



FINAL PROGRAMME

April 10, 2019 (Wednesday)

17:00 Registration
20:00 Welcome drink

April 11, 2019 (Thursday)

Time	Authors	Paper
9:30	Opening ceremony	
	Keynote speakers, Chairman: Andy Pearson	
10:00	Kenneth Madsen, Advansor A/S, Denmark	Transcritical CO2 application in food retail applications worldwide. Challenges and solutions.
10:30	David Schalenbourg, "Delhaize", Belgium	End-user perspective on transitioning away from HFCs towards natural refrigerants
11:00	Coffee break	
	CO2 and ammonia refrigeration, Chairman: Marc Bouwman	
11:20	L. Kuijpers, N. Kochova, A. Vonsild, Netherlands, R. Macedonia, Denmark	Climate considerations for R/AC equipment operation: is the answer in energy efficiency?
11:40	Kazuhiro Hattori, Ryohei Arimoto, Iwao Terashima, Mayekawa, Japan	Development of a high efficient NH3/CO2 refrigeration system
12:00	Edward Johnson Dean Foods (IIAR), USA	Personal protective equipment for safety when working with NH3 and CO2
12:20	Lunch break	
	CO2 refrigeration, Chairman: Maurizio Orlandi	
13:20	Armin Hafner, Angel Pardinias NTNU, Norway	CO2 refrigeration technology: Possible innovations
13:40	Oliver Javerschek, Julian Pfaffl, Julian Karbner "Bitzer", Germany	Analysis of energy consumption by applying a new generation of CO2 compressors
14:00	Giovanni Rossanese, L. Mattiello, W. Muvegi, L. Nalini Carel Industries S.p.A., Italy	Improved oil level detection and equalization system for CO2 high pressure shell hermetic rotary compressor
14:20	Stefano Trabucchi, Maurizio Orlandi Epta SpA, Italy	Optimization of two-stages CO2 transcritical cycles for low temperature water-cooled cabinets application
14:40	Klaas Visser, KAV Consulting, Australia	Transcritical CO2 refrigerating systems applied to the cooling and heating of buildings reduce energy and cooling water
15:00	Coffee break	
	Hall 1 Ammonia refrigeration, Chairman: Mark Davies - Parallel session	
15:20	Martin Kaern, Wiebke Markussen, J. Kristófersson Denmark, Technical University of Denmark / DTI	Multi-objective optimization of low charge liquid overfeed ammonia evaporators for industrial refrigeration
15:40	Morten Skovrup, Niels Vestergaard, Joris Kortstee Danfoss, Denmark	Energy consumption of hot gas, electrical and brine defrost
16:00	Trevor Hegg, R. Vandenboer, G. Struder, J. Hamilton, C. Nagle, Evapco USA / Belgium	Adiabatic fluid coolers & refrigerant condensers: impact of pad system design on saturation efficiency and unit operation
16:20	P. Jørgensen, T. Ommen, W. Markussen, B. Elmegaard DTU, Denmark	Performance Mapping of a Large-Scale Ammonia Heat Pump in Off-Design Conditions
16:40	Anil Gulanikar, Dag-Tech Services, India	Revamping and expansion of milk chilling centre
	Hall 2 CO2 refrigeration, Chairman: Armin Hafner - Parallel session -	
15:20	Simone Dugaria, Marco Azzolin, Livio Calabrese, Silvia Minetto, Davide Del Col; UNIPD, Italy	Energy analysis of integrated CO2 commercial refrigeration systems under different climate conditions
15:40	Silje Marie Smitt, Armin Hafner and Erik Hoksrød NTNU, Norway	Presentation of the first combined CO2 heat pump, air conditioning and hot tap water system for a hotel in Scandinavia
16:00	Christian Doerffel, Thomas Tannert, Ullrich Hesse TU Dresden, Germany	Effect of the operating conditions on a transcritical CO2 refrigeration systems efficiency
16:20	Francesco Botticella, Zishen Liu, Stefan Elbel University of Illinois, USA	Trade-offs between design complexity and performance impacts for transcritical R744 ejectors
16:40	A. Ozyurt, B. Yilmaz, E. Mancuhan, D. Yilmaz, D. Kurtbogun; FrigoBlock Refrig. , Turkey	Improving performance of transcritical CO2 booster systems, using phase change materials (PCM) in a cold storage application
17:00	Coffee break	
	Hall 1 Ammonia, CO2, Propane, Chairman: Zoran Stajic - Parallel session	
17:20	Kristina Widell, Tom Nordtvedt SINTEF, Norway	Freezing of mackerel filets in two step freezing process
17:40	Frank Rinne, Rene Paatzsch, Emerson Climate Technologies / ILK, Germany	CO2 or R290 for supermarket applications – Pros and Cons
18:00	Klara Skacanova, Alvaro de Ona, Shecco, Belgium	Market & technology trends for CO2 and ammonia in commercial and industrial refrigeration

18:20	Hakon Selvnes, Yosr Allouche and Armin Hafner NTNU, Norway	A CFD analysis for the performance assessment of a novel design of plates-in-tank storage unit for freezing applications
Hall 2 CO2 refrigeration, Chairman: Silvia Minetto - Parallel session -		
17:20	G. Tosato, S. Minetto, S. Girotto, A. Rossetti, S. Marinetti; CNR-CTI/Enex, Italy	CO2-based water chiller for wineries: a case study
17:40	P. Schrank, A. Rauch, A. Presetschnik, R. Rieberer V2C2 / Liebherr-Transport. Systems / TU Graz, Austria	Eco-friendly, energy- and cost-efficient AC system with heat pump functionality using R744 for rail applications
18:00	P. Artuso, A. Rossetti, S. Minetto, S. Marinetti, Davide Del Col; University Padova / CNR-CTI, Italy	Numerical investigation on the thermal performance of a new cooling unit for refrigerated transport using CO2 as the working fluid
18:20	V.V. Shishov and M. S. Talyzin Bauman Moscow State Technical University, Russia	Entropic and statistical analysis of CO2 refrigeration plants for retail application

