

# ADVANCED HVAC & NATURAL GAS TECHNOLOGIES



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**REHVA Annual Meeting & Conference 2015**  
with special student sessions on  
“Advanced HVAC and Natural Gas Technologies”

06–09 May, 2015  
Riga, Latvia  
Radisson Blu Hotel Latvija Conference centre

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FINAL ANNOUNCEMENT — CALL FOR REGISTRATION  
TILL 19 APRIL 2015  
FOR EARLY REGISTRATION



**Professor Egils Dzelzitis**

President of Organising  
Committee in Riga,  
Fellow REHVA, Fellow ASHRAE  
and REHVA Vice-President

Dear Colleagues,

It is my great pleasure to invite you to the REHVA Annual Meeting and the 9th Conference on Advanced HVAC and Natural Gas Technologies which takes place this spring in one of the Baltic States – Riga, Latvia on 6-9 May 2015.

This year, Latvia, for the first time, is assuming the Presidency of the Council of the European Union and I am very honoured to meet the leading international scientific and engineering colleagues and friends in the field of Heating, Ventilation and Air Conditioning (HVAC) during this historical moment.

***“We welcome you to Riga - the place where meetings, knowledge sharing and experience inspires for new cooperation and further industry development.”***

Be present and enjoy a wonderful springtime in Latvia! Be witness how rich and colourful the history of the country meets new and modern 21st century technologies. We are proud of the fastest broadband internet in the European Union and admirable Art Nouveau architecture in Riga.

On behalf of the organising Committee, I warmly invite you to register for the events and looking forward to meeting you in Riga.

## CONNECT WITH YOUR COLLEAGUES AND FRIENDS IN RIGA FOR:

- Two conference days
- Professional networking
- Workshop sessions
- REHVA professional award ceremony
- Technical & social events
- REHVA student competition

# REHVA GALA DINNER AND PROFESSIONAL AWARD CEREMONY\*

THURSDAY, 7 MAY  
20:00

We welcome you to a special event where we celebrate success and the fruits of professional work. Congratulations to all the nominees of 2015. Let's celebrate!



Venue: Culture Palace "Ziemeļblāzma" ("Northern light") - architectural landmark situated in a five-hectare large park in the northern suburb of Riga city centre. It was built in 1913 by lumber magnate and patron of the arts Augusts Dombrovskis for local residents to enjoy a full social and cultural life.

Now the 100-year-old edifice has been entirely restored, bringing back its historic worth and architectural beauty.

\* By invitation only

# WORKSHOP SESSIONS WITH LEADING EXPERTS FROM LATVIA AND GERMANY\*\*

THURSDAY, 7 MAY  
Innovative systems and products for smart buildings  
13:00–18:00



13:00–15:30 — Sustainable indirect evaporative cooling systems

16:00–18:00 — Building automation developments and trends

Workshop speakers and  
programme available [here](#)

Registration

till April 20

\*\* Separate registration needed

[www.hvacriga2015.eu](http://www.hvacriga2015.eu)

# REHVA CONFERENCE AND STUDENT COMPETITION 2015

**FRIDAY, 8 MAY**

Student competition  
08:00–10:00

Conference  
ADVANCED HVAC & NATURAL GAS  
TECHNOLOGIES  
10:00–17:00



This conference is a unique platform for researchers and engineers. Gathering 50 speakers from 15 countries, it becomes the major event of the year. Meet the leading experts from the international heating, ventilation and air conditioning community. This conference will serve as start base for practical implementation of innovative ideas and future practical application of modern technologies.

## KEYNOTE SPEAKERS



**Laurent Deleersnyder,**  
European Commission —  
DG Energy

### Update on EU building regulations: EPBD revision and CEN standards

Mr Deleersnyder is a policy officer at DG ENERGY of the European Commission and he has more than 15 year experience on working with building related policies.

In his presentation, he will give an update on EU building related policies and regulation. EPBD directive review process has started this year and will be supported by some studies to be launched in the coming months.

