



**ICCC 2020**  
NANTES – FRANCE  
Cité des Congrès  
August 26-28, 2020

## 6th IIR International Conference on Sustainability and the Cold Chain

An IIR conference



Wednesday 26 <sup>th</sup> of August 2020 (local timetable UTC/GMT+2)				
INTERNATIONAL EVENTS (FREE AND OPEN TO ALL PARTICIPANTS OF THE ICCC CONFERENCE)				
13:00	17:30			13:00 - 14:30 <b>WORKSHOP Cold Chain in Hot Countries</b> IIR - UNEP Face-to-face and by videoconferencing system  <a href="#">click here to join the webinar as participant</a>
		15:00 - 17:00 <b>WORKSHOP CRYOHUB</b>  Face-to-face and by videoconferencing system  <a href="#">click here to register to the webinar</a>	15:00 - 17:00 <b>WORKSHOP COOLFISH</b>  Face-to-face and by videoconferencing system  <a href="#">click here to register to the webinar</a>	15:00 - 16:30 <b>WORKSHOP UNIDO K-cep : For energy efficient and HFC-free domestic, commercial and retail refrigeration</b>  Face-to-face and by videoconferencing system  <a href="#">click here to join the webinar as participant</a>
18:00	20:00	WELCOME COCKTAIL AND RECORDING PARTICIPANTS		







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08:00		08:30		WELCOME + RECORDING PARTICIPANTS + COFFEE			
8:30	9:00	<b>OPENING CEREMONY (Room 1)</b> Didier COULOMB (Director General of the IIR) Gérard CAVALIER (President of the IIR Science and Technology Council + President of the AFF) Alain LE BAIL (President of the IIR Commission C2 - Food science & engineering + ONIRIS-GEPEA)					
9:00	9:30	Plenary session - Noboru KAGAWA - President of the JSRAE (Room 1) - New Technologies for Global Cold Chain of Japan					
9:30	10:00	Plenary session - Jacques GUILPART - MF CONSEIL (Room 1) - A methodology to assess the carbon footprint of food cold chain in western Europe					
10:00	10:30	COFFEE BREAK					
		<b>Transport storage (Room 1)</b> Chair : Richard LAWTON		<b>Sensors and control (Room 2)</b> Chair : Eric DEVIN		<b>Frost and Exchangers (Room 3)</b> Chair : Cyril TOUBLANC	
10:30	10:50	Effect of internal composition, pallet orientation and presence of gaps on the pressure distribution inside palletised kiwifruit packages during forced-air cooling Massey University (New Zealand) Tapia-Zapata Nicolas		PVDF-based optoacoustic spectroscopy for the identification of clathrates LSTME Busan (South Korea) Thomas Stahl		Theoretical and experimental study on a frost-free refrigerated display cabinet Central Research Institute of Electric Power Industry (Japan) Zhang Li	
10:50	11:10	Vacuum insulation in refrigerated vehicles Laboratoire d'Informatique en Image et Systèmes d'Information (France) - Centre d'énergie et de Thermique de Lyon (France) - Cemafruid (France) - CHEREAU (France) Capo Claudia		Effects of sensors and data process in the temperature control of reefers Thermo King (Spain) M. Martinez Santiago		Experimental Investigation of Two-Phase Flow Boiling Heat Transfer and Pressure Drop of Ammonia in Multipoint Minichannel Chonnam National University (South Korea) - Hanoi University of Science and Technology (Vietnam) - Electric Power University (Vietnam) Oh Jong-Taek	
11:10	11:30	Tests and qualification of thermochemical adsorption machines in refrigerated transport Cemafruid (France) Suquet Thomas		Cold room control, efficiency and analysis based on IOT connected cloud services AKO Group (Spain) Albets-Chico Xavier		Optimization and further experimental testing of a resistive sensor for monitoring frost formation in refrigeration systems C-MAST - Centre for Mechanical and Aerospace Science and Technologies, Covilhã (Portugal) - University of Beira Interior (Portugal) Aguiar Martim	
11:30	11:50	The thermochemical sorption in the temperature-controlled containers Sofrigam (France) - Coldway (France) - Laboratoire CNRS-PROMES Rambla de la Thermodynamique (France) Kacimi Abbes		Real time energy performance measurement of a refrigerating unit via gas anemometer technique Air Liquide (France) Youbi Idrissi Mohammed		Dynamic Modeling and simulation of frost formation on industrial deep-freezing heat exchangers Ecole Nationale Vétérinaire, Agroalimentaire et de l'alimentation Nantes-Atlantique (France) Badri Deyae	
11:50	12:10	Innovative Method for Evaluating Liquid Nitrogen Consumption of Cryogenic Transport Refrigerated Units AIR LIQUIDE (France) Bernard Jean-Pierre				Performance analysis of a Shell-and-tube CO2 supercritical heater with CFD modelling University of South Wales (United Kingdom) - Brunel University London (United Kingdom) Zhang Xinyu	
12:10	13:30	LUNCH + COFFEE					







