance properties of conductive composite materials
P1.21	I. Polikarpova, Marika Rosa, Riga Technical University, Latvia	Energy reduction potential of the district heating company introducing energy management systems
P1.22	M.S. Abd-Elhady, Beni-Suef University, Egypt S. Abdelhady, Aswan University, Egypt M.M. Fouad, German University in Cairo, Egypt	An understanding of the operation of silicon Photovoltaic panels
P1.23	M. Zinzi, F. Spinelli, D. Latauro, P. Signoretti, L. Terrinoni, ENEA, Italy Alessandro Mangione, Università La Sapienza, Italy	Impact of Different Illuminance Typical Years Models on a Climate Based Method for the Calculation of Artificial Lighting Energy Use in Office Buildings

Poster session II		
P2.1	A. Kubule, T. Komisarova, D. Blumberga, Riga Technical University, Latvia	Optimization methodology for complete use of bio-resources
P2.2	L. Zihare, D. Blumberga, Riga Technical University, Latvia	Invasive Species Application in Bioeconomy. Case study Heracleum in Latvia
P2.3	A. Chlebnikovas, P. Baltrėnas, Vilnius Gediminas Technical University, Lithuania	Research of Aggressive Conditions Formation into a Multi-Channel Cyclone
P2.4	K. Ivanovs, Riga Technical University, Latvia	Feeding of pike and perch in rivers of Latvia in different environmental conditions
P2.5	A. Menind, Technology University of Talinn, Estonia	Specifics of digestion of separated silage comparing Whole Crop Digestion process
P2.6	D. Baranenko, ITMO University, Russia J. Gusca, D. Blumberga, Riga Technical University, Latvia	Fish industry waste valorisation: review study
P2.7	N. Aydin, University of Karabuk, Turkey	Review of Municipal Solid Waste Management in Turkey with a Particular Focus on Recycling of Plastics
P2.8	O. Kadnikova, G. Altynbayeva, A. Aidarkhanov, B. Shaldikova, B. Nurmuchambetova, KRNTU, Kazakhstan	Improving the technology of processing sewing and knitwear production waste
P2.9	Ali Aydin, Pamukkale University, Turkey	Determination of vertical and lateral anthropogenic boundaries of sedimentary deposits in the urban area in Denizli metropolitan, Turkey using magnetic susceptibility
P2.10	J. Seniunaite, S. Vasarevicius, Vilnius Gediminas Technical University, Lithuania	Leaching of Copper, Lead and Zinc from Municipal Solid Waste Incineration Bottom Ash
P2.11	K. Spalvins, Riga Technical University, Latvia	Analysis of role of defensin-like peptides
P2.12	O. I. Sergienko, E. G. Solodchenko, ITMO University, Russia	Comparing the environmental impact of disposal methods of sugar production waste by simulation modeling

P2.13	B. Chenari, F. B. Lamas, A. R. Gaspar, M. G. da Silva, University of Coimbra, Portugal	Simulation of occupancy and CO ₂ -based demand-controlled mechanical ventilation strategies in an office room using EnergyPlus
P2.14	A. Khabdullin, Z. Khabdullina, G. Khabdullina, A. Khabdullin, Rudny Industrial Institute, Kazakhstan D. Lauka, D. Blumberga, Riga Technical University, Latvia	Analysis of Industrial Electricity Consumption Flexibility. Assessment of Saving Potentials in Latvia and Kazakhstan
P2.15	I. Kuznecova, J. Gusca, Riga Technical University, Latvia	Life cycle analysis of medical waste treatment technologies
P2.16	K. Klavina, F. Romagnoli, V. Vitilins, D. Blumberga, Riga Technical University, Latvia	Comparative life cycle assessment of woodchip uses in pyrolysis and combined heat and power production in Latvia
P2.17	M. Eldermann, A. Siirde, J. Gusca, Tallinn University of Technology	Risk assessment of oil shale industry
P2.18	A. Skromulis, J. Breidaks, E. Teirumnieks, Rezekne Academy of Technologies, Latvia.	Effect of atmospheric pollution on air ion concentration
P2.19	A. Kubule, M. Rosa, Riga Technical University, Latvia	Barriers for industrial symbiosis in Latvia
P2.20	V. Kirsanovs, D. Blumberga, K. Karklina, I. Veidenbergs, C. Rochas, E. Vigants, G. Vigants, Riga Technical University, Latvia	Biomass gasification for district heating
P2.21	A. Turkayeva, G. Jamalova, U. Mussina, M. Oshakbayev, KRNTU, Kazakhstan L. Timma, J. Pubule, D. Blumberga, Riga Technical University, Latvia	Chemical and Microbiological Nature of Produced Water Treatment Biotechnology
P2.22	M. Eldermann, A. Siirde, J. Gusca, Tallinn University of Technology	Decarbonisation of Estonian oil shale industry: alternative analysis
P2.23	K. Klavenieks, D. Blumberga, Riga Technical University	Common and Distinctive in Municipal Solid Waste Management in Baltic States