The commission is following EPBD implementation which includes intermediate nZEB targets for new buildings and assessment of compliance of national EPB calculation methods as well as the preparation of European Voluntary Certification scheme for non-residential buildings.



**Bjarne W. Olesen,**  
DTU, Chair CEN TC 156 WG19

### Residential ventilation in the revised EN 15251 (prEN16789-1 and DTR16789-2)

Mr Olesen is professor at DTU, International Centre for Indoor Environment and Energy, Denmark. He has extensively solid background in the indoor climate research and standardization with many outstanding merits and being a most known leading expert in this field.

In his presentation, Prof. Olesen will discuss how residential ventilation is dealt in the most important European indoor climate standard, the revised EN 15251. It is widely known that energy efficient buildings need adequate ventilation systems, but in many countries binding ventilation requirements still do not exist.

EN 15251 will specify ventilation airflow rates and other requirements that can be implemented in national building codes.



**Jarek Kurnitski,**  
REHVA Vice-President, TTU

## Progress with national nZEB applications in the EU

Mr Kurnitski is professor at two universities, at TUT Estonia and Aalto, Finland being the leader of Nearly Zero Energy Buildings nZEB research group. He is one of leading European experts in energy performance of buildings, being known from development of REHVA nZEB technical definition and Estonian and Finnish energy frames based on dynamic energy simulation.

In his presentation, Prof. Kurnitski is reporting about the results of REHVA nZEB Task Force which is following the technical progress of nZEB buildings and situation with national nZEB definitions. Numeric values of nZEB definitions, inclusion of renewable energy contribution and indicators allowing describing the grid load will be discussed.



**William P. Bahnfleth,**  
ASHRAE, The Pennsylvania  
State University

## Updates to ASHRAE ventilation standards

Mr. Bill Bahnfleth is a professor and director of the Indoor Environment Center at The Pennsylvania State University. He was also the President of ASHRAE (2013-2014).

As an ASHRAE president, he initiated a program leading to the formation of the Indoor Environmental Quality Global Alliance to unite key IEQ-focused organizations including REHVA to support the development of better standards and practices for IAQ worldwide. He has chaired ASHRAE's Technology Council, Members Council, Technical Activities Committee and Technical Committee 6.9 Thermal Storage, among others.

In his presentation, he will discuss an updates to ASHRAE ventilation standards being under development similarly to European standards.

# ON SPOTLIGHT

## Energy efficient Cooling systems

- Indirect and direct adiabatic cooling
- Innovations in field of direct expansion systems
- Hydronic cooling systems
- Environmentally friendly Refrigerants
- Natural resources for cooling of the buildings
- Absorption cooling systems

## Advanced Heating and Ventilation systems

- Heat recovery
- Natural ventilation
- Heating systems operation and maintenance specifics
- Centralized heating systems
- Indoor air quality and thermal comfort

## Sustainable buildings

- Integration of renewables
- Rain water and Potable Water reuse
- Green buildings
- Retrofitting of existing building stock
- Sustainable building materials

## Efficient and clean Natural Gas technologies

- Efficient and clean natural gas technologies for energy generation transportation and distribution
- Increasing the energy efficiency of natural gas applications in environmental protection
- Urban innovations on the base of natural gas
- Natural Gas advanced technologies
- Role of the Natural Gas transmission and distribution operators in the liberalized energy market



# CONFERENCE PROGRAMME, 8 MAY

8:00–10:00	REHVA student competition
10:00–10:20	Coffee Break

## SESSION 1: EU POLICY AND REGULATION

10:20–10:30	Opening words by N.N. Latvia, REHVA President Karel Kabele and AHGWTEL
10:30–11:00	Update on EU building regulations: EPBD revision and CEN standards <i>Laurent Deleersnyder, European Commission - DG Energy</i>
11:00–11:20	EPBD legislation in practice — challenges regarding compliance and quality of the works <i>Peter Wouters, INIVE EEIG</i>
11:20–11:40	Eurovent certification programmes for HVAC products with verified performance <i>Sylvain Courty, Eurovent Certita Certification</i>
11:40–12:00	Synergies in energy efficiency criteria and indoor environment quality in building certification systems <i>Maija Krizmane, Latvian Sustainable Building Council</i>
12:00–13:00	Lunch Break

