



UNITED NATIONS ENVIRONMENT PROGRAMME  
INTERNATIONAL INSTITUTE OF REFRIGERATION  
EUROPEAN ASSOCIATION OF RAC CONTRACTORS  
ITALIAN ASSOCIATION OF RAC TECHNICIANS  
RENEWABLE ENERGY INSTITUTE  
CENTRO STUDI GALILEO

Hybrid event: on-site and on-line  
(Polytechnic University of Milan, De Donato Room)  
Simultaneous translation English-Italian

10-11 June 2021

# 19th European Conference

**The Latest Technologies in  
Refrigeration and Air Conditioning**  
The Cold Chain for Vaccines, Environment,  
Energy, Training, Certification, Legislation,  
Standards, Safety



Under the auspices of the Italian  
Ministry of Ecological Transition

*In Association with Global Leading  
Researchers and Experts from:*

United Nations Environment Programme (UNEP)  
United Nations Industrial Development  
Organization (UNIDO)  
European Commission DG Clima  
International Institute of Refrigeration (IIR)  
Association Française du Froid (AFF)  
AREA - ASERCOM - ASHRAE - AHRI - EPEE  
Politecnico of Milan, Turin  
Universities of Ancona, Genoa, Padua  
and all the AC&R European Associations

## PRESIDENTS & KEYNOTE SPEAKERS

**JIM CURLIN**, *Acting Head/Network, Policy Manager* – UNEP  
**DIDIER COULOMB**, *Director General* – IIR  
**ALBERTO CAVALLINI**, *Honorary President* – IIR  
**BENTE TRANHOLM-SCHWARZ**, *Deputy Head* – EU Commission DG Clima  
**FRANZISKA MENTEN**, *Project Coordinator* – UNIDO  
**DIVINE NJIE**, *Deputy Director, Food Systems and Food Safety* – FAO  
**STEPHEN YUREK**, *President & CEO* – AHRI  
**WALID CHAKROUN**, *Chair, ASHRAE-UNEP liaison committee* – ASHRAE  
**NOBORU KAGAWA**, *Board Member* – JSRAE  
**ANDREA VOIGT**, *Director General* – EPEE  
**MARCO BUONI**, *President* – AREA  
**FIONNUALA WALRAVENS**, *Senior Campaigner* – EIA  
**WOLFGANG ZAREMSKI**, *President* – ASERCOM  
**FRANCESCO SCUDERI**, *Deputy Secretary General* – Eurovent  
**MIKE CREAMER**, *President* – IOR  
**GERALD CAVALIER**, *President* – AFF  
**MADI SAKANDÉ**, *President* – U-3ARC  
**FEDERICO MUSAZZI**, *Secretary General* – Assoclimate  
**FRANCESCO MASTRAPASQUA**, *President* – Assocold  
**ENNIO MACCHI**, *Professor Emeritus* – Politecnico Milano  
**GIOVANNI LOZZA**, *Director, Energy Dept* – Politecnico Milano  
**FABIO POLONARA**, *Co-chair TEAP-RTOC & Politecnico Marche*  
**MARCO MASOERO**, *Director Energy Dept.* – Politecnico Torino  
**LUCA TAGLIAFICO**, *Professor* – Università Genova  
**ARMIN HAFNER**, *Professor* – Norwegian University NTNU  
**PAOLO ARTUSO**, *Researcher* – CNR-ITC Padova  
**MARCO AZZOLIN**, *Engineer* – Padova University  
**CLAUDIO ZILIO**, *Professor* – Padova University  
**CARLO MALVICINO**, *Head of CO<sub>2</sub> Emissions Reduction Strategies* – Stellantis

To participate, please get  
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# 19th European Conference

## THE LATEST TECHNOLOGIES IN REFRIGERATION AND AIR CONDITIONING

*The Cold Chain for Vaccines, Environment, Energy, Training, Certification, Legislation, Standards, Safety*

