2008 was a milestone year for the IIR: its centenary celebrated in several countries, provided an opportunity to showcase not only the rich and fascinating history of refrigeration, but also the ever-increasing global challenges and a lively, constantly changing refrigeration community.

2009 should enable us to continue to build on the centenary and continue to convey messages.

This will be all the more necessary in an economic context that has considerably worsened in a lasting manner. Companies in the refrigeration and air-conditioning sector will undoubtedly bear the brunt of some of the repercussions. However, I firmly believe that the refrigeration sector will be less affected by the current slowdown than most other sectors. We will always need refrigeration, and additional investments will be required in the short term in our sector. Major energy-saving initiatives will have to be implemented, particularly within the framework of climate-change-related challenges, and also with a view to ensuring more rational, more economical development in the long term. Refrigerant replacement, including the scheduled phase-out of HCFCs, must take place at a faster pace. Replacement solutions must involve a greater degree of innovation and a higher level of investment, especially now that HCFCs are undergoing reappraisal (see the Focus). Beyond new restrictions and of course difficulties encountered when adapting to new situations, this process will be a veritable source of numerous opportunities for unprecedented economic development.

I hope you will all manage to emerge from this difficult period strengthened and that you will seize the opportunity to implement sustainable development: this development will demonstrate its true value during periods such as that which we are currently encountering.

Happy New Year!

Didier Coulomb, Director of the IIR

2008 a été une année faste pour l'IIR : son centenaire, célébré dans de plusieurs pays, a permis de montrer non seulement une histoire du froid déjà riche et passionnante, mais aussi des défis mondiaux croissants et une communauté toujours vivante et en renouvellement.

L’année 2009 devra permettre de poursuivre nos efforts de communication en prenant appui sur ce Centenaire.

Ce sera d’autant plus nécessaire que la conjoncture économique mondiale s’est profondément et durablement détériorée. Les entreprises du froid et du conditionnement d’air en subiront certainement des conséquences. Je crois toutefois profondément que le ralentissement sera moins fort que dans la plupart des autres secteurs. Nous aurons toujours besoin de froid et de plus, davantage d’investissements seront nécessaires à court terme dans ce secteur. De très importants efforts d’économie d’énergie devront être effectués, notamment pour faire face aux défis du changement climatique, mais aussi dans une optique de développement économique plus rationnel et économique à long terme. Le renouvellement des frigorigènes devra s’accélérer, avec la disparition programmée des HFC. Les solutions de remplacement devront faire preuve de davantage d’innovation et d’investissements, d’autant que les HFC sont maintenants sur la sellette (cf. le focus). C’est au-delà des contraintes nouvelles et des difficultés évidentes d’adaptation, une très réelle source d’opportunités pour de nouveaux développements économiques.

Je vous souhaite donc à tous de passer ce cap difficile et d’en sortir renforcé : je vous souhaite un vrai développement durable : c’est dans une période telle que celle-ci que ce terme prend toute sa valeur.

Bonne année 2009 !

Didier Coulomb, Director of the IIR
**IIR events**

**International events**

- **Dinan, France**
  “Pôle Cristal” in Dinan, France, organized on October 9-10, 2008 a conference on industrial refrigeration and thermodynamic systems, celebrating the centenaries of the IIR and the French Association of Refrigeration (AFF). J. Paul, President of the Executive and the Management Committees of the IIR, D. Couboul, Director of the IIR and P. Rivet, in charge of AFF’s centenary, presented papers.

- **Wellington, New Zealand**
  A 1-day celebration of the IIR’s centenary took place in Wellington, New Zealand, on October 14, 2008. Papers on the past, present and future of refrigeration technology and industry were presented. Don Cleland, Head of Section C of the IIR’s Science and Technology Council, received the Ian Syminton Prize.

- **Yverdon-les-Bains, Switzerland**
  The Swiss Association of Refrigeration (ASF), French-speaking section, held its annual general meeting as a special event dedicated to the IIR’s centenary in Yverdon-les-Bains, Switzerland, on November 5, 2008. Papers presented during the conference at UNESCO on June 12, 2008, were presented once again.

- **Poznan, Poland**
  An IIR-co-sponsored conference, Design and operation of environmentally friendly refrigeration and AC systems, took place in Poznan, Poland, on October 15-17, 2008. It also provided an opportunity to celebrate the IIR’s centenary and the role of Poland in refrigeration science and technology.