## SESSION 2: NZEB APPLICATIONS

13:00–13:20	Progress with national nZEB applications in the EU <i>Jarek Kurnitski, REHVA Vice-President, TTU</i>
13:20–13:40	Danish nZEB application and energy calculation methodology <i>Søren Aggerholm, Danish Building Research Institut</i>
13:40–14:00	US energy policy developments towards nZEB <i>SA Sherif, University of Florida</i>
14:00–14:15	Ventilation in prefabricated multifunctional building elements for modular NZE retrofitting of residential buildings (MORE- CONNECT) <i>Peter Op't Veld, Huygen Engineers &amp; Consultants, The Netherlands</i>
14:15–14:30	Training and Qualification Platform for Continuing Professional Development on nZEB (PROF- TRAC) <i>Anita Derjanecz, Policy and Project Officer, REHVA</i>
14:30–14:45	nZEB refurbishment of Italian hotel buildings – a NEZEH case study <i>Stefano Corgnati, REHVA Vice-President, POLITO</i>
14:45–15:00	Coffee Break

## SESSION 3: EPBD RELATED STANDARDS

15:00–15:20	Revision of EPBD overarching standard – time schedule and national options <i>Jaap Hogeling, REHVA, Chair CENTC 371 Program Committee on EPBD</i>
15:20–15:40	Updates to ASHRAE ventilation standards <i>William P. Bahnfleth, ASHRAE, The Pennsylvania State University</i>
15:40–16:00	Dynamic simulation as a tool for compliance approval with energy performance regulation <i>Mika Vuolle, IBPSA-Nordic</i>
16:00–16:20	New performance requirements for filtration and air cleaning in EN 13779/prEN 16798-3 and EN779:2012 <i>Claus Händel, European Ventilation Industry Association EVIA</i>
16:20–16:40	Residential ventilation in the revised EN 15251 (prEN16789-1 and DTR16789-2) <i>Bjarne W. Olesen, DTU, Chair CEN TC 156 WG19</i>
16:40–17:00	Large differences in real-life IAQ and Energy performance of code compliant residential ventilation systems – experience from Dutch dwellings <i>Rob van Holsteijn, VHK, The Netherlands</i>

# CONFERENCE PROGRAMME DRAFT, 9 MAY

8:30–10:30	<p>OPENING SESSION AND KEYNOTE SPEAKERS</p> <p>AWARDING CEREMONY OF THE STUDENT COMPETITION</p> <p>US ENERGY POLICY DEVELOPMENTS TOWARDS NZEB <i>SA Sherif, University of Florida</i></p> <p>NZEB NEW TREND OR KNOWLEDGE FROM THE PAST <i>Hendrik Voll, Tallinn University of Technology, Estonia</i></p> <p>RENEWABLE ENERGY DEVELOPMENT AND FUTURE ROLE IN ENERGY SUPPLY <i>Peteris Shipkovs, Riga Technical University</i></p>
10:30–11:00	Coffee Break