10-11 June 2021



10 June 2021

### 10 June 2021 - morning

#### Introduction

9.15 am – 10 am CEST	<b>INTRODUCTION TO THE TOPICS OF THE CONFERENCE; EUROPEAN AND GLOBAL RAC SITUATION. THE COLD CHAIN FOR VACCINES. TECHNOLOGIES; EQUIPMENT AND COMPONENTS. F-GAS AND REFRIGERANTS. ENERGY EFFICIENCY AND RENEWABLES. POLICY AND REGULATIONS.</b>
9.15	<b>M. Buoni</b> Air Conditioning & Refrigeration Association – AREA
9.30	<b>J. Curlin</b> United Nations Environment Programme – UNEP
9.45	<b>D. Coulomb</b> International Institute of Refrigeration – IIR

### 10 June 2021 - morning

#### First Session | Technologies; equipment and components

10.10 am – 1 pm CEST	<b>NEW COMPONENTS &amp; EQUIPMENT WITH ALTERNATIVE REFRIGERANTS, CONSIDERING THEIR ENERGY EFFICIENCY AND ENVIRONMENTAL ISSUES, RESULTS AND UPDATES.</b>
	<b>COORDINATORS: E. Macchi, G. Lozza</b> Polytechnic of Milan <b>CHAIRPERSONS: P. Artuso</b> CNR Padova   <b>M. Azzolin</b> Padova University   <b>M. Creamer</b> IOR
	Energy issues in relation to the air conditioning and refrigeration components and plants optimization. Secondary refrigerant plants, CO <sub>2</sub> , HC systems. Compressors and systems. Energy optimization. New components for domestic, commercial and industrial refrigeration and air conditioning. Process and design.
10.10	<b>M. Azzolin</b> Padova University – <i>“Use of CO<sub>2</sub> in a dual source solar assisted heat pump”</i>
10.20	<b>P. Artuso</b> CNR Padova – <i>“Integrated CO<sub>2</sub> heat pump systems for hotels”</i>
10.30	<b>M. Ascani</b> Angelantoni Industrie – <i>“Innovation for CO<sub>2</sub> refrigeration systems efficiency”</i>
10.40	<b>S. Capanelli</b> Carel Industries – <i>“Benefits and reliability of air-to-water heat pumps with R-290”</i>
10.50 – 11.20	<b>Q&amp;A</b>
11.20 – 11.40	<b>Coffee break</b>
11.40	<b>M. Bonfanti</b> Officine Mario Dorin – <i>“New R744 transcritical compressor”</i>
11.50	<b>M. Caldognetto</b> Bitzer – <i>“Digitalization applied to refrigeration compressors”</i>
12.00	<b>B. Bella</b> Emerson – <i>“Horizontal Variable Speed Scroll for R290 Integral Display Cabinets”</i>
12.10	<b>M. Creamer</b> Business Edge – <i>“Centrifugal Vapour Compressor Oil-Free”</i>
12.20	<b>M. Bassi</b> Embraco – <i>“Ecodesign-Labeling EEI: Variable speed compressors with Smart Control”</i>
12.30 – 13.00	<b>Q&amp;A</b>