- **Belgrade, Serbia**
  The 39th International Congress and Exhibition on heating, refrigeration and air conditioning in Belgrade, Serbia, an IIR-co-sponsored event, took place on December 3-5, 2008. It celebrated the IIR’s centenary and the role of Serbia from the very beginning of the IIR. A Serbian version of the centenary brochure was given to the participants.

- **Cemafroid**
  Cemafroid, a French organization handling, testing and providing expertise on refrigeration equipment, organized a “Day on the cold chain” in Antony, France, focusing on various issues in certification and agreements that Cemafroid has obtained from the French government. The IIR’s centenary was also celebrated.

- **Transfrigoroute**
  Transfrigoroute International held its Annual General Meeting in Cascais, Portugal, on October 23-24, 2008. D. Couboul presented a paper on energy consumption and refrigerant emissions.

- **Delegates of IIR and REHVA last June discussed the idea of a workshop on the refurbishment of existing buildings and AICARR (the Italian Association of Air Conditioning Heating and Refrigerating) agreed to organize an initial workshop involving persons from all three organizations. The workshop was held in Milan on October 31, 2008 and was chaired by Prof. Renato Lazzarin, President of AICARR and President of the IIR’s Commission E1. The participants decided to hold a conference in October 2009. renato@gest.unipd.it www.aicarr.it

**Conference update**

- **A record number of IIR events will be held in 2009 and there’s something for everyone!**

  - 1st IIR Workshop on Refrigerant Charge Reduction in Refrigerating Systems will be held in Antony, France, on April 6-7, 2009. Contact helene.macchi@cemagref.fr to register and present a paper.
  - The 1st IIR Cold Chain Conference will take place in Singapore on April 27-29, 2009. It will bring together the leading professionals in the field and present cutting-edge research and technologies, case studies, practical applications, logistics and transport issues: david@airah.org.au http://www.airah.org.au/iir-coldchain09.asp
  - The next conference in a series of leading-edge IIR events on ammonia is to be held in Ohrid, Macedonia, on May 7-9, 2009: Ammonia Refrigeration Technology. Present a paper and register: ristoci@ukim.edu.mk www.mf.ukim.edu.mk/web_ohrid2009/ohrid-2009.html
  - The 3rd International Conference on Magnetic Thermag III Refrigeration at Room Temperature will take place in Des Moines, USA, on May 12-15, 2009. Register for this cutting-edge event: vitkp@ameslab.gov http://www.ucs.iastate.edu/innmet/thermag/home.html
  - The 8th Conference on Phase-Change Materials and Slurries is to be staged by the IIR, working party in this field in Karlsruhe, Germany, on June 3-5, 2009. Contact stefanie.tolmie@hs-karlsruhe.de or laurence.fournaison@cemagref.fr to present a paper and register.
  - The 3rd Conference on Thermophysical Properties and Transfer Properties of Refrigerants is to take place in Boulder (CO), USA, on June 23-26, 2009. Submit a paper and register: piotr.domanski@nist.gov or mark.mclinden@nist.gov www.iirboulder2009.org
  - For an update on the state of the art in the compressors field, register for the 7th IIR International Conference on Compressors and Coolants – Compressors 2009 to be held in Casta Papiernicka, Slovak Republic, on September 30-October 2, 2009. Present a paper and register: zvazchkt@internet.sk www.internet.sk/zvazchkt
  - The IIR-co-sponsored 47th AICARR International Conference will be held in Rome, Italy, on October 8-9, 2009. REHVA and ASHRAE are also co-sponsoring this event. For full details: conveggoroma@aicarr.it renato@gest.unipd.it www.aicarr.it

**IIR-elearning-training partnership**

- **The IIR and elearning-training have partnered to encourage access to on-line training courses in refrigeration, especially in developing countries:** IIR members will be able to benefit from training courses on Refrigeration Fundamentals, Air Conditioning Fundamentals, CO₂ Refrigeration, and F-gas European regulations produced by elearning-training at discounted prices; IIR members from developing countries (according to the OECD list) benefit from a 50% discount, while members from developed countries are entitled to a 10% discount. elearning-training, part of Star Refrigeration, received a prestigious Cooling Industry Award in 2007. The discount code is available on the home page of the IIR’s Web site (www.iirb.org) in the member section (green area).

**Briefs**

- **François Billiard,** Honorary Director of the IIR, recently became chevalier of the Legion of Honour. André Gac, also Honorary Director of the IIR, presented the medal. The IIR wishes François Billiard all the best for his retirement.