Room 1		Room 2		Main hall	
11:00–12:30					
Session 4: Energy Efficient Buildings Chair: Anatolijs Borodinecs, Latvia		Session 5: Heat Pumps and refrigeration Chair: Agnese Lickrastina, Latvia		Poster Session	
Towards nearly-zero energy buildings: HVAC system’s performances in the expected operative scenarios of Turin Energy Centre <i>Antonio Mangogna, Daniela Valagussa, Temitope Akintola, Matteo Arietti, Salvatore Cicero, Federica Mordillo, Anna Pagani, Rachele Sipione, Stefano P. Corgnati</i>		GreenHP: Next Generation Heat Pump for Retrofitting Buildings – new evaporator component for large capacity air-to-water heat pumps <i>Christoph Reichl, Thore Oltersdorf, Simon Braungardt, Marco Pröhl, Peter Benovsky, Mirza Popovac, Thomas Fleckl</i>		Optimization of Solar Cooling System in Latvia <i>Peteris Shipkovs, Janis Shipkovs, Andrejs Snegirjovs, Galina Kashkarova1, Kristina Lebedeva, Lana Migla, Vidas Lekavichius</i>	
Performance of Heat Recovery Ventilation System with Ground Source Brine Heat Exchanger Pre-Heating System in the Context of nZEB <i>Kalle Kuusk, Jaanus Hallik, Targo Kalamees, Tõnu Mauring</i>		Improving Energy Efficiency of a Refrigeration System with a Rankine Cycle and an Expander <i>Alison Subiantoro</i>		Hydrological Performance of Green Roofs <i>Zuzana Poórová, Zuzana Vranayová</i>	
Evaluation of indoor environment in apartment buildings before and after their refurbishment <i>Dušan Petráš, Veronika Földváry, Hana Pustayová Bukovianská</i>		Development of a Hardware-in-the-Loop test method for heat pumps and chillers <i>Stutterecker Werner, Schoberer Thomas, Steindl Gernot</i>		The urban developments of Tirana after 90 years and its environmental problems	

CONFERENCE PROGRAMME DRAFT, 9 MAY

Room 1	Room 2	Main hall
<b>Comparison of simplified and detailed window models in energy simulations</b> <i>Martin Thalfeldt M.Sc., Jarek Kurnitski D.Sc., Hendrik Voll Ph.D</i>	<b>COP Evaluation for a Membrane Liquid Desiccant Air Conditioning System Using Four Different Heating Equipment</b> <i>Ahmed H. Abdel-Salam, Carey J. Simonson</i>	<b>The Impact of Authorized Representatives on Energy Efficiency in Multifamily Apartment Houses and Prolongation of the Lifetime of the Buildings</b> <i>Aleksandra Cimbale</i>
<b>Simulation study of solar thermal and photovoltaic collector options for solar-assisted heating of a residential building in Germany</b> <i>Amar Abdul-Zahra , Tillman Faßnacht, Christian Glück and Andreas Wagner</i>	<b>Simulation Study of a Heuristic Predictive Optimization Scheme for Grid-reactive Heat Pump Operation</b> <i>Tillman Faßnacht, Manuel Loesch, Andreas Wagner</i>	<b>Evaluation of the impact of the additional mass of an innovative AC system on the overall energy consumption of a battery electric vehicle in tropical climate</b> <i>Srikanth Ramachandrana, Alison Subiantoro, Ooi Kim Tiow, Masanari Ukai</i>
<b>12.30 – 13.30 Lunch</b>		<b>Analysis of thermal comfort conditions and actual energy efficiency for different heating systems in test buildings</b> <i>Stanislavs Gendelis, Andris Jakovičs, Toms Dzenis, Liene Bandeniece</i>
<b>13.30 – 15.30</b>		<b>The Technical-economic Analysis of Hot Water Supply Systems for Residential Buildings</b> <i>Karina Tumanova, Aleksandra Cimbale</i>
<b>Session 6 : indoor climate</b> <b>Chair: Galina Stankevica, Latvia</b>	<b>Session 7: heat, gas supply and air-conditioning</b> <b>Chair: Artus Lesinskis, Latvia</b>	<b>Structurally-oriented design of the heat insulation plastering material</b> <i>Vladimir Kersh, Prof., PhD, Andrey Kolesnikov, Maria Pidkapka</i>
<b>Impact of Indoor Climate on energy efficiency and productivity in office buildings</b> <i>Galina Stankevica, Andris Kreslins</i>	<b>The evaluation of exhaust gas condensing economizer installation at Riga CHP plants</b> <i>Maris Kunickis, Maris Balodis, Olegs Linkevics, Polina Ivanova</i>	<b>Energy efficiency of short-term room natural ventilation</b> <i>Andrii Zakovorotnyi, Olga Tadlia, Pavel Krukovsky</i>
<b>Indoor air quality and thermal comfort assessment of two Portuguese secondary schools: main results</b> <i>Luísa Dias Pereira, Luis Neto, Manuel Gameiro da Silva</i>	<b>Heat Consumption Assessment of the Domestic Hot Water Systems in the Apartment Buildings</b> <i>Dzintars Grasmanis, Normunds Talcis, Aldis Grekis</i>	<b>Modeling of indirect evaporative air cooler for thermal performance study</b> <i>Guntars Fridenbergs, Arturs Lešinskis</i>