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		Transport and storage (Room 1) Chair : Leo LUKASSE	Energy efficiency (Room 2) Chair : Camille FERTEL	Low GWP and natural refrigeration systems (Room 3) Chair : Thomas SUQUET
13:30	13:50	Mobile abattoir and refrigeration tunnel for laying hens SINTEF Ocean (Norway) Indergaard Erlend	Identification and implications of over-consuming domestic refrigerators and freezers London South Bank University (United Kingdom) Evans Judith	New refrigerants and sustainable refrigerant management for cold chain -Current situation in Japan and future aspect- National Defense Academy of Japan (Japan) Noboru Kagawa
13:50	14:10	Experimental assessment of the difference between new refrigerated vans and their corresponding prototypes Laboratoire d'Informatique en Image et Systèmes d'information (France) - Centre d'énergétique et de Thermique de Lyon (France) - Cemafrroid (France) Capo Claudia, Gérald Cavalier	Conceptual study of a transportable cooling system based on renewable energy for use on fruits and vegetables Norwegian University of Science and Technology (Norway) - SINTEF Ocean (Norway) - Indian Institute of Technology Kharagpur (India) Eikevik Trygve	Reducing global food waste by using natural refrigerants in the cold chain Shecco (Belgium) Koegelenberg Ilana
14:10	14:30	Ageing of refrigerated transport vehicles: development of a numerical predictive model Laboratoire d'Informatique en Image et Systèmes d'information (France) - Centre d'énergétique et de Thermique de Lyon (France) - Cemafrroid (France) Capo Claudia, Gérald Cavalier	CO2 transcritical plant with optimized dedicated mechanical subcooling University of Udine (Italy) Cortella Giovanni	Hydrocarbon Refrigerant for Refrigeration Applications in Indonesia: Performance and Safety Analysis Universitas Indonesia (Indonesia) - Université de Rennes 1 (France) Yatim Ardiyansyah
14:30	14:50	Impact of the refrigeration system on the fuel consumption and on the emissions of a small refrigerated truck Universita degli Studi di Padova, Department of Industrial Engineering (Italy) - National Research Council, Construction Technology Institute (Italy) Fabris Francesco	Study of a phase change material storage for the solar air-conditioning system of a net-zero energy hotel in a tropical region Laboratoire de Génie Civil et Génie Mécanique (France) - Equipe Matériaux et Thermo-Rhéologie, Université Rennes 1 (France) Byrne Paul	Trans-critical carbon dioxide and ammonia: energy efficiency and basic capital cost comparison for industrial refrigeration systems OFFICINE MARIO DORIN (Italy) Pisano Giacomo
14:50	15:10	Partial load test protocol for multi temperature, a way to move ahead for efficiency measurement in transport refrigeration CARRIER TRANSICOLD (France) Pourcheresse Lionel	Thermal store small scale demonstrator for liquid air energy storage Air Liquide (France) - London South Bank University (United Kingdom) - Air Liquide / Centre de Recherche Claude Delorme (France) - INRAE (France) Foster Alan	Less Than 150 GWP Options to Replace R452A for Transport Refrigeration ThermoKing (United States) Kujak Stephen
15:10	15:40	COFFEE BREAK + POSTERS SESSION /PRE-RECORDED VIDEO/ (Room 1)		
		Sustainability (Room 1) Chair : Mohammed YOUBI-IDRISSI	Standards and best practices (Room 2) Chair : Judith EVANS	Low GWP and natural refrigeration systems (Room 3) Chair : Silvia MINETTO
15:40	16:00	Implementation of a technology platform to develop sustainable strategies in order to reduce Food Loss and Waste across the continuum of food distribution in Saint-Hyacinthe Research and Development Centre, Agriculture and Agri-Food Canada, Saint-Hyacinthe (Canada) - Quebec Research and Development Centre, Agriculture Villeneuve Sebastien	Developing cold chain for Indian surimi supply chain Birla Institute of Technology and Science (India) - SINTEF Ocean (Norway) Sultan Farook Abdullah	Performance Measurements of Transcritical R744 System Using Low-Complexity Ejector Design University of Illinois at Urbana-Champaign (United States) - Creative Thermal Solutions (United States) Elbel Stefan
16:00	16:20	Decarbonization of the retail sector in the cold chain as a mean for sustainable cooling Danfoss Cooling (Denmark) Funder Kristensen Torben	Refrigeration transport consumption indicators: how to integrate best practices Cemafrroid (France) Devin Eric	Performance, cost and emissions comparison of refrigeration systems for supermarkets using refrigerants with a GWP below 150 The Chemours Company (United Kingdom) - Wheatlands Aire Valley Engineering Ltd. (WAVE) (United Kingdom) - The Chemours Company (France) Saab Samer
16:20	16:40	Towards a Sustainable Global Food Cold Chain Global Food Cold Chain Council (Germany, United States, France, Denmark, Belgium) Funder Kristensen Torben	Improving Cold Chain Energy Efficiency: EU H2020 project for facilitating energy efficiency improvements in SMEs of the food and beverage cold chains Universita degli Studi di Brescia (Italy) - Escan energy consulting (Spain) - Fraunhofer Institute for Systems and Innovation Research (Germany) - Institute of Energy Marchi Beatrice	A3 Refrigerant R290 Leak and Ignition Testing for Refrigerated Display Cases Air-Conditioning, Heating, and Refrigeration Institute (United States) Wang Xudong
16:40	17:00	Future trends of innovative green packaging of the food products to deplastification C-MAST - Centre for Mechanical and Aerospace Science and Technologies, Covilhã (Portugal) - University of Beira Interior (Portugal) Pedor Dinis Gaspar	Considerations for emissions test methodology for diesel-engine driven transport refrigeration systems Cambridge Refrigeration Technology (United Kingdom) Rhodes Christopher	Lower GWP Options to Replace R23 for Ultra Low Temperature Transport Refrigeration ThermoKing (United States) Kujak Stephen
17:00	17:20	Evolution de la production frigorifique en stockage négatif et plateformes de distribution Consultant (France) Rivet Paul	Proposal of a method to determine the effects of doors opening to size equipment of delivery trucks Cemafrroid (France) - Federico II University of Naples Department of Industrial Engineering (Italy) Suquet Thomas	Field assessment of the performance of a state-of-the-art CO2 integrated system for supermarket with distributed HVAC terminals in the shopping area National Research Council, Construction Technology Institute, Padova (Italy) - ENEX S.r.l. (Italy) - Norwegian University of Science and Technology, Trondheim (Norway) Silvia Minetto
17:20	17:40	Field measurements of integrated multipack supermarket in Portugal Norwegian University of Science and Technology (Norway) Christian Schlemminger		Thermo-economic analysis of low Global Warming Potential refrigerants for food refrigeration Federico II University of Naples Department of Industrial Engineering (Italy) - Zanotti S.p.A (Italy) Citarella Biagio
18:30	20:15	Boat transfer on the Erdre River - Château de la Poterie		
20:30	23:00	GALA DINNER - Château de la Poterie		
23:00	00:00	Shuttle to return by bus to the center of Nantes		