- **The IIR** was deeply saddened to learn of the death of Prof. Eddie Leonardi in December 2008. Eddie was Professor of Mechanical Engineering at the University of New South Wales, Australia, and taught refrigeration, air conditioning, thermodynamics, fluid dynamics, heat transfer and computing. Besides being a member of Commission B1 and a private member of the IIR, he was also Technical Editor of AIRAH journal for many years and member of the Editorial Advisory Board of the International Journal of Heat and Mass Transfer and International Communications in Heat and Mass Transfer. The IIR extends its sincerest condolences to Eddie’s family.

**News from IIR members**

- **Kinarca obtains ISO 22000 certification for its gel-ice machine**

  The IIR extends its partntered to encourage access to on-line training courses in refrigeration, especially in developing countries: IIR members will be able to benefit from training courses on Refrigeration Fundamentals, Air Conditioning Fundamentals, CO₂ Refrigeration, and F-gas European regulations produced by elearning-training at discounted prices; IIR members from developing countries (according to the OECD list) benefit from a 50% discount, while members from developed countries are entitled to a 10% discount. elearning-training, part of Star Refrigeration, received a prestigious Cooling Industry Award in 2007. The discount code is available on the home page of the IIR’s Web site (www.iirb.org) in the member section (green area).
the ice is hygienic and not exposed to dust; ability to operate at low temperatures: it is possible to reach temperatures down to –6°C; an energy saving of 30-40% in comparison to traditional ice generation; lower infrastructure costs; reduced chilling time compared with traditional ice; longer shelf lives for food-stuffs.

www.kinarca.com/frames_ingles/hielo.htm

In the news

Markets

- **Worldwide refrigerator market**
  According to the Japan Electrical Manufacturer's Association (JEMA), the worldwide demand for refrigerators topped 79.3 million units in 2006, 82.3 million units in 2007, 85 million units in 2008 and is predicted to reach 90.1 million units in 2010 (+13.6% compared with 2006).
  Geographically, demand in China, Southeast Asia, Latin America and Eastern Europe is expected to expand, while demand in North America and Western Europe is expected to remain firm and focused on replacement demand.
  China has the highest demand and India and Brazil have the highest predicted growth rates for the period 2006-2010. See the table below.

<table>
<thead>
<tr>
<th>Country</th>
<th>Demand in 2006</th>
<th>Demand in 2010</th>
<th>Growth</th>
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<tbody>
<tr>
<td></td>
<td>1000 units</td>
<td>%</td>
<td>1000 units</td>
</tr>
<tr>
<td>China</td>
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<tr>
<td>Russia</td>
<td>3,242</td>
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<td>3,756</td>
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</tbody>
</table>

JARN, November 25, 2008

- **Russian refrigeration market**
  The Russian refrigeration market is rapidly expanding. According to Alexander Baranenko, Chairman of the International Academy of Refrigeration, 300 000 companies are currently involved in refrigeration in Russia. About 6 million refrigerating units were added to the existing 69 million units in 2007. The air-conditioning sector grew by 20% in 2007 thanks to rising numbers of new buildings. Industrial refrigeration sales figures are expected to reach USD 923 million in 2008 and USD 1207 million in 2010. A. Baranenko considers that refrigerated transport of food has a huge potential for development.
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  China has the highest demand and India and Brazil have the highest predicted growth rates for the period 2006-2010. See the table below.


Trends and Figures

- **Benefits of refrigeration in reducing stomach cancers highlighted**
  In its 2008 World Cancer Report, the World Health Organization (WHO) estimates that by 2010, cancer will be the leading cause of death in the world, surpassing heart disease and causing more deaths than AIDS, malaria and tuberculosis combined. WHO highlights that refrigeration and improved hygiene have reduced stomach cancer by 89% in men and 92% in women since 1930 in the United States.