CONFERENCE PROGRAMME, 9 MAY

Room 1		Room 2	Main hall
<b>Relationship between Thermal Environmental Acceptability and Individual Characteristics in an Office</b> <i>Shiori Saito, Masanari Ukai, Yuta Ichikawa, Tatsuo Nobe, Shigeki Kametani</i>	<b>Low-temperature heating systems control in low-energy buildings</b> <i>Vojtech Mazanec, Karele Kabele</i>	<b>Case Study of Indoor Air Quality and Energy Efficiency in Passive House in Latvia</b> <i>Gatis Plavenieks, Arturs Lesinskis, Ilze Dimdina</i>	
<b>Compliance with Summer Thermal Comfort requirements in Apartment Building</b> <i>Raimo Simson, Jarek Kurnitski, Mikk Maivel, Targo Kalamees</i>	<b>Large-scale heat pumps review and their introduction to natural gas markets potential</b> <i>Vasili Sakavets, Hans Havtun</i>		
<b>Usage Survey of Personal Underfloor Air Outlet System and Thermal Environment Acceptability</b> <i>Masanari Ukai, Kogakuin University, Yoshito Arai, Shimizu Corporation, Mitsuhiro Takahashi</i>	<b>Predesign stage on reconstruction of system of heat supply of the campus of SPbSTU</b> <i>Anna Nefedova, Julia Bykova, Sergei Kosov, Nikolai Vatin</i>		
<b>Development of Air Supply Nozzle for Stadium Chair</b> <i>Tatsuya Yada, Tatsuo Nobe</i>	<b>Indirect Evaporative Cooling in Air Condition Systems</b> <i>Arturs Brahmanis, Arturs Lesinskis</i>		
	<b>Session 8 Building materials Chair: TBC</b>		
	<b>Influence of silica fume on durability of cement-based materials exposed to chlorides</b> <i>Martina Kovalcikova, Adriana Estokova</i>		
	<b>Effect of Physical Treatment on the Properties of Composites Based on Natural Fibres</b> <i>Ivana Schwarzova, Nadezda Stevulova, Eva Terpakova, Jozef Junak</i>		
	<b>Cellulose fibres used in building materials</b> <i>Nadezda Stevulova, Viola Hospodarova</i>		
	<b>Air Heating Solar Collector for Hemp Drying</b> <i>Ilze Pelēce, Ādolfs Ruciņš, Oskars Valainis</i>		
16:00	CLOSING SESSION OF THE CONFERENCE		

# TECHNICAL & SOCIAL EVENTS

## THURSDAY, 7 MAY

Tour to the Incukalns Under Gas Storage Facility  
19:00–21:00

You are also invited to join technical & social tours outside the city.



Incukalns Underground Gas Storage is the only functioning gas storage facility in the Baltic States. The highest capacity of this Underground Gas Storage Facility is 4.47 billion m<sup>3</sup>.

Excursion by bus and tour guide: 20 EUR

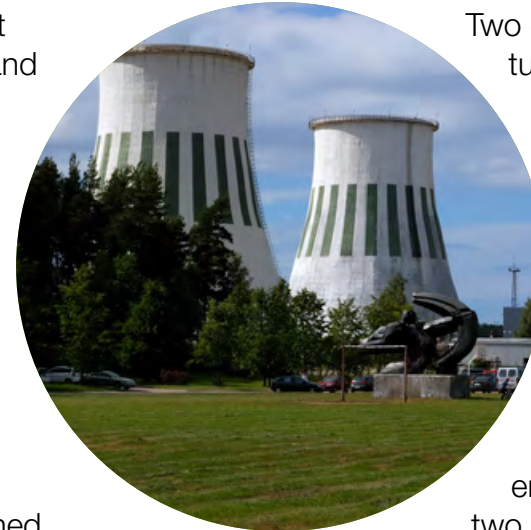
Please mark this tour within registration on [www.hvacriga2015.eu](http://www.hvacriga2015.eu)

