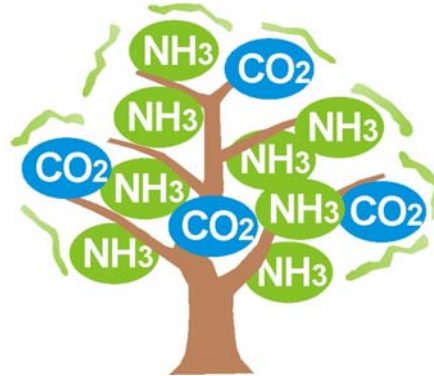


## ANNOUNCEMENT AND CALL FOR PAPERS

### 8th INTERNATIONAL CONFERENCE



## Ammonia and CO<sub>2</sub> Refrigeration Technologies

IIR Commissions: B2 with B1, D1

April 11-13, 2019, Ohrid, Republic of Macedonia



Organized by

Faculty of Mechanical Engineering, University "Ss. Cyril & Methodius" - Skopje

[www.mf.edu.mk/web\\_ohrid2019/ohrid-2019.html](http://www.mf.edu.mk/web_ohrid2019/ohrid-2019.html)

Programme Sponsors: **eurammon**, and **iilar** (International Institute of Ammonia Refrigeration)

### ABOUT THE CONFERENCE

The climate change is a global issue with catastrophic consequences which remind us almost every day. There are alarming projections of GHG emissions including HFCs. In Europe the Regulation No 517/2014 on F-gases has been introduced with gradually phase-down. The 28 Meeting of the Parties (in 2016) adopted an amendment to the Montreal Protocol for gradually phase-down of HFCs (from 2019 to 2047) to achieve 85% reduction. Recently, new HFC refrigerants (named HFOs) with low GWPs are appeared on the market.

The choice of refrigerant (and technology) has become a very complicated issue. In the RAC industry, confusion and uncertainties related to working fluids in many applications are continuing. In addition, there are many groups with diverging interests: chemical companies, manufacturers of equipment, distributors, users, environmental organizations, politicians ...

After several conversions CFCs -> HCFCs -> HFCs -> HFOs(?), the global trend towards using natural refrigerants is intensifying. There are very positive signals in Europe and some parts in the world where expanding use of ammonia, carbon dioxide and hydrocarbons in various applications is occurring. We will eliminate all uncertainties in the future regarding both Protocols and environmental regulations applying to natural refrigerants.

Of all refrigerants applied today, ammonia and CO<sub>2</sub> are the oldest that have been used since the 19th century. The topics of the conference are: design of modern ammonia and new CO<sub>2</sub> systems and technological innovations, improving energy efficiency, various applications, technical guidelines and safety regulations. It is very clear: by using more ammonia and CO<sub>2</sub> refrigerants, we are employing environmentally friendly technologies.

The previous seven conferences were very successful, so we look forward to the 8th Conference on Ammonia and CO<sub>2</sub> Refrigeration Technologies. Use the opportunity to see the beautiful city of Ohrid and Ohrid Lake!

## MAIN TOPICS

### **Design of modern ammonia (NH<sub>3</sub>) systems and technological innovation**

Lowering of ammonia charge in the systems; Medium and small size ammonia systems;  
Advanced design; Factory-made units;  
Compatibility of ammonia with metals and new oils.

### **Design of carbon dioxide (CO<sub>2</sub>) refrigeration and heat pump systems**

Transcritical and subcritical operation;  
Modifications of cycles to improve the energy efficiency;  
Development of CO<sub>2</sub> systems intended for hot climate;  
Ejector as an expansion device.

### **New innovative components**

Plate and "shell & plate" heat exchangers; DX evaporators;  
Microchannel air-cooled condensers; Improved evaporative condensers;  
Semi-hermetic and hermetic ammonia compressors;  
High-pressure ammonia and CO<sub>2</sub> compressors.

### **Energy efficiency of ammonia and CO<sub>2</sub> refrigerating systems**

Advantages of ammonia and CO<sub>2</sub> versus fluorocarbon-based systems;  
New secondary coolants; CO<sub>2</sub> as a secondary coolant;  
NH<sub>3</sub>/CO<sub>2</sub> cascade systems.