Green buildings: not so expensive

- A study sponsored by the investment firm Good Energies on 150 green building projects around the world shows that, on average, they cost only around 2% more than traditional buildings and yielded 33% savings on energy use. These results can counter the idea that green building is too expensive since a 2007 survey from the World Business Council for Sustainable Development, for example, reported that business leaders believed green buildings would cost 17% more than traditional buildings.

www.greenetechmedia.com

Events

- **The latest c-dig (carbon dioxide interest group) meeting took place in Lyon, France, on November 3-4, 2008 and was attended by about 40 researchers, compressor manufacturers and industry stakeholders. It gave an overview of the current state of the art of CO2 applications in refrigeration: CO2 as refrigerant in the low stage of a cascade system, CO2 as refrigerant in transcritical cycles and CO2 (or CO2 hydrate slurry) as secondary refrigerant. Jean-Luc Dupont represented the IIR and presented IIR projects around the world shows that, on average, they cost only around 2% more than traditional buildings and yielded 33% savings on energy use. These results can counter the idea that green building is too expensive since a 2007 survey from the World Business Council for Sustainable Development, for example, reported that business leaders believed green buildings would cost 17% more than traditional buildings.**

www.tecumseh-europe.com

DKV news

- **DKV’s annual conference held in Ulm in November 2008**

- **NOAA Greenhouse Gas Index**
  Researchers at the US National Oceanic and Atmospheric Administration (NOAA) developed what they call a “scientifically unambiguous” index, that they say will allow them to track changes in the gases that contribute the most to the warming greenhouse effect. To create the Annual Greenhouse Gas Index (AGGI), NOAA scientists used measurements of greenhouse gas concentrations, recorded around the world since 1979. They accounted for only the main "long-lived" greenhouse gases that remain in the atmosphere and are uniformly mixed throughout the global atmosphere; those gases include carbon dioxide, methane, nitrous oxide, CFC-11, CFC-12 and a set of 10 minor long-lived halogen gases including CFC-113, HCFC-22, HFC-141b, HCFC-142b and HFC-134a.
  For the year 2007, the total AGGI was 1.24 (an increase in total radiative forcing of 24% since 1990). As expected, CO2 (63.4%) dominates the total radiative forcing with methane. CFC-11 and CFC-12 (8.6% together) are relatively smaller contributors thanks to the CFC phase-out in application of the Montreal Protocol. The 10 minor halogen gases represent 3.2% of the total forcing with HFC-134a representing 0.26%. NOAA concludes that “the slowdown in the methane growth rate and the decline in the CFCs has tempered the increase in the net radiative forcing considerably.”

www.dkv.org info@dkv.org

Chillventa: brilliant premiere

- The first Chillventa show took place in Nuremberg, Germany, on October 15-17, 2008. The show drew almost 30 000 trade visitors from over 90 countries and 804 exhibitors from 43 countries. Energy efficiency was showcased in a context of EU climate protection targets calling for a 20% reduction in CO2 emissions compared with 1990 levels.


Briefs

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Data centre cooling

Data processing environments were estimated in 2006 to consume about 1.5% of the total electricity in the US. Data centre power consumption has roughly doubled in the last 5 years and is expected to double again in the next 5 years to more than 100 billion kWh.

Estimates of power costs for US data centres now range as high as 3.3 billion USD.

This increase has coincided with the adoption of new blade server technology. Traditional data centres were intended to accommodate 2 to 3 kW per rack. However, power requirements for blade servers today can be as high as 20 to 30 kW. In addition to increased power supply requirements, the new high-density environments - with numerous blades packed tightly into a rack - generate significantly more heat than traditional servers, and therefore require more cooling capacity.

A survey conducted by Emerson Network Power, found that 64% of all data centres will not have enough electricity to handle all critical computing functions by 2011. However, solutions exist: a 2007 EPA report to the US Congress concluded that reduction of data centre energy consumption by 50% by 2011 was possible.

For example, most data centres have implemented best practices such as the hot-aisle/cold-aisle rack arrangement. Potential exists in sealing gaps in floors, using blanking panels in open spaces in racks and avoiding mixing of hot and cold air. Computational fluid dynamics (CFD) can be used to identify inefficiencies and optimize airflow.

Recent technologies, such as digital scroll compressors and variable frequency drives in computer room air conditioners (CRACs) allow high energy efficiencies to be maintained at partial loads. High-density data centres up to 30 kW per rack require supplemental cooling units, which are mounted above and alongside equipment racks, and pull hot air directly from the hot aisle and deliver cold air to the cold aisle. Compared with conventional CRACs, supplemental cooling units can reduce cooling costs by up to 30%.