# TECHNICAL & SOCIAL EVENTS

## FRIDAY, 8 MAY

Tour to Combined Cycle Gas Turbine Power Plant  
18:00–20:00

Riga TEC-2 is the largest Latvian combined heat and power plant. It began operation in 1973. The reconstruction of Riga TEC-2 was initiated in 2006, the first power unit was commissioned in late 2008 and the second power unit was commissioned in late 2013, thus finalising the reconstruction of combined heat and power plants of the Group. Along with the commissioning of the Riga TEC-2 second power unit, the exploitation of inefficient and environmentally unfriendly power units, commissioned during 1972–1979, has been suspended. Currently Riga TEC-2 has become the most efficient and up-to-date combined cycle power plant in the Baltics.



Two combined-cycle gas turbine (CCGT) units and five water boilers are currently exploited at Riga TEC-2. Upon the commissioning of the second power unit, the electrical capacity of Riga TEC-2 in cogeneration mode reaches 832 MW<sub>el</sub>, while the total thermal energy capacity of the two power units reaches 544 MW<sub>th</sub> in cogeneration mode. The full thermal energy capacity of Riga TEC-2, including the boilers, is 1,124 MW<sub>th</sub>.

In 2013, the Riga TEC-2 generated 1550 GWh of electricity and 1533 GWh of thermal energy.

Excursion by bus and tour guide: 20 EUR  
Please mark this tour within registration on [www.hvacriga2015.eu](http://www.hvacriga2015.eu)

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# MEETING AND CONFERENCE VENUE

## LOCATED IN THE HEART OF RIGA CITY CENTRE

Radisson Blu Hotel Latvija  
Conference centre  
Elizabetes street 55, Riga

Located in the heart of the city's business and shopping centre, the hotel and conference centre at only 400 metres from the beautiful Old Town. The hotel is only 15 km from Riga International Airport. The Riga Train Station is 2 km from the hotel.



## REGISTRATION

### REHVA Annual Meeting 6–7 May

We welcome you to register till 19 April  
for early registration

[Registration](#)

### REHVA Conference on “Advanced HVAC & Natural Gas Technologies” 8–9 May

We welcome you to register till 19 April for early  
registration

[Registration](#)

[www.hvacriga2015.eu](http://www.hvacriga2015.eu)



# USEFUL AND PRACTICAL INFORMATION ABOUT RIGA

## ELECTRICITY

220 volts AC, 50 Hz; European-style 2-pin plugs are in use

## TIME IN RIGA

Riga is three hours ahead of GMT during the summer season. Daylight savings time is set on the same dates as in Western Europe. Riga is located in the same time zone as Helsinki, Tallinn and Vilnius.

## CURRENCY AND CURRENCY EXCHANGE

The Latvian currency is the euro (EUR), which is divided into 100 euro cents.

## THE BEST INTERNET

Hotel and conference venue have internet access. Internet cafes can easily be found throughout Riga – both in the city centre, and in other parts of the city. Laptop computers can also be connected to the Internet in many cafes and restaurants. Internet access is often free of charge.



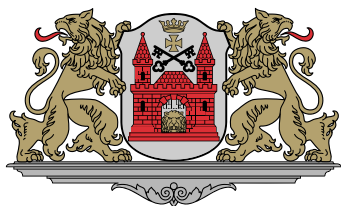
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TO RIGA



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# PARTNERS & SUPPORTERS

All of this could not have been possible without the cooperation and support of our valued partners. Organisers of REHVA Annual Meeting and Conference on “Advanced HVAC & Natural Gas Technologies 2015” want to express our gratitude on support and cooperation in this regard.



RIGA CITY COUNCIL



## SECRETARIAT

Secretariat of REHVA Annual Meeting and Conference 2015

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