

# REFRIGERANTS AND GLOBAL WARMING: WILL CARBON DIOXIDE BE THE ULTIMATE SOLUTION?

December 4<sup>th</sup>, 2007. 8.30 a.m.

**CASSA DI RISPARMIO DI PADOVA E ROVIGO  
GRUPPO SAN PAOLO IMI SPA  
Via Adige, 6  
Sarmeola di Rubano-Padova (Italy)**

This one-day Seminar is organized by AICARR<sup>(\*)</sup> Refrigeration Technical Committee in cooperation with the Department of Fisica Tecnica – University of Padova (Italy).

The seminar is arranged in two parts.

In the first part three well-known experts will outline, by coupling scientific and field-experience points of view, the state-of-the-art and perspectives about the use of carbon dioxide as a refrigerant and about the main components, such as compressors, heat exchangers and lubricants. A representative of the Italian Government DG Environment will update about the development of EU and local Regulation and Directives on refrigerants.

In the second part, the most recent applications both in subcritical and transcritical plants in the Southern part of Europe (Italy and Spain, mainly) will be reported and the impact of compressor efficiency and heat transfer efficiency on the overall system performance will be analysed.

**Simultaneous Italian-English translation service will be available.**

**8.30-9.30** Registration

**9.30-9.40** Welcome: AICARR President, ASSISTAL Delegate, IIF/IIR Italian Representative

**9.40-10.10** Introduction of AICARR Refrigeration Technical Committee (CTR)

Mr. Carmine Casale, Chairman CTR

## **Chairmen:**

**Prof. Alberto Cavallini**, Dipartimento di Fisica Tecnica, Università di Padova

**Mr. Carmine Casale**, AICARR.

**10.10-10.55 Refrigerants and global warming: Prospective on Carbon Dioxide**

*Predrag Hrnijak, University of Illinois at Urbana-Champaign USA*

**10.55-11.40 The Beneficial Properties of Carbon Dioxide as a Refrigerant**

*Andy Pearson, Star Refrigeration Ltd, Glasgow GB*

**11.40-12.25 Challenges for Development of CO<sub>2</sub> Compressors - State of the Art and Future Perspectives**

*Hermann Renz, Chairman Technical Committee Compressors ASERCOM, Germany*

**12.25-13.00 Italian Vision and perspectives about European F-Gas Regulation**

*Matteo Di Nicola, Italian DG Environment, Rome*

**13.00-14.30** Lunch

**14.30-15.15 Review on lubricant effects on carbon dioxide heat transfer processes**

*Sergio Bobbo, CNR-ITC, Padova*

*Claudio Zilio, Dipartimento di Fisica Tecnica, Università di Padova*

**15.15-15.40 Development of a CO<sub>2</sub> refrigeration unit for train air conditioning**

*Cesare Maria Joppolo, Politecnico di Milano, AICARR President*

*Matteo Fedeli, Luca Molinaroli, Dipartimento di Energetica, Politecnico di Milano*

**15.40-16.05 Venice freight yard plant: an example of successful use of carbon dioxide for frozen food preservation**

*Mauro Marinelli, Marco Cinciripini, Frigo Tecnica Internazionale spa, Ripatronsone AP*

**16.05-16.30 Recent applications of reciprocating compressors in commercial refrigeration operating with single and two-stage compression**

*Sergio Girotto, Enex srl, Ponzano TV*

*Silvia Minetto, Dipartimento di Fisica Tecnica, Università di Padova*

**16.30-16.55 Scroll Compressors for R744 (CO<sub>2</sub>) refrigeration: Development and Field Experience**

*Eric Winandy, Copeland Europe, Belgium*

**16.55-17.20 Industrial cascade refrigeration with carbon dioxide: Italian and Spanish field experiences**

*Maurizio Giuliani, Johnson Controls Refrigeration, S.L. Barcelona, Spain*

*Roberto Tavecchio, Johnson Controls Holding Italy srl, Cusano Milanino MI*

**17.20-17.45 Discussion and closure**

For registration and info

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(\*) AICARR is a cultural association among people whose activity is directly or indirectly related to the science and technology of systems set up for the production, distribution and use of thermal energy for residential, commercial and industrial purpose. AICARR also brings together people involved with problems relating to renewable energy, urban climate, indoor environment, natural resources use, systems management and maintenance.