1. Data Center Cooling, Scafolding CP, Weaver TS. ASHRAE Journal, August 2008

Energy storage thanks to refrigeration

Electrical energy is notoriously difficult to store, especially on a large scale and this can be particularly problematic when dealing with irregular sources such as wind power for which there can be a great mismatch between energy supply and demand. The Night Wind Cold Store project aims at storing wind power at night. The principle is simple: to cool the cold stores and products (as if charging a battery) to a greater extent when the energy supply exceeds demand and energy prices are lower, and to release this energy during day time peak hours. In the case of frozen foods, slight temperature variations do not entail important efficiency losses. The temperature variations should not exceed the frozen foods temperature range (~18°C to ~27°C) limit. However, it is essential for the proponents of the system to certify that the “NightWind” battery operation has no adverse effects on the quality of the stored products. Tests conducted over 8 months with 10 different food samples showed that the attributes of foods stored in frozen state at variable temperatures were comparable but generally slightly inferior to those of foods maintained at a constant temperature. It is also necessary to develop a specific control system to operate a cold store as a Night Wind “battery”, taking into account parameters such as input of wind energy predictions, energy cost predictions, calculation of time-series for lowest costs or optimal grid control, control of the capacity of the refrigeration compressors, measurement of air and product temperatures, adjustment of the dynamic cold store model in order to optimize (future) temperature predictions, etc. The differences in the time scales of the air temperature (minutes) and the product temperature dynamics (days) make it very difficult to perform optimization of compressor-capacity time series, but recently a fast control system was developed and successfully tested on a small storage facility with success.

From Cold Storage of Wind Energy – NightWind, September 2007 by S.M. van der Sluis, Head of IIR Section D and project coordinator, www.nightwind.eu

Automated systems for refrigerated transport

The refrigerated transport sector is looking for solutions to reduce fuel consumption, refrigerant emissions and noise emissions.

• Autonomous systems cooled by cryogenic secondary coolants offer alternatives. A system developed in Germany uses tanks of liquid nitrogen (~196°C) fixed under the vehicle for an automated direct or indirect (with an exchanger) system using injection for cooling. The system’s weight is similar to that of a traditional unit, but allows for substantially less CO2 emissions and fuel consumption. As an example, a dual-temperature lorry carrying 80% fresh products and 20% frozen foods using this system could release as little as 1.5 tonnes equivalent CO2 vs. 25 with a traditional system. The system also less noisy and cools goods 2-3 times faster than other systems. According to tests, tanks within the 450-1200 litre capacity range could offer 1-2 days autonomy. Notwithstanding bulk issues, 1000 such vehicles are now in service in Germany.

• Autonomous insulated containers are another solution. Olivo manufactures containers with a capacity of 50-1400 litres, operating thanks to eutectic plates or dry ice, allowing for autonomy of up to 24 hours. Containers are also a flexible solution as they make it very easy to transport very different types of goods (frozen or chilled) in the same vehicle and do not require controlled temperature hubs for loading or unloading.


H2 update

The European Commission is providing €67.6 million in funding for Air Liquide’s Horizon Hydrogen Energy (H2E) Innovation Program. The 7-year overall programme aims at building sustainable and competitive hydrogen-energy solutions and will require almost €200 million in total funding. A particular research focus will be the development of innovative technologies for hydrogen production, using renewable energy and hydrogen storage and industrialization of fuel cells. H2E will also contribute to the setting up of a suitable regulatory framework, and will familiarize the wider public with this new, clean energy vector. Air Liquide intends to be ready for the emergence of hydrogen in transport by 2015. http://www.airliquide.com

Linde recently opened the world’s first hydrogen filling station for fuel cell passenger ships in Hamburg. The Zemship filling station provides fill-ups of hydrogen gas for this “zero emissions ship.” The first passenger ship for 100 people to be operated via a hydrogen fuel cell will convey passengers on the Alster and the Elbe rivers. For fuelling, liquid hydrogen stored at a temperature of -253°C is transformed into hydrogen gas in an evaporator and then compressed up to 450 bar via a two-stage compressor system. With 300 000 hydrogen fill-ups by the end of last year, the company has set a new fuelling record. To prove that hydrogen is well-suited as a fuel for ships, the Hamburg Office of Urban Planning and Environmental Affairs has brought together Germanische Lloyd AG, Proton Motor, Hamburger Hochbah AG, the Linde Group, Alster-Touristik GmbH, Hochschule fuer Angewandte Wissenschaften, Hamburg, hySolutions GmbH and The UJV Nuclear Research Institute for this EU-sponsored project.