### **Applications of ammonia and CO<sub>2</sub> refrigeration**

Cold stores, food and drink industries; Supermarkets; Air-conditioning systems (liquid chillers);  
Heat pumps (medium and high temperature heating).

### **Absorption machines**

Modified absorption cycles; Trigenation and district cooling.

### **Ammonia and CO<sub>2</sub> systems in developing countries**

Modernisation, improvements, technical assistance, barriers.

### **Technical and safety issues; Guidelines and training materials**

Regulations on the construction and operation of ammonia and CO<sub>2</sub> refrigerating systems;  
Education and training for: best practices, operating procedures, handling and safe operation.

### **Public awareness of the image and benefits of natural refrigerants**

Crucial and sustainable contributions to a better environment; Barriers to market penetration;  
Current and future use of natural refrigerants; Montreal and Kigali amendment, phase-down of HFCs.

## International Scientific/Technical Committee

President: Andy Pearson, Former President of IoR; Member of IIR Commission E1, UK

Georgy Belozarov, Member of IIR Commission D1, Russia

Jocelyn Bonjour, Vice-President of IIR Commission B1, France

Risto Ciconkov, Member of IIR Commission B2 and E2, Macedonia

Sergio Giroto, Enex, Italy

Armin Hafner, SINTEF, Norway

Predrag Hrnjak, Member of IIR Commission E2, USA

Stefan Jensen, Member of the Board of Directors of the IIR, Australia

Yong Tae Kang, President of IIR section B, S. Korea

Kuniaki Kawamura, President of JSRAE, President of IIR Comm. D1, Japan

Gert Koster, Member of IIR Commission B2, Netherlands

Tomasz Lokietek, Secretary of IIR Commission B2, Poland

Natalia Mednikova, VNIHI, Russia

Vasile Minea, Member of IIR Commission E2, Canada

Silvia Minetto, Secretary of IIR Commission D1, Italy

Mike Odey, Vice-President of IIR Commission B2, New Zealand

Alexander Pachai, Member of UNEP RTOC Committee, Denmark

Bjorn Palm, Member of IIR Commission B1, Sweden

Branimir Pavkovic, Member of IIR Commission E1, Croatia

Fabio Polonara, Vice-President of IIR Commission A2, Italy

Rene Rieberer, Member of IIR Commission E2, Austria

Eric Smith, IIR Vice-President and Technical Director, USA

Thomas Spänich (eurammon executive board), Germany

Zoran Stajic, Emerson-Vilter, Serbia

Juraj Shvingal, ABC Food Machinery, Slovakia

Ruzhu Wang, Vice-President of IIR Commission B2, China

## Organizing Committee

President: Risto Ciconkov, (Skopje University), Member of IIR Commission B2 and E2

Didier Coulomb, Director of the IIR

Karin Jahn, Eurammon Management

Darko Danev, Dean of the FME, Skopje University, Macedonia

Slave Lasovski, Primatehna doo, Macedonia

Vasil Ciconkov, Energija doo, Macedonia

Samoil Ciconkov, Energija doo, Macedonia

IIR Communications and Development Manager: Mrs. Deonie Lambert

## INFORMATION FOR AUTHORS

Abstracts are to be written in English, submitted electronically. Author of the accepted abstract will be invited to submit a full paper. At least one author of each paper must attend the conference to present the paper.

The abstract should be no longer than 250 words, on A4 paper. It should include:

- Title of the paper
- Up to five keywords
- Name(s), company/organization, address and e-mail.

Please indicate the preferred mode of presentation (oral or poster).

Submit the abstract or paper in electronic form by e-mail to: [ristoci@ukim.edu.mk](mailto:ristoci@ukim.edu.mk) , or [info@energija.com.mk](mailto:info@energija.com.mk)

### Timetable

Deadline for submission of abstracts	September 30, 2018;
Notification of acceptance	October 31, 2018;
Deadline for submission of full paper	January 5, 2019
Notification of acceptance	February 5, 2019

Instructions for manuscript preparation and all information are available on the conference web site

[www.mf.edu.mk/web\\_ohrid2019/ohrid-2019.html](http://www.mf.edu.mk/web_ohrid2019/ohrid-2019.html).

