



International
Institute of Refrigeration

INTERNATIONAL CONFERENCE
Ammonia and CO2 Refrigeration Technologies
April 16-18, 2015, Ohrid, Republic of Macedonia

MTC
Faculty of Mechanical
Engineering - Skopje

FINAL PROGRAMME

April 15, 2015 (Wednesday)

17:00 Registration
20:00 Welcome drink

April 16, 2015 (Thursday)

Time	Authors	Paper
9:30	Opening ceremony	
	Plenary lectures, Chairman: Andy Pearson	
10:00	Andy Pearson Star Refrigeration Ltd (UK)	Why is ammonia such a good refrigerant?
10:30	Maurice Young Maurice Young Consulting Ltd (UK)	The compliance of ammonia refrigeration plants with the EU ATEX Directive
11:00	Coffee break	
	Ammonia refrigeration, Chairman: Gert Koster	
11:30	Niels Vestergaard, Danfoss (Denmark)	Global trends, design and safety requirements for ammonia installations
11:50	Alexander Pachai, JCI - Sabroe (Denmark)	New proposals for ventilation rates in machine rooms
12:10	Kenneth Hoffmann and Vaclav Ruzek, GEA Refrigeration (UK; Czech Republic)	Piston versus screw compressors – a life cycle analysis of high pressure ammonia systems
12:30	Bas Pijnenburg and John Ritmann, Bitzer (Denmark)	Parallel operation of NH3 screw compressors - The optimum way
12:50	Lunch break	
	Ammonia refrigeration, Chairman: Rob Vandenboer	
13:50	Krzysztof Banasiak, Armin Hafner, Steiner Anton, SINTEF (Norway)	COP improvement of two-stage ammonia heat pumps by use of ejector
14:10	Jan Boone and Ivaylo Ivanov, Mayekawa (Belgium/ Bulgaria)	Ammonia and CO2 applications in industrial refrigeration plants
14:30	Anil Gulanikar, Dag-Tech Refrigeration (India)	Ammonia charge reduction and revamping of refrigeration system installed for dairy in India
14:50	Gert Nielsen, Multiconsult AS (Norway)	Borehole installations or air to water heat pumps. What to use and where.
	Hall 2 CO2 refrigeration, Chairman: Niels Vestergaard - Parallel session -	
13:50	E. Kriezi, K. Fredslund, K. Banasiak, A. Hafner, Danfoss (Denmark); SINTEF (Norway)	Multi ejector and impact of ejector design on the operation of a CO2 refrigeration system
14:10	M. Karampour, S. Sawalha, A. Abdi, J. Arias and J. Rogstam, KTH (Sweden)	Review of supermarket refrigeration and heat recovery research at KTH - Sweden
14:30	Pierce Kennedy, H. Esmonde, P. Young, Thermo King (Ireland)	Computer modeling of an open cycle CO2 transport refrigeration system
14:50	Lakdar Kairouani, N. Jemni and E. Nehdi, ENIT (Tunisia)	Energetic analysis of CO2/Propane and CO2/Propylene cascade refrigeration system
15:10	Coffee break	
	Hall 1 CO2 refrigeration, Chairman: Stefano Filippini	
15:30	S. Minetto, S. Giroto, A. Rossetti, S. Marinetti, CTI-NRC; Enex (Italy)	Air conditioning and space heating with CO2: efficiency improvement with ejectors
15:50	Y. Shabtay, J. Black, Nigel Cotton, Copper Alliance (USA; Belgium)	New copper-based heat exchangers for R744 refrigerant. Part I: New technologies for tubes and coils"
16:10	Andreas Schroeder and Jürgen Koehler, Technical University of Braunschweig (Germany)	Implementation of a CO2 ejector in a one MW high temperature heat pump
16:30	B. Yilmaz, N. Erdönmez, A. Özyurt, D. Yilmaz et al. Marmara University (Turkey)	Energy and exergy analysis and optimization studies of a CO2/NH3 cascade refrigeration system
	Hall 2 Absorption technology, Chairman: Lars Reinholdt - Parallel session -	
15:30	J. Ciganda, R. Graf, A. Kuehn, P. Schmitt-Gehrke, F. Ziegler; Technical University Berlin (Germany)	Operational experiences and system optimisation measures for gas absorption heat pump systems
15:50	M. Grund, U. Hesse, T. Weimer, K. Rühling, Technical University of Dresden (Germany)	Design of a novel resorption refrigeration system with an attached ice storage system
16:10	Mihail-Dan Staicovici, SC Varia Energia SRL (Romania)	Cooling-Rankine absorption cycles. Part 1: Single-stage case"
16:30	Luis Mendoza and Jürg Schiffmann, EPFL (Switzerland)	Technical feasibility of a novel oil-free co-rotating scroll expander for a Kalina cycle
16:50	Coffee break	
17:20	Panel discussion. Panelists: Andy Pearson, René van Gerwen, Pega Hrnjak and Fons Pennartz	Packaged Ammonia Chillers

April 17, 2015 (Friday)