Temperature-sensitive products

DHL has launched a Europe-wide solution for customers shipping small volumes of temperature-sensitive products. Throughout the entire journey in refrigerated shipping containers, the temperature of the pharmaceutical shipment is continuously monitored and transmitted via GPS (Global Positioning System). Dedicated IT tools allow each customer to track the status and temperature of all shipments online in real time. In addition, all warehouses
and cross docking stations are specifically equipped to guarantee continuous temperature control. www.dhl.com

- Cold chain first for Continental Airlines: the airline has obtained accreditation under the Qualified Envirotainer Provider Training and Quality programme (QEP) for its management of shipments using temperature-controlled air cargo containers. Continental Airlines’ ClimateSecure systems are also increasing business in non-pharmaceutical goods such as cut flowers and frozen fruit juice. www.envirotainer.com

- UPS has announced “significant expansion” of its capabilities for shipment of temperature-sensitive medical items, including round-the-clock refrigeration or replenishment of dry ice. As necessary UPS has implemented Proactive Response, a sophisticated monitoring tool that matches data on where a package is located compared with where it should be. The company is operating its cold-chain services in 72 countries. UPS is to open a 20 000 m² healthcare distribution facility in Roermond, The Netherlands, later this year. www.cargonewsasia.com

- The French Refrigeration Association (AFF) and the French Society of Pharmaceutical Science and Technology (SFSTP) have jointly published a guide entitled Guide pratique : chaîne du froid pour les médicaments. The 196-page guide (in French) is intended to address the needs of those handling increasingly temperature-sensitive drugs, particularly in the transport sector. The guide is on sale (60 € for AFF members, 75 € for non-members): www.aff.asso.fr

Briefs

- HFO-1234yf: results of SAE investigations The Society of Automobile Engineers (SAE) International Cooperative Research Program (CRP) presented its findings on the new alternative refrigerant for mobile air-conditioning systems HFO-1234yf. SAE is a global association of 115 000 engineers and technical experts in the automotive industries. HFO-1234yf (C₃F₇CF=CH₂), an hydrofluoroolefin with a GWP of 4, has been developed by Honeywell and DuPont as a replacement for HFC-134a, in response to the European Directive which bans the use of refrigerants with a GWP higher than 150 in new cars by 2011. The main conclusions of the SAE CRP regarding HFO-1234yf are: 10-15% less total weight, 10-15% less total global warming emissions than CO₂, near drop-in solution (vs. new system design required for CO₂) safe for use in automotive air-conditioning applications with proper refrigeration (same conclusion for CO₂). For HFO-1234yf and CO₂, the next challenge will be the decision on the pending EPA SNAP (Significant New Alternatives Policy) regulatory approval for US markets. See http://congelation.sol.frezee.org/index.php?action=extmichel

- A CO₂ secondary refrigerant system to test icebreakers Travelling through the North Pole’s ice-capped seas could reduce sea transport distances between Hamburg and Osaka, Japan, or Shanghai, China, for instance, by more than 4000 nautical miles, thus allowing for great time and financial savings. The Ice Breaking Laboratory, situated in Helsinki, designs icebreakers and vessels that can sail through ice capped seas, for Aker Arctic Technology Inc. All new ships are tested as models in the laboratory’s ice model tank, which includes an 8 × 60 m surface with up to 100 mm thick ice. Previously ice thickness was only 26 mm, but thanks to the equipment newly designed by York/Johnson Controls, Finland, this has improved. CO₂ was chosen as a heat transfer medium from 4 screw compressors (vs. ammonia which could not be used here) with R-404A as refrigerant. The system uses 100 kg of R-404A and 2 tonnes of CO₂ and has a capacity of 200-300 kW, delivering air temperatures down to between -6°C and -27°C. The ice is made by spraying fresh water over the pool through 118 gravity coils, divided into 6 separately controllable groups, placed over the pool and ensuring that the ice is as even as possible. During freezing, a heat recovery system saves hot water in a 50 m³ (2500 kW h) tank which is used to melt the ice once it has been broken. ScanRef; December 2008

- Nitrogen blasting designed for beer shelf life boost Vacuum Barrier Corp. has developed Nitrojetter technology, which reduces oxygen levels within carbonated beverages in order to extend shelf life without affecting taste or colour. Nitrojetter uses liquid nitrogen steam that is fired into the beverage through a special adaptable nozzle. The nitrogen causes foaming within the beverage that rises to the top of the container, expelling air, and notably oxygen, within the bottle before capping takes place. The main advantages of nitrogen jetting are claimed to be cleaner bottle necks, no fungi growth, less beer lost and less water treatment. Vacuum Barrier Corp. provides special insulation techniques and training in the handling of liquid nitrogen at a temperature of -196°C. www.vacuumbarrier.com