April 12, 2019 (Friday)

Time	Authors	Paper
Keynote speakers, Chairman: Niels Vestergaard		
9:00	Andy Pearson, Star Refrigeration; Former President of IoR (UK)	The road ahead for ammonia and carbon dioxide refrigerants
9:30	Trevor Hegg, Evapco, Inc., USA	Low charge ammonia packaged refrigeration systems: Achieving ultra-reliable operation
10:00	Alexander Pachai Sabroe-JCI, Denmark (regular paper)	Ammonia Refrigeration - what can we expect in the future?
10:20	Coffee break	
Ammonia refrigeration, Chairman: Rob Vandenboer		
10:50	Niels Vestergaard, M. Skovrup, J. Kristófersson Danfoss / DTI, Denmark	Charge reduction in re-circulating ammonia systems
11:10	Tobias Nitschke and Stefan Jensen University of Applied Sciences Karlsruhe / Scantac Germany/Australia	Thermodynamic modeling of liquid overfeed and dry expansion feed central NH3 refrigeration plants to determine differences in energy performance
11:30	Michael Elstrøm HB Products, Denmark	New sensor technology optimizes evaporator performance especially during part load on both DX, flooded and pump circulation systems
11:50	Bas Pijenburg, John Ritmann Bitzer / Lodam, Denmark	Parallel operation of ammonia screw compressors – the practical way
12:10	Predrag Hrnjak, (keynote speaker) University of Illinois, USA	Packaged ammonia refrigeration units continuously improve
12:40	Lunch break	
Combined poster session, Chairmen: John Ritmann and Risto Ciconkov		
13:40	Zhaohua Li, Kun Liang, Hanying Jiang, Mike Dadd University of Sussex / University of Oxford, UK	Modeling of a novel oil-free linear compressor for small ammonia refrigerator
	J. Karwacki, A. Tomaszewski, A. Szcześniak, P. Pochwatka, R. Kwidziński, Polish Academy of Sciences, Poland	Experimental stands for testing separation efficiency of unconventional separators for ammonia cooling units
	Knut Ringstad, Yosr Allouche, Armin Hafner NTNU, Norway	Investigation of CFD models for ammonia ejector applications
	Juraj Svingal ABC Food Machinery, Slovakia	Using low charge ammonia heat pump as main cooling/heating energy source for ice hockey stadiums
	Juraj Svingal ABC Food Machinery, Slovakia	Extreme low charge units with ammonia blend R723 applications in practice
	Ahmet Kitap and John Gibson, KIMO RHVAC Controls, Germany	Using good rack design and electrical step-up autotransformers to improve the stable operation and energy saving of multiple-compressor racks
	Steffen Feja, C. Hanzelmann, S. Zuber ILK Dresden / Klueber Lubrication, Germany	Thermodynamic properties of ammonia-oil-mixtures that influence the efficiency of an evaporator
	Francisco Javier Taguas, Armin Hafner NTNU, Norway	Heat pumps for energy efficient breweries
	A. Okbaz, M. Sökücü, H. Onbaşıoğlu, Ali Olcay Friterm, Turkey	Experimental investigation of evaporators with smooth and inner grooved tubes using CO2 as a refrigerant
	Yosr Allouche, Iolanda Manescu, Armin Hafner NTNU, Norway	Experimental evaluation of ice storage inside a concentric helically coiled tubes heat exchanger integrated into a R744 refig. system
	Viren Bhanot, P. Petagna, A. Cioncolini, H. Iacovides CERN/University of Manchester, Switzerland/UK	Simulation and validation of a CO2-based pumped loop cooling system
	Kundan Kumar and Pramod Kumar Indian Institute of Science – Bangalore, India	Analysis of Propane + CO2 mixture as a working fluid in a vapor compression refrigeration system
	Philipp Wagner, Thomas Kitzinger, René Rieberer, Graz University of Technology, Austria	Analysis of a gas-fired absorption heat pump with different cycle configurations and superheated refrigerant at the absorber inlet

	Marcel Ahrens, Armin Hafner and Trygve Eikevik, NTNU, Norway	Compressors for ammonia/water hybrid absorption/compression heat pumps
	Mihail-Dan Staicovici, S.C. Varia Energia, Romania	Analysis of several electrical thermal cascades boosted by the absorption working cycle technology

15:15 Sightseeing in the old town of Ohrid

20:00 Gala dinner

April 13, 2019 (Saturday)

	Continued discussions at posters; Informal discussions
9:00	Continued discussions at posters
	Discussion on Safety in Refrigeration, introduction by Alexander Pachai, a leader of IIR working group. Informal discussions; Q&A; Opportunities to meet known experts; Ideas for research, projects, business, ...
11:00	Coffee, tea and light snacks on the lake terrace

Accompanying Persons Programme

Presence at all social events of the conference: welcome drink, conference gala dinner, sightseeing or excursion.

April 11, 13:30: Excursion in the Monastery complex of Kalishta near Struga, along the lake.

April 12, 10:00: Visit at the Ohrid old bazaar with special jewels, filigree and Ohrid pearls. Coffee party by the lake.