Cold chain storage and refrigerated transport, along with infrastructure needs (electricity, solar cooling...), have become priorities recognized by the United Nations (UN) and UN agencies such as FAO or UNIDO, thanks to partnerships the IIR has set up with these organizations. A joint FAO-IIR workshop was held in Cameroon in June 2012 and made it possible to identify courses of action in various regions and sectors (fruit and vegetables, milk and dairy products, meat and fish). The existence and the quality of a cold chain clearly emerge as prerequisites to local agricultural development and as means of reducing the environmental impact (greenhouse effect, premature) thanks to reduced losses. A joint action plan involving the IIR, FAO and UNIDO and even other public organizations will be developed. The IIR’s Working Party on the Cold Chain in Warm Countries will be revitalized. A guide to cold storage specifically designed to address the needs of these countries is being written. One-off actions in our member countries such as India are underway.

Didier Coulomb
Director of the IIR

L’Institut International du Froid (IIF) comprend de nombreux pays en développement et émergents, en Afrique et en Asie. Il s’y investit d’autant plus que c’est là que se trouvent les plus grands besoins en froid, c’est là que se produit le développement économique le plus fort. La mise en place d’une chaîne du froid efficace et adaptée aux contextes locaux, les investissements nécessaires en entrepôts, en transport, avec leurs corollaires en matière d’infrastructures (électricité, froid solaire…) sont une priorité maintenante reconnue par les Nations Unies et leurs agences telles que la FAO ou l’ONUDI, grâce aux partenariats que l’IIF a noués avec eux.


Didier Coulomb
Directeur de l’IIF
The IIR’s statutory meetings
The IIR’s statutory committees met in Paris on June 13-15, 2012. The delegates of member countries will join the Management Committee (MC): Haimo Thraya, Delegate of Tunisia, and Min Sov Kim, Delegate of South Korea. Noboru Kagawa, new Delegate of Japan and main organizer the next IIR Congress to be held in Yokohama in 2015, will join the MC as observer. Scientific and technical work as well as budgetary and promotional issues were discussed. Prof. Bart Nicolaï gave a lecture on the cold chain and post-harvest technologies used for fresh fruit and vegetables. You can consult it in the IIR’s Frédic database: www.iifr.org

GL 2012 in Delft: a great success
The 10th IIR Gustav Lorentzen Conference on Natural Working Fluids (GL 2012) took place on June 25-27, 2012 in Delft, the Netherlands. With 278 attendees from 37 countries, the conference was a great success, showing the global development of natural refrigerants and new improvements. The most discussed topics were, in decreasing order: CO2, sorption, hydrocarbons, ammonia, compressors, heat pumps, ejectors, supermarkets. Research on CO2 focused mainly on the improvement of the transcritical cycle by the inclusion of euctors to recover part of the expansion losses, and other technologies. Most sorption papers concerned absorption. A number of prototypes are under development and significant progress has been reported, especially in terms of COP. Regarding hydrocarbons, compressor designs have been improved, allowing higher isentropic efficiencies. Consult a full report and consult the papers: www.iifr.org. Several business meetings of IIR commissions and the first meeting of the IIR Working Party on LCCP Evaluation took place during this conference; see the minutes: www.iifr.org. The next event in the series will take place at Hangzhou, China, on August 31-September 2, 2014.

Conference update
Several IIR conferences will take place in September and October 2012 in Jordan, Germany, France and Spain: consult the list on the last page of the Newsletter and register!

- The 8th IIR International Conference on Sustainability and the Cold Chain will take place in Paris on April 2-4, 2013. The full paper deadline is November 30, 2012. www.iccc2013.com contact@iccc2013.com

Briefs
International Journal of Refrigeration (IJR)
Here are some indicators of the ongoing, resounding success of the IJR: the Impact Factor1 rose from 1.439 in 2010 to 1.878 in 2011! Moreover, the IJR is now ranked 16th out of 121 journals in the domain of mechanical engineering and 16th out of 52 in the field of thermodynamics. Find out how to become a member of the IJR and receive the IJR for free by checking: www.iifr.org.

- The IJR has published an Informative Note on the Applications of Cryosurgery. The note features a new, attractive presentation and is in colour. Consult it: www.iifr.org

Climate Control News
The IIR has set up an agreement with Climate Control News (CCN), a monthly Australian publication serving the heating, ventilation, air conditioning and refrigeration (HVAC&R) sector, with a view to exchanging news items. CCN provides news, coverage of industry issues, special features, company profiles, industry opinion and product news www.yaffa.com.au/client/ccn.html

News from IIR members
AFF, the French Refrigeration Association (Association Française du Froid) has launched a new logo and has revamped its Web site. Check out the attractive new site: http://association-francaise-du-froid.fr What’s more, Patrick Antoine, President of AFF, recently became a Knight of the French Legion of Honour. Antoine Cesbron received the AFF’s Charles Tellier Medal in recognition of his company’s innovative technology.

- The general Assembly of EPEE took place on May 23, 2012 in Brussels. Discussions on energy and on refrigerants took place and the Director of the IIR participated: www.epeeglobal.org/media-center/events/post-events/epee-annual-general-assembly-2012/

Air Liquide and Astrium have announced the creation of EuroCryospace, the new European expansion of Cryospace, created 25 years ago by both companies, for the development and production of Ariane cryogenic tanks. www.cryogenicsociety.org/17913/news/air_liquide_astrium_create_eurocryospace

In the news
Markets and figures
Cold chain in India: current status
New Indian legislation allowing majority foreign direct investment in the retail sector may well bring in large investments in cold chain equipment. Foreign companies such as German Metro or USA’s Walmart have already set up bulk stores but are not yet allowed to sell to end consumers. Some large Indian companies have already started small-scale supermarkets with extensive refrigeration facilities in a few large cities. Even though the idea of a national cold chain is still utopian, cold links have been established from farms to the main consumption centres in large cities. Fruit from foreign countries is also available in some large Indian cities.