- 1905: St Michel station in the Parisian Métro Today, freezing is widely used in tunnel construction. However, it was the recent technology in 1905 when line No. 4 of the Parisian Métro system was under construction. This was the first line built under the Seine and the works proved difficult because of seepage of river water into the unstable ground through which the tunnel was to pass. How was the problem solved? By circulating brine at a temperature of -24°C through pipes in order to freeze the ground. The freezing process was applied for 40 days and the section of the Métro measuring a mere 14.5 metres took 10 months to build! www.navily.net/ligne4.php

- Out of the ordinary

- Robots pack frozen food In continuation of its range of “Ready to Pack” modules and machines, Cermex has just developed a new version of a wrap-around case packer. Presented at Interpack 2008 the robots load cartons or flow-packed aluminium trays of frozen food either horizontally or upright... for optimal industrial flexibility and merchandising! The key feature is the use of robot tooling to collate the product batch prior to loading. Watch a video showing the robots at work: http://www.cheappacking.com/?s=provots+to+pack+frozen+food&what=articles

Regulations-Standardization

Montreal Protocol news

- Malaysia expects to phase-out HCFCs by 2030 “Malaysia is expected to completely phase out the consumption of HCFCs by 2030 as scheduled”, Natural Resources and Environment Minister Datuk Douglas Uggah Embas said recently. He presented a national HCFC Phase-Out Management Plan, the objective of which is to curb the rising HCFC consumption in Malaysia which has increased from 841 tonnes in 1996 to 5 635 tonnes in 2005. OzoNews (UNEP), December 2008

- Vietnam needs USD 15 million to cut HCFC use Le Cong Thanh, acting head of the Department for Hydrometeorology and Climate Change under the Ministry of Natural Resources and Environment, estimated that Vietnam requires at least USD 15 million to phase out HCFCs in accordance with the Montreal Protocol over the next 15 years. http://english.vietnamnet.vn

India: CFCs phased out ahead of schedule During celebration making the 14th International Day for the Preservation of the Ozone Layer, the Indian Minister of State for Environment and Forests, Shri Meena, announced that CFC phase-out had been achieved in August 2008, i.e. 17 months ahead of the deadline of the Montreal Protocol for developing countries. OzoNews (UNEP), September 30, 2008

Africa: on schedule to phase-out CFCs During a recent workshop on refrigeration in Lilongwe, Malawi, UNEP Regional Policy and Enforcement Officer, Patrick Salifu, said that “South Africa, Swaziland and Lesotho have made outstanding progress in meeting the 2010 deadline but almost all the [African] countries are in advanced stages of phasing out CFCs”. OzoNews (UNEP), December 2008

EU Directive recognizes heat pumps as a renewable energy technology On December 17, 2008, the European Parliament adopted the EU Directive on the promotion of the use of energy from renewable sources. The final compromise text for the first time includes aerothermal and hydrothermal energy sources, effectively recognising air-source and water-source heat pumps – not just ground-source heat pumps – as “renewable energy technology”. Since the European Member states have agreed to target a 20% share of renewable energies in overall Community energy consumption by 2020,
it should boost the heat pump market which has significantly increased in recent years (see Newsletter of the IIR No. 36). As an example, the sales of air-to-water heat pumps have topped 120,000 in 2008 in France, compared with 52,800 in 2007, boosted by tax incentives.

US: Updating installation standards

It is estimated that over 50% of the air conditioners in US homes are under-efficient, due to improper installation; 62% are improperly charged, 50% are oversized and 70% lack proper airflow input at the coil. The performance of such poorly installed systems can be impaired by up to 30%, often well under the levels of comfort and energy expected from the systems. Products are thus kept from delivering their rated performance, even though their standards have increased over the years. EPA has therefore decided to set up the HVAC quality installation (QI) programme, based on the Quality Installation Specification of the Air Conditioning Contractors of America’s (ACCA). The programme aims at improving current HVAC installation practices, thus delivering greater efficiency to consumers and reducing peak loads for power utilities.