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Friday 28 <sup>th</sup> of August 2020 (local timetable UTC/GMT+2)			
08:30	09:00	WELCOME + COFFEE	
9:00	9:30	Plenary Session - Tom Ståle NORDTVEDT - SINTEF (Room 1) - Seafood refrigeration processing	
9:30	10:00	Plenary session - CaRe (Career in Refrigeration) - IIR Working Group (Ina Colombo, Catarina Marques) Women in the Refrigeration, Air-Conditioning and Heat Pumps Industry	
10:00	10:30	COFFEE BREAK + POSTERS SESSION /PRE-RECORDED VIDEO/ (Room 1)	
		<b>Simulation in the cold chain (Room 1)</b> Chair : Michel HAVET	<b>Sensors and control (Room 2)</b> Chair : Kristina WIDELL
10:30	10:50	Validated numerical model of heat transfer in the forced air freezing of bulk packed whole chickens University of Waikato (New Zealand) - Massey University (New Zealand) Hoang Duy	Implementation of blockchain in food supply chains: Field test monitoring of fresh aquaculture fish cold chain Laboratory of Food Chemistry and Technology, School of Chemical Engineering National Technical University of Athens (Greece) - Infratab Inc. (United States) Semenoglou Ioanna
10:50	11:10	Enhancement of Performance of a Refrigerated Locker by the Addition of Phase Change Material Harbin University of Commerce [Heilongjiang] (China) Li Xiaoyan	Food properties analysis in refrigerated transport through connected IOT devices AKO Group (Spain) - Thermo King, Global Marine Solutions (Spain) Albets-Chico Xavier
11:10	11:30	A parametric study and performance evaluation of the different vent hole configuration for fruit packaging using Computational Fluid Dynamics C-MAST - Centre for Mechanical and Aerospace Science and Technologies, Covilhã (Portugal) - University of Beira Interior (Portugal) Adhiyaman Ilangovan	CALLIFREEZE Å®; A New sensor to measure inline the degree of freezing of food products. GEA Refrigeration France (France) - AQUANTIS, EPFL (Switzerland) - ONIRIS-GEPEA (France) Nouhin Mathieu
11:30	11:50	Heat and mass transfer in a loaded truck trailer equipped with eutectic plates: a comparative numerical study Emerson Commercial and Residential Solutions (Canada) - Université de Sherbrooke (Canada) Alla Eddine Benchikh Lehocine	Digital twins to map the key quality attributes in fresh-produce supply chains University of Bern (Switzerland) - Swiss Federal Laboratories for Materials Science and Technology (Switzerland) - Citrus Research International, University of Stellenbosch (South Africa) Shrivastava Chandrima
11:50	12:40	IIR COMMISSION D2 MEMBERS MEETING (ROOM 1)	IIR COMMISSION D1 MEMBERS MEETING (ROOM 2)
12:40	14:00	LUNCH + COFFEE	
		<b>Sustainability (Room 1)</b> Chair : Jacques GUILPART	<b>Food quality (Room 2)</b> Chair : Alain LE-BAIL
14:00	14:20	SME and quality focused traceability architecture to increase sustainability and profit C-MAST - Centre for Mechanical and Aerospace Science and Technologies, Covilhã (Portugal) - University of Beira Interior (Portugal) João Paulo Curto	Examinations of Quantitative Evaluation Method of Food Freezing Process --Evaluation of Pre-cooling Freezing-- Department of Food Science and Technology, Tokyo University of Marine Science and Technology (Japan) Maekawa Ryunosuke
14:20	14:40	Humidity control and fresh air exchange in reefer containers: lowest feasible relative humidity, temperature and energy consumption Wageningen University & Research (Netherlands) Lukasse Leo	Effect of supercooling freezing on the blanched and unbalanced potato compare with conventional freezing methods Tokyo University of Marine Science and Technology (Japan) Watanabe Manabu
14:40	15:00	Cryogenic energy storage systems as a synergistic contributor to the cooling and heating supply of a refrigerated warehouse or food factory Technical University of Sofia (Bulgaria) Fikiin Kostadin	Enzymatic hydrolysis of cod heads -" effect of freezing and thawing on the quality and composition of protein hydrolysates. SINTEF Ocean (Norway) - Norwegian University of Science and Technology (Norway) Guro Møen Tveit
15:00	15:20	Cryogenic cold utilization and system integration possibilities for LNG-driven fishing vessels Norwegian University of Science and Technology (Norway) - SINTEF Ocean (Norway) Saeed Muhammad Zahid	Test of condensing units' performance and operating limits using different low GWP refrigerants MINES ParisTech (France) - ARMINES (France) - The Chemours Company (France) Haddad Etienne
15:20	16:10	CLOSING CEREMONY (Room 1)	