Accepted papers presented at the conference will be available as registered separate papers during the conference.

All papers will be published on a memory stick (or CD-ROM) in the final proceedings.

## REGISTRATION AND FEES

Full conference fee includes: participation at the conference, supply of the separate printed papers, final proceedings during the conference, coffee breaks, conference gala dinner and sightseeing in the old town of Ohrid (or another tour).

### Registration fee

Full registration in Euros

	IIR members	Non-IIR mebers
By March 31	310	390
After March 31	370	450

Accompanying persons: 120 EUR

## ACCOMMODATION

Accommodation is not included in the conference fee. Accommodation is available at the conference facility, in a four-star hotel.

### Venue:

Metropol Lake Resort

Hotel Metropol \*\*\*\*

[www.metropol-ohrid.com.mk](http://www.metropol-ohrid.com.mk)

[sales@metropol-ohrid.com.mk](mailto:sales@metropol-ohrid.com.mk)

Metropol Lake Resort is sited in the most beautiful part of the east coast of the Lake Ohrid, with the lake view from one side, and mountain view from the other side. The resort consists of three hotels on the same location.

Room rates, EUR (Half board, per person)

Hotel	Occupancy	HB
METROPOL ****	1/1	61
	1/2	47
BELLEVUE****	1/1	61
	1/2	47
TURIST***	1/1	43
	1/2	33



## OTHER INFORMATION

Ohrid: [www.ohrid.com.mk](http://www.ohrid.com.mk)

Macedonia: [www.travel-macedonia.com.mk](http://www.travel-macedonia.com.mk); [www.exploringmacedonia.com](http://www.exploringmacedonia.com)

Flights: [www.airports.com.mk](http://www.airports.com.mk)

Visa information: [www.mfa.gov.mk](http://www.mfa.gov.mk)

(Visa is not necessary for most of the countries.)

## OHRID

Ohrid is a city-museum with numerous archaeological treasures, with a number of early Christian basilicas, a great number of churches, luxurious mosaics, valuable archaeological sites and an antique theatre, which confirm that Ohrid was a cultural centre of the ancient era.

Lake Ohrid, the blue Macedonian pearl, is one of the oldest and best-preserved lakes in the world. It lies at an altitude of 695 m, has an area of 358 km<sup>2</sup> and maximum depth of 289 m. The crystal-clear lake water and the unpolluted environment afford a breath of untouched nature.

Ohrid and Lake Ohrid have been named a world cultural and natural heritage listed city under the protection of UNESCO since 1980.

Over the centuries, an enormous and colourful heritage of beautiful architecture, crafts and traditions has evolved. Combined with its scenic lake and mountainscape, interesting town and village architecture, local hospitality, climate and delicious fresh food, a visit to the Ohrid area will be deeply rewarding.



### International Institute of Refrigeration

The International Institute of Refrigeration (IIR) is the only independent intergovernmental science and technology based organization which promotes knowledge of refrigeration and associated technologies that improve quality of life in a cost-effective and environmentally sustainable manner including: Food quality and safety from farm to consumer; Comfort in homes and commercial buildings; Health products and services; Low temperature technology and liquefied gas technology; Energy efficiency; Use of non-ozone depleting and low global warming refrigerants in a safe manner.

Members of the IIR include Member Countries. Member Countries take part in IIR activities via the commission members they select. Moreover, companies, laboratories, universities... can become corporate or benefactor members of the IIR.

The IIR provides its members with tailored services meeting a wide range of member-country, national and international organizations, decision-makers, researchers and refrigeration practitioners needs.

The head office of the IIR and its entire staff are located in Paris.

Find out more about the IIR on: [www.iifir.org](http://www.iifir.org).

More information:

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[www.mf.edu.mk/web\\_ohrid2019/ohrid-2019.html](http://www.mf.edu.mk/web_ohrid2019/ohrid-2019.html)

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