P2.24	I. Muizniece, L. Timma, D. Blumberga, Riga Technical University, Latvia	Biotechnomy innovations development barriers in Latvia
P2.25	K. Balina, F. Romagnoli, L. Pastare, D. Blumberga, Riga Technical University, Latvia	Use of macroalgae for Bioenergy production in Latvia: review on potential availability of marine coastline species
P2.26	I. Kuznecova , M. Gedrovics, J. Gusca, Riga Technical University, Latvia	Indicator analysis of individual heating sector
P2.27	M. M. Fawzy, T. Prodanuks, I. Veidenbergs, D. Blumberga, Riga Technical University, Latvia	Towards carbon neutral combustion. LCOE analysis of co-firing solid particles and gaseous fuel in Latvia
P2.28	A. Kalnbalkite, D. Lauka D, D Blumberga, Riga Technical University, Latvia	Urban Planning Needs. Clustering of Energy End Users
P2.29	A. Ismaili M'hamdi, N. Idrissi Kandri, A. Zerouale, University of Sidi Mohammed Ben Abdellah, Morocco J. Gusca, Riga Technical University, Latvia	Life cycle assessment framework of paper and fuel production from treated wood
P2.30	I. Kuznecova , M. Gedrovics, J. Gusca, Riga Technical University, Latvia	Calculation framework of household sustainability index through heat generation
P2.31	I. Shabbir, M. Mirzaeian, University of the West of Scotland, United Kingdom	A techno-economic analysis of cogeneration potential in paper mills
P2.32	M. Repele, L. Udrene, G. Bazbauers, Riga Technical University, Latvia	Support mechanisms for biomethane production and supply
P2.33	L. L. Bozhko, A. Naizabekov, Rudny Industrial Institute, Kazakhstan	Assessment of approaches to industrialization issues in the Republic of Kazakhstan and the People's Republic of China
P2.34	M. T. Hassan, S. Burek, M. Asif, Glasgow Caledonian University, United Kingdom	Barriers to industrial energy efficiency improvement- Manufacturing SMEs of Pakistan
P2.35	I. Kuznecova, E. Kavals, M. Gedrovics, J. Kramens, J. Gusca, Riga Technical University, Latvia	Primary energy consumption analysis of Latvian household heating sector

P2.36	A. Ismaili M'hamdi, A. Zerouale, N. Idrissi Kandri, University of Sidi Mohammed Ben Abdellah, Morocco J. Gusca, D. Blumberga, Riga Technical University, Latvia	Comparative analyses of processed wood waste reuse possibilities after chemical delignification treatment
P2.37	H. Vigants, I. Veidenbergs, D. Blumberga, Riga Technical University, Latvia	Process optimisation for pellets production
P2.38	K. Kass, A. Blumberga, D. Blumberga, G. Zogla, A. Kamenders, E. Kamendere, Riga Technical University, Latvia	Pre-assessment method for historical building stock renovation evaluation
P2.39	R. Vanaga, A. Blumberga, M. Zamovskis, D. Blumberga, Riga Technical University, Latvia	Choosing the best nature's strategy with the highest thermodynamical potential for application in building thermal envelope using combined fuzzy AHP and fuzzy TOPSIS based strategic analysis
P2.40	K. Haine, Riga technical University, Latvia	