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**Lunch break**

### 10 June 2021 - afternoon

#### Second Session | F-Gas and Refrigerants

2 pm – 5 pm CEST	NEW REFRIGERANTS AND FUTURE PERSPECTIVES, IN REFERENCE TO THE F-GAS REGULATION AND ENERGY SAVING.
	<p><b>COORDINATOR:</b> A. Cavallini Padova University - IIR  <b>CHAIRPERSONS:</b> D. Coulomb IIR   W. Chakroun ASHRAE   C. Zilio Padova University   N. Kagawa JSRAE   A. Hafner NTNU</p>
	New low GWP refrigerants. Developments, perspectives and forecasts on new alternative refrigerants. New synthetic and natural refrigerants, pure and mixtures HFC, R32, HFO-1234yf/ze/za, HFO mixtures, CO <sub>2</sub> , ammonia, hydrocarbons; secondary refrigerants; lubricants for synthetic refrigerants.
14.00	<b>D. Coulomb</b> IIR – <i>“Environmental and Refrigerants Issues Related to Refrigeration Technologies”</i>
14.10	<b>N. Kagawa</b> JSRAE – <i>“The importance of Refrigerant Management Circle”</i>
14.20	<b>W. Chakroun</b> ASHRAE – <i>“Low-GWP Refrigerants in High Ambient Temperatures Countries”</i>
14.30 – 14.50	<b>Q&amp;A</b>
14.50	<b>A. Hafner</b> NTNU – <i>“Refrigeration Technology towards 2030 and beyond: the Natural Working Fluids way”</i>
15.00	<b>C. Zilio</b> Padova University – <i>“The solubility of low-GWP refrigerants in oil”</i>
15.10	<b>P. Mattavelli</b> Errecom – <i>“Lubricants for lower GWP Refrigerants”</i>
15.20 – 15.40	<b>Q&amp;A</b>
15.40	<b>S. Filippini</b> LU-VE Group – <i>“New generation of low-GWP refrigerants”</i>
15.50	<b>S. Saab</b> Chemours – <i>“Performance Impact of Low-GWP refrigerants in Condensing Unit”</i>
16.00	<b>S. Fedeli</b> General Gas – <i>“Performance in commercial refrigeration with different refrigerants”</i>
16.10	<b>M. Lorusso</b> Nippon Gases – <i>“A2L, energy efficiency and R472A mixture”</i>
16.20 – 17.00	<b>Q&amp;A</b>

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11 June 2021

11 June 2021 - morning

Third Session | Green Cooling and Energy Efficiency

9.15 am – 12 pm CEST	GREEN COOLING AND ENERGY EFFICIENCY.
	<p><b>COORDINATOR:</b> A. Cavallini Padova University - IIR</p> <p><b>CHAIRPERSONS:</b> M. Masoero ATF &amp; Polytechnic of Turin   F. Scuderi Eurovent   F. Polonara TEAP – RTOC   F. Musazzi Assoclisma   L. Tagliafico Genova University   C. Malvicino Stellantis</p>
	European Green Deal, ecodesign. Energy efficiency in plants. Heat pumps, cooling with absorption and adsorption plants. Renewable energy and chemistry in air conditioning and refrigeration. Evaporative cooling, district cooling and magnetic cooling. Mobile air conditioning.
9.30	<b>M. Masoero</b> ATF & Poli Torino – <i>“Introduction: The role of technical systems in preventing the diffusion of COVID-19”</i>
9.40	<b>F. Scuderi</b> Eurovent – <i>“Ecodesign and Energy Labelling”</i>
9.50	<b>F. Musazzi</b> Assoclisma – <i>“The heat pump in the EU Green Deal scenario”</i>
10.00	<b>L. Tagliafico</b> Genova University – <i>“Solid state and magnetic refrigeration near room temperature”</i>
10.10	<b>F. Polonara</b> TEAP – RTOC – <i>“The report of energy efficiency task force of Montreal Protocol”</i>
10.20 – 10.50	<b>Q&amp;A</b>
10.50	<b>C. Malvicino</b> Stellantis – <i>“Worldwide Regulations on refrigerants and efficiency in automotive”</i>
11.00	<b>K. Berglöf</b> ClimaCheck – <i>“Performance based predictive”</i>
11.10	<b>K. Nourrice</b> Frascold – <i>“Energy analysis for all-in-one CO<sub>2</sub> systems in commercial refrigeration”</i>
11.20	<b>T. Funder-Kristensen</b> Danfoss – <i>“Energy analysis for all-in-one CO<sub>2</sub> systems in commercial refrigeration”</i>
11.30	<b>D. Tsimpoukis</b> Metro – <i>“Waste-heat powered absorption chiller on existing transcritical CO<sub>2</sub> plant”</i>
11.40 – 12.00	<b>Q&amp;A</b>

