

Wednesday, June 26

SYMPOSIUM

REFRIGERANTS: HEAT TRANSFER AND APPLICATIONS

8:15 Registration

9:00 Opening



WORLD REFRIGERATION,
AIR-CONDITIONING
AND HEAT-PUMPS DAY.
26TH JUNE 2019
ANNUAL EVENT

9:15 **Keynote lecture – Room T3**
Session Chair: Davide Del Col

State-of-the-art on Refrigerants

Alberto Cavallini, Emeritus Professor at Università degli Studi di Padova, Italy

10:00 **Invited lecture – Room T3**
Refrigeration - the Road to the future, somewhat rocky, somewhat promising
Srinivas Garimella - Georgia Institute of Technology, USA

10:35 Coffee break

Invited lectures – Room T3
Session Chair: Alberto Cavallini

10:55 *Low charge ammonia systems*
Pega Hrnjak - University of Illinois at Urbana-Champaign, USA

11:30 *Hydrocarbon systems designed for low charge*
Bjorn Palm - Royal Institute of Technology, Sweden

12:05 *Milestones on the path of CO₂ becoming the natural refrigerant choice*
Petter Neksa - Norwegian University of Science and Technology, Norway

12:40 *Refrigerant maldistribution in BPHE evaporators*
José Miguel Corberan - Universidad Politecnica de Valencia, Spain

13:15 Lunch

Session 15 REFRIGERANTS: HEAT TRANSFER

Room T4 Session Chair: José Miguel Corberan

- 14:20 *Experimental investigation of R513A flow boiling inside smooth tube and microfin tube*
A. DIANI, E. SAVIO, L. ROSSETTO
- 14:40 *Condensation and vaporization heat transfer of low-GWP mixtures*
S. BORTOLIN, M. AZZOLIN, A. BERTO, C. GUZZARDI, D. DEL COL
- 15:00 *Effect of refrigerant properties estimation on the prediction capabilities of well established two phase heat transfer and pressure drop models for new refrigerants*
G. RIGHETTI, R. AKASAKA, S. BOBBO, J.S. BROWN, L. FEDELE, Y. HIGASHI, G.A. LONGO, S. MANCIN, C. ZILIO
- 15:20 *Flow boiling of azeotropic and non-azeotropic mixtures. Effect of the glide temperature difference on the nucleate boiling contribution: assessment of methods*
R. MASTRULLO, A.W. MAURO, G. NAPOLI, F. PELELLA, L. VISCITO
- 15:40 *Characteristics of propane evaporation in a microfinned tube with internal diameter of 4.47 mm*
E. ALLYMEHR, T.M. EIKEVIK, A. HAFNER
- 16:00 *A new experimental correlation for the design of a H₂O/LiBr falling film absorber with a horizontal tube bundle*
F. LONARDI, M. OLBRIGHT, A. LUKE
- 16:20 *Study of an evaporator with integrated latent heat storage for a compressed air dryer*
A. BERTO, M. AZZOLIN, F. SIMONATO, E. STEVANIN, A. VILLA, D. DEL COL

Session 16 REFRIGERANTS: APPLICATIONS

Room T3 Session Chair: Pega Hrnjak

- 14:20 *Analysis of risk assessment for the use of A2L refrigerants*
S. BORTOLIN, F. MANCINI, L. MARTIN, D. DEL COL
- 14:40 *First experimental results of the use of R1234yf and R1234ze(E) as drop-in substitutes of R134a in a water-to-water heat pump*
L. MOLINAROLI, A. LUCCHINI, L.P.M. COLOMBO, F. BOCCHINFUSO
- 15:00 *Experimental and numerical activity on a prototype ejector chiller*
J. MAHMOUDIAN, F. MAZZELLI, A. MILAZZO, A. ROCCHETTI
- 15:20 *Impact of PWM Valve Unsteadiness on the performance of a Commercial Display Cabinet Evaporator*
P. ARTUSO, A. ROSSETTI, S. MINETTO, S. MARINETTI, F. FERRARI
- 15:40 *An integrated CO₂ unit for heating, cooling and DHW installed in a hotel. Data from the field*
G. TOSATO, S. GIROTTO, S. MINETTO, A. ROSSETTI, S. MARINETTI
- 16:00 *Energy analysis of transcritical CO₂ booster systems for commercial refrigeration*
S. DUGARIA, M. AZZOLIN, L. CALABRESE, S. MINETTO, D. DEL COL
- 16:20 *Increased efficiency of combined heat and power plants by utilizing waste heat for resorption chillers and their combination with hydrocarbon chillers*
O. ZIEGLER, U. HESSE, C. THOMAS
- 16:40 Coffee break
- 17:00 Panel discussion
- 17:50 Closing ceremony