

## September 16, 2021 (Thursday)

09:00	Opening ceremony	
	Keynote lectures,	
09:20	Andy Pearson Star Refrigeration, UK (keynote)	Optimising energy use in refrigeration systems
09:50	Stefan Jensen Scantec Refrigeration, Australia (keynote)	The future of low charge NH <sub>3</sub> refrigerating plants
10:20	L. Kuijpers, N. Kochova, A. Vonsild, Netherlands, R. Macedonia, Denmark	Steps towards the low and "net-zero" emissions future
10:40	Coffee break	
	Ammonia refrigeration, :	
11:00	Michael Elstrom HB Products A/S, Denmark	Low Charge Ammonia systems designed as Direct Expansion
11:15	Manuel Munoz-Alonso, L. Dixon, C. Seeton, J. Karnaz, Shrieve Products International Ltd, UK	The role of miscible PAG lubricants in ammonia refrigeration systems reduction and compactness
11:30	P. Wagner, M. Verdnik, R. Rieberer, T. Demmerer, M. Blaser Graz University of Technology, Austria	High temperature ammonia heat pump as an add on to an existing chiller
11:45	E. Svendsen, K. Widell, T. Nordtvedt, S. Jafarzadeh, C. Gabrielli, SINTEF, Norway	Energy consumption of ammonia refrigeration system on board fishing vessel
12:00	Franz Sperl Guentner GmbH, Germany	Behaviour of a NH <sub>3</sub> -evaporator in the transition from superheated to flooded operation
12:15	Questions and answers	
12:40	Lunch break	
	Heat pumps, :	
13:40	Alexander Pachai, J. Normann, C. Arpagaus, A. Hafner JCI-Sabroe, Denmark	Screening of future-proof working fluids for industrial high-temperature heat pumps up to 250 °C (Part 1)
13:55	Alexander Pachai, J. Normann, C. Arpagaus, A. Hafner JCI-Sabroe, Denmark	Screening of future-proof working fluids for industrial high-temperature heat pumps up to 250 °C (Part 2)
14:10	Kenneth Hoffmann, Jan Gerritsen GEA Refrigeration, Netherlands	Is chemical HFO refrigerants a solution for heat pumps?
14:25	Marcel Ahrens, H. Selvnes, Leon Henke, M. Bantle, A. Hafner NTNU, Norway	Investigation on heat recovery strategies from low temperature food processing plants: Energy analysis and system comparison
14:40	Yantong Li, N. Nord, I. Rekstad, S. Skanoy, L. Sorensen NTNU, Norway	Effect of electronic expansion valve opening on discharge pressure of a water-source CO <sub>2</sub> heat pump: An experimental study
14:55	Questions and answers	
15:20	Coffee break	
	CO <sub>2</sub> refrigeration,	
15:40	Javier Vega, Cristian Cuevas, Remi Dickes, Vincent Lemort, University of Liege, Belgium	Application of a semi-empirical modelling approach to a two-stage rotary CO <sub>2</sub> compressor
15:55	Pavel Semaev, E. Söylemez, I. Tolstorebrov, A. Hafner, K. Widell, Th. Lund, J. Øy, J. Urke, NTNU, Norway	Simulation of a carbon dioxide (R-744) refrigeration system for fishing vessel
16:10	Steffen Feja, C. Hanzelmann, S. Zuber ILK Dresden, Germany	Thermodynamic properties (Daniel Plot) of lubricant - supercritical CO <sub>2</sub> mixtures at high temperatures
16:25	S. Singh, A. Pardinias, A. Hafner, C. Schlemminger, K. Banasiak, Norway, NTNU	R744 Refrigeration Solution for Small Supermarkets
16:40	Paolo Artuso, S. Minetto, A. Rossetti, G. Tosato, S. Marinetti CTI-NRC, Italy	Two years of data monitoring of all-CO <sub>2</sub> retail stores within the MultiPACK project
16:55	Questions and answers	
17:20	End	

**September 17, 2021 (Friday)**

	Keynote lectures,	
9:00	Sergio Girotto Enex srl, Italy	CO2 as a refrigerant: what can we expect in future?
9:30	Predrag Hrnjak University of Illinois, USA	Efficient and compact a/c system for high-speed trains based on CO2
10:00	Zahid Ayub Isotherm Inc., USA	Role of enhanced surface heat transfer in ammonia and carbon dioxide refrigeration systems with emphasis on low charge
10:30	Coffee break	
	CO2 refrigeration,	
11:00	Oliver Javerschek, Jens Mannewitz Bitzer, Germany	Advanced design for CO2 compressors in industrial applications
11:15	Ben Adamson REI Process, Australia	CO2 refrigeration for FPSOs (floating production, storage and offloading facilities)
11:30	Knut Ringstad, Krzysztof Banasiak, Armin Hafner NTNU, Norway	CFD-based design algorithm for CO2 ejectors
11:45	Junya Nakayama Nakayama Engineering, Japan	Innovative heat exchanger design for R717 and R744 cascade refrigeration system
12:00	Muhammad Z. Saeed, A. Hafner, C. Gabrielli, I. Tolstorebrov, K. Widell, Norway	CO2 refrigeration system design and optimization for LNG driven cruise ships
12:15	Questions and answers	
12:40	Lunch break	
	CO2 refrigeration,	
13:40	Nishant Karve, Kris Van de Velde, Stefan Vandaele Daikin Europe, Belgium	Energy performance of integrated CO2 refrigeration, heating and cooling system in real applications
13:55	Luca Contiero, Armin Hafner, Ángel Pardinás NTNU, Norway	Multi Ejector and pivoting-supported R744 application with AC for supermarkets
14:10	Joachim Germanus, S. Feja, M. Junk, P. Röllig, J. Kubitschk ILK Dresden, Germany	Low molecular weight esters as hybrid fluids for R744 sublimation cooling circuits
14:25	Hakon Selvnes, Yosr Allouche, Armin Hafner NTNU, Norway	A cold thermal energy storage unit for CO2 refrigeration using phase change material: First experimental results
14:40	Antoine Metsue, Yann Bartosiewicz, Sébastien Poncet Université de Sherbrooke, Canada	Investigation on ejector design for CO2 heat pump applications using Dymola
14:55	Questions and answers	
15:20	Coffee break	
	Various refrigeration applications,	
15:40	Pierre Barroca, B. Verlaet, A. Hafner, S. Blust, W. Hulek, L. Zwalinski, D. Teixeira, NTNU, Norway	Safety and reliability assessment of CO2 refrigeration system for underground applications below -50 °C
15:55	Victor Shishov and Maxim Talyzin Moscow State Technical University, Russia	Entropic and statistical analysis of industrial refrigeration plants
16:10	Ehsan Allymehr, N. Idelon, A. Pardinás, T. Eikevik, A. Hafner NTNU, Norway	Potential of using Additive Manufacturing to build plate heat exchangers
16:25	Christian Doerffel, Riley Barta, Christiane Thomas, U. Hesse, TU Dresden, Germany	Experimental investigation of enhanced CO2 refrigeration systems at varying operating conditions
16:40	Questions and answers	

17:00 Closing