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**Lunch break**

**11 June 2021 - afternoon**

### Fourth Session | Regulations & Certifications Globally

<b>1 pm – 3 pm CEST</b>	<b>POLICY: GLOBAL F-GAS PHASE DOWN AND EU REGULATION REVIEW, TRAINING AND CERTIFICATION.</b>
	<b>COORDINATOR: J. Curlin</b> UNEP <b>CHAIRPERSONS: B. Tranholm-Schwarz</b> EU Commission DG Clima   <b>S. Yurek</b> AHRI   <b>A. Voigt</b> EPEE   <b>W. Zaremski</b> ASERCOM   <b>F. Mastrapasqua</b> Assocold   <b>M. Buoni</b> AREA   <b>F. Walravens</b> EIA
	The Kigali Amendment: HFC Phase-down, flammable refrigerants' standards, illegal refrigerants, inspections, logbook, maintenance. Containment, recovery and recycling. Training and certification in Europe and Italy. Products' and components' certification.
13.00	<b>B. Tranholm-Schwarz</b> DG Clima – <i>“The revision of the European Fgas regulation”</i>
13.10	<b>A. Voigt</b> EPEE – <i>“Revision of the F-Gas Regulation: “Fine-tuning the gold standard”</i>
13.20	<b>W. Zaremski</b> ASERCOM – <i>“The F-Gases Regulation, Phase Down, Certification and Licences”</i>
13.30 – 13.50	<b>Q&amp;A</b>
13.50	<b>F. Mastrapasqua</b> Assocold – <i>“The Italian Recovery Plan and the phase down of HFCs”</i>
14.00	<b>F. Walravens</b> EIA – <i>“Adapting to change; embrace future challenges and opportunities”</i>
14.10 – 14.20	<b>Q&amp;A</b>
14.20	<b>J. Curlin</b> UNEP – <i>“The Kigali amendment, a global refrigerants reduction ”</i>
14.30	<b>S. Yurek</b> AHRI – <i>“Industry Challenges and Opportunities”</i>
14.40	<b>M. Buoni</b> AREA – <i>“Certification and training with the new refrigerants”</i>
14.50 – 15.00	<b>Q&amp;A</b>

**Coffee break**

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**11 June 2021 - afternoon**  
**Fifth Session | The Cold Chain**

<b>3.30 pm – 5 pm CEST</b>	<b>THE COLD CHAIN, FOOD AND VACCINES DISTRIBUTION AND CONSERVATION, COLD STORAGE AND TRANSPORT, CONTROLS AND DATA LOGGERS.</b>
	<b>COORDINATOR: M. Masoero</b> ATF & Polytechnic of Turin <b>CHAIRPERSONS: A. Cavallini</b> IIR   <b>F. Menten</b> UNIDO   <b>D. Njie</b> FAO   <b>G. Cavalier</b> AFF   <b>M. Sakandé</b> U-3ARC
	<p>New technology in the cold chain: vaccines and food preservation; vehicles, trains, ships, cold storages; applications in commercial and domestic refrigeration, supermarkets, hospitals, vaccination centres and industry. Energy saving optimization. Solar refrigeration. Insulation; environmental control in food processes, safety control in the cold chain ATP.</p>
15.30	<b>D. Njie</b> FAO – <i>“Impacts of COVID-19 on Cold Chain Logistics in Food Systems”</i>
15.40	<b>F. Menten</b> UNIDO – <i>“Montreal Protocol and cold chain on the SDGs. The crucial role of industry in the “Decade of Action”</i>
15.50	<b>M. Sakandé</b> U-3ARC – <i>“The Cold Chain in Africa”</i>
16.00 – 16.20	<b>Q&amp;A</b>
16.20	<b>G. Cavalier</b> AFF – <i>“Refrigeration for Vaccines”</i>
16.30	<b>V. Tsyplakov</b> Mirai Intex – <i>“Air cycle refrigeration fight the pandemic ”</i>
16.40	<b>D. Coulomb</b> IIR – <i>“The cold chain for health and the environment”</i>
16.50 – 17.00	<b>Q&amp;A</b>

### Conclusions to the Conference