The News, October 13, 2008

IIR conferences

April 6-7

Antony France

IIR Workshop on Refrigerant Charge Reduction in Refrigerating Systems

Helene Macchi-Tejeda: helene.macchi@cemagref.fr
Fax: +33 1 4096 6249

IIR Conference

B1, B2

with D1, D2, E1, E2

April 27-29

Singapore Singapore

2009 1st IIR Cold Chain Conference

David Leach: david@airah.org.au
Fax: +61 3 9614 8949

IIR Conference

C2, D1, D2

May 7-9

Ohrid Macedonia (FYROM)

Ammonia Refrigeration Technology

Risto Cikonovic: ristov@ukim.edu.mk

IIR Conference

B2 with B1, D1

May 11-15

Des Moines United States

3rd International Conference on Magnetic Refrigeration at Room Temperature

Vitalij K. Pecharsky: vtpk@ameslab.gov
www.ucs.iastate.edu/mnet/thermag/home.html

IIR Conference

A1, B2, E2

June 3-5

Karlsruhe Germany

8th Conference on Phase-Change Materials and Slurries

Stefanie Tolme: stefanie.tolme@hs-karlsruhe.de
Laurence Fournaison: laurence.fournaison@cemagref.fr
Fax: +49 721 925 1915
www.hs-karlsruhe.de/servlet/PB/menu/1081092/index.html

IIR Conference

B2, B1, D2

June 23-26

Boulder USA

3rd Conference on Thermophysical Properties and Transfer Processes of Refrigerants

Piotr Domanski: piotr.domanski@nist.gov
Mark McLinden: mark.mclinden@nist.gov
Fax: +1 500 578 9873
www.IIRBoulder2009.org

IIR Conference

B1

Sept. 30 - Oct. 2

Casta Papiernicka Slovak Republic

7th International Conference on Compressors and Coolants - Compressors 2009

Peter Tomlein: zvazchkt@iernet.sk
Fax: +421 2 45646971
www.iernet.sk/szchkt

IIR Conference

B1, B2 with E1, E2

April 12-14

Sydney Australia

9th IIR-Gustav Lorenzen Conference on Natural Working Fluids (GL2010)

David Leach: david@airah.org.au
Fax: +61 3 9614 8949
www.airah.org.au

IIR Congress

B1, B2 with E1, E2


• making HFCs more expensive: the CPRS will apply pressure to phase out the use of high-GWP HFCs by making them subject to a strong price mechanism. This will be done by applying Scheme obligations to large importers, as well as raising existing import levies to achieve an equivalent carbon price on all synthetic greenhouse gases sold in Australia;

• early phase out of R-22: in new equipment, use of HCFC-22 will be phased out in 2010, five years sooner than planned;

• recovery and destruction incentives at end of life and servicing of equipment will be issued. It is expected that this Scheme will begin on July 1, 2010.

www.rt44.com

5000* fridge bought back in Australia

The 5000* fridge has been collected as part of the NSW Government-backed Fridge Buyback programme. Climate Change Minister Carmel Tebbutt said the households that sold their second fridge to the scheme for AUD 35 would save a total of almost AUD 1 million on energy bills this year and reduce greenhouse gas emissions by more than 5000 tonnes. “Every fridge taken out of circulation saves one tonne of greenhouse gas emissions a year and an average of AUD 190 on electricity bills,” she said. The collected fridges under the scheme were professionally degassed and the metals recycled. Refrigerators account for about 13% of a household’s electricity use and older fridges can sell in Australia; so households’ electricity use and older fridges can sell in Australia; to be eligible for the buyback, the refrigerator must be a working second fridge that is at least 10 years old and with a capacity of at least 250 litres. Sydney Morning Herald, November 16, 2008.

www.fridgebuyback.com.au

International Institute of Refrigeration

Institut International du Froid

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IIR-co-sponsored conferences

2009

I2E European Logistics Cold Chain Education Program

Alien Wolbink or Theo Von Sambeeck

european@gcca.org

Fax: +31 38 4546550

http://www.iirw.org/hq/europeaneducation/index.asp

Taipei - Taiwan - May 20-22

4th Asian Conference on Refrigeration and Air Conditioning - ACRA2009

Prof. Yang-Cheng Shih: scrsctaipei@scrcr.org.tw
Fax: +886-2-87733713

http://www.acra2009.org

Rome – Italy - October 8-9

47th AICARR International Conference

Ornella Perron: conevegnonora@acarr.it
Renato Lazzarini: renato@gest.unipd.it
Fax: +39 02 6749762

http://www.acarr.it/news.asp?ID=11

2010

LNG 16 - Liquefied Natural Gas

LNG Conference Secretariat - Oran:

lng16-secretariat@snf.sonatrach.dz
Fax: +213 41 489 190
http://www.lng16.org

France

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