Time	Authors	Paper
	Plenary lectures, Chairman: Alexander Pachai	
9:00	Armin Hafner SINTEF Energi AS (Norway)	2020 Perspectives for CO2 refrigeration and heat pump systems
9:30	Predrag Hrnjak University of Illinois (USA)	In-tube evaporation of CO2: visualization and effect of oil
10:00	Eric Smith Int. Institute of Ammonia Refrigeration (USA)	Navigating the regulatory environment and opportunities for new technologies in the U.S
10:30	Coffee break	
	CO2 refrigeration, Chairman: Sergio Girotto	
11:00	S. Minetto, S. Girotto, A. Rossetti, S. Marinetti, CTI-NRC; Enx (Italy)	Experience with ejector work recovery and auxiliary compressors in CO2 refrigeration systems. Technological ...
11:20	Stefano Filippini and Umberto Merlo, LU-VE Group (Italy)	New generation of air cooled heat exchangers for CO2 applications
11:40	I. Colombo, G. Maidment, I. Chaer, A. Paurine, London South Bank University (UK)	Modeling and experimental results of a carbon dioxide refrigeration system with heat recovery
12:00	Klaas Visser, KAV Consulting Pty Ltd (Australia)	CO2 evaporative condensers and gas coolers enable efficient CO2 refrigeration application worldwide irrespective of climate
12:20	N. Fidorra, A. Hafner, P. Nekså, J.Köhler TU Braunschweig; SINTEF (Germany; Norway)	Energy cost analysis of heat recovery in CO2 supermarket refrigeration systems
12:40	Lunch break	
	Poster session, Chairmen: John Ritmann, Risto Ciconkov	
13:40	Gert Nielsen and Carl Rasmussen, Multiconsult AS (Norway)	Internal reversible ammonia air-to-water heat pump / chiller
	Mike Odey, Mike Odey & Associates Ltd (New Zealand)	Giving new life to old ammonia refrigeration plants
	Alexander Sinyagovsky, Igor Kornilov , Lion Kotlyar, HOLTEC (Russia)	Ammonia refrigeration systems: company innovation practice
	Ishtvan Vanjur and Vladimir Sovilj, Frigoria (Serbia)	Reducing energy consumption of refrigeration compressors in large breweries
	A. Pachai, Z. Vuković, N. Srdić, JCI; Soko (Denmark; Serbia)	A large cold store in Belgrade, Serbia
	Gratiela Tarlea Technical University Bucharest (Romania)	Romania – R717 and R744 refrigeration user
	C. Moehl and U. Hesse, Technical University of Dresden (Germany)	An inquiry into new ammonia resistant potting materials
	K. Banasiak, A. Hafner, K.N. Widell, SINTEF (Norway)	Blast freezers (part 1): R717 versus R717 / R744 cascade
	K. Banasiak, A. Hafner, K.N. Widell, SINTEF (Norway)	Blast freezers (Part 2): R717 versus R744
	Ole Stavset, Wiebke Meesenburg, Tom Nordtvedt, Kristina Widell; SINTEF (Norway)	Discretized model of a fish freezing tunnel in Modelica
	Tom Nordtvedt, Ole Stavset, Kristina Widell, SINTEF (Norway)	Handling, processing and freezing of pelagic fish in Norway
	Y. Shabtay, J. Black; N. Cotton, Copper Alliance (USA; Belgium)	New copper-based heat exchangers for R744 refrigerant. Part II: System design and case studies"
	J. Germanus, S. Guenther, M. Goldberg, ILK Dresden (Germany)	Carbon Dioxide as a Refrigerant for Small Cooling Devices
	Steffen Feja and Christian Hanzelmann, ILK Dresden (Germany)	Experimental studies of thermodynamic properties of R744-oil-mixtures up to 140 °C and 150 bar
	B. Yilmaz, M. Sevindir, E. Mançuhan, N. Erdönmez, A. Özyurt, D. Yilmaz; Marmara University (Turkey)	Performance analysis of an experimental R404A/CO2 cascade refrigeration system
	Mihail-Dan Staicovici, SC Varia Energia SRL (Romania)	Cooling-Rankine absorption cycles. Part 2: Multi-effect working/cooling cycles-sensible heat supply case"
	Mihail-Dan Staicovici, SC Varia Energia SRL (Romania)	Cooling-Rankine absorption cycles. Part 3: Multi-effect working/cooling cycles-latent heat supply case"
	M. Popovac, S. Seichter, C. Reichl, P. Benovsky, Austrian Institute of Technology GmbH (Austria)	Implementation and application of the frost growth and densification model in numerical analysis of heat pump performances

15:15 **Sightseeing in the old town of Ohrid**
20:00 **Gala dinner**

April 18, 2015 (Saturday)

	Various applications and some specifics, Chairman: Klaas Visser	
9:00	L. Drughean, A. Girip, A. Dobrovicescu, A. Serban, A. Ilie; University Politehnica of Bucharest (Romania)	Compact ammonia refrigeration system for ice rink
9:20	Mike Odey, Mike Odey & Associates Ltd (New Zealand)	The challenges of refrigeration piping compliance in a seismic environment
9:40	Kristina Widell, Maria Alonso, Tom Nordtvedt, SINTEF (Norway)	Simulation of air velocity distribution in a freezing tunnel
10:00	F. Chiriac, A. Serban, I. Boian, G. Nastase, S. Bolocan; TU University Bucharest (Romania)	Cooling machines for individual buildings air conditioning. Comparative study
10:20	Klaus Spindler, University of Stuttgart (Germany)	Enhancement of condensation heat transfer of ammonia on the outside of tubes
10:40	Closing ceremony - Resume	
11:00	Informal coffee	

Accompanying Persons Programme

Presence at all social events of the conference: welcome drink, conference gala dinner, sightseeing in the old town of Ohrid.

April 16, 13:30: Excursion in the Monastery complex of Kalishta near Struga, along the lake.

April 17, 10:00: Visit at the Ohrid old bazaar with special jewels, filigree and Ohrid pearls.