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POSTERS DISPLAYED DURING THE ENTIRE CONFERENCE + 2 VISIOCONFERENCE SESSIONS DURING COFFEE (			
<p><b>Effect of different film packaging on the quality of Chinese flowering cabbage during cold Storage</b> Shanghai Ocean University (China) - Vegetable Research Center, Beijing Academy of Agriculture and Forestry Sciences (China)  Liu Sheng</p>	<p><b>Experimental performances for forced-air cooling of peach fruits and energy-saving operation strategy with low-power axial fans</b> Beijing Engineering Research Center of City Heat (China) - Department of Energy and Resources Engineering, College of Engineering, Peking University (China)  Wang Guan-Bang</p>	<p><b>Optimum Proportion and Experimental Study of R22/R23/R14 Self-Cascade Refrigeration System</b> School of Energy and Architectural Engineering, Harbin University of Commerce, China (China)  Menglu Li</p>	
<p><b>Effect of Different Retailing Methods on Quality of Grape after Forced-air Cooling and Low Temperature Transportation</b> Beijing Academy of Agriculture and Forestry Sciences, National Engineering Research Center for Vegetables (China) - Shanghai Ocean University (China)  Liu Sheng</p>	<p><b>Experimental study on mist size distribution characteristics of ultrasonic humidifier</b> College of Engineering, South China Agricultural University - Engineering Fundamental Teaching and Training Center, South China Agricultural University (China)  Guo Jiaming</p>	<p><b>Salting of mackerel fillets in refrigerated brine</b>  SINTEF Ocean (Norway)  Widell Kristina N.</p>	
<p><b>Effect of Precooling, Transportation and Distribution Methods on Tomato Quality</b> Shanghai Ocean University (China) - Vegetable Research Centre, Beijing Academy of Agriculture and Forestry Sciences (China)  Liu Sheng</p>	<p><b>Influence of fish freshness on freezing process and quality</b> Department of Food Science and Technology Graduate of school Tokyo University of Marine Science and Technology (Japan)  Ozeki Akihiro</p>	<p><b>Study and application of Time-Temperature Integrator smart labels for monitoring the cold chain of active modified atmosphere packaged sea bass</b> Laboratory of Food Chemistry and Technology, School of Chemical Engineering National Technical University of Athens, Athens, Greece (Greece)  Semenoglou Ioanna</p>	