New dairies are springing up, with average daily processing capacities of 1 million litres and 2100-2800 kW refrigeration capacity. A National Dairy Plan envisages a future annual production capacity of 180 million tons by 2021, but India’s current production of 107 million tons per annum ranks it as the world’s largest milk and dairy products producer. The main challenge is still to chill the milk down to 4°C within 4 hours of milking.

The meat industry has demonstrated big growth in the last decade and private companies now export over USD 1.2 billion worth of raw meat in chilled and frozen form. Around 6000 refrigerated trucks are used to deliver to an abundant supply of seafood. While the local domestic market is huge and chaotic, the export market has been developing since the early 1960s, now reaching USD 2.8 billion.

India is the second largest producer of fruit and vegetables in the world; however, 30% of the produce is damaged before it reaches the market due to inadequate pre-cooling and storage facilities. However, there is an export market for high-value fruit such as grapes, pomegranates and mangoes, mostly transported by air.

Around 4000 refrigerated trucks circulated around the country in 2011, a figure that is currently growing by 1000-1500 annually. JARN, May 25, 2012

Food waste, climate change top agenda at FAO Near East Conference
FAO recently announced measures to improve regional food security by cutting food losses and waste during its Regional Conference for the Near East in May 2012. Land and water constraints severely limit...
the potential for increased food production to feed a Near Eastern population set to grow from 380 to 520 million in 2030. In addition to improving land and water management, lower food losses and waste would help provide the extra food without putting additional pressure on limited land and water resources. Some 15% of vegetables and legumes and more than 30% of perishable foods such as fruit, vegetables, dairy products, meat and fish are also wasted annually in the region. Refrigeration of food losses and waste include poor storage facilities and limited cold storage. As for animal-source foods, losses during handling, storage, processing, packaging, distribution and consumption are significantly higher than losses during production. At between 25% and 50%, losses in fish and seafood are the highest of any animal-source foods, with more than two-thirds of losses incurred during processing, packaging and distribution. Much of the problem stems from the limited number of wholesale, supermarket and retail facilities providing suitable storage and sales conditions for food products. Wholesale and retail markets in the region are often small, crowded, unsanitary and dealing with expired or damaged goods. Another issue is the lack of paved roads suitable for large vehicles to connect production areas with ports or city centres, as well as a shortage of power and water infrastructure.

Refrigeration sectors in numerous countries, including Australia and the US, are facing refrigerant price hikes as result of changing legislation.

- The Australian price increase set to materialize from July 1, 2013, when a new tax linked to refrigerant GWP is imposed on HFCs (see Newsletter of the IIR No. 48). Under the scheme, the typical price of refrigerants such as R410A (tax of about 32 €/kg after July 1, 2013) could triple. Overall, the initiative could help Australia to cut carbon emissions by 159 million tonnes a year by 2020.

- In the US, the rising price of R22 is a consequence of the implementation of the Montreal Protocol through HFC phase-out via Clean Air Act Regulations. Since January 1, 2010, virgin R22 is no longer allowed in new refrigeration equipment but is still allowed for servicing. However, by 2015, consumption has to be cut to 10% of its original baseline. After that, all manufactu-

ers are cutting back accordingly. Contractors have reported R22 prices jumping from 70 to 150 €/kg in the last year and estimate that rising prices have caused the cost of a typical air conditioner to rise fourfold. RAC, May 2012.

- Rio+20: support for HFC phase-down

In paragraph No. 222 of their final declaration, the Heads of State and Government and heads of the European Union and other countries who met in June in Rio de Janeiro, Brazil, for the UN Conference on Sustainable Development (“Rio+20”) have provided support of an HFC phase-down: “We recognize that the phase-out of ozone-depleting substances is resulting in rapid increase in the use and release of high global-warming potential hydrofluorocarbons to the environment. We support a gradual phase-down in the consumption and production of hydrofluorocarbons.”


Refrigerant news

■ Incidents with fake refrigerants

■ Incidents involving fake refrigerants have hit the headlines on various occasions recently. The incidents often involve R40 (methyl chloroform) or a hazardous chemical compound, or other substances. It is believed for example that R40 was cut with R22 and then sold as R134a to various Asian service companies, and that this caused of a number of explosions, some of which were fatal. “F-Gas: Feasibility of an early phase-out of HFCs by 2020” prepared by Michael Kauffeld for the Environmental Investigation Agency (EIA) outlines a timetable specifying dates by which the use of HFCs could be banned in new equipment for each refrigeration and air conditioning sub-sector, with a complete phase-out possible in 20 sub-sectors by 2020. This report states that “the use of placing on the market prohibitions (PMOs) of HFCs in new equipment is the most effective way of phasing out the emission of HFCs”. The introduction of such bans alongside measures to ensure the maximum technically feasible transition to alternatives up to the prohibition dates would prevent emissions of 75 Gt CO₂-equivalent per year by 2030. This represents a cumulative reduction in HFC emissions of 600 Mt CO₂-eq. and a cumulative reduction in demand of 1.6 Gt CO₂-eq. HFCs by 2030”.

■ F-Gas Regulation news

The European Commission (EC) has published a summary of the results of the online public consultation concerning possible actions to address emissions of fluorinated greenhouse gases (“F-gases”) and designed to gather input for the current review of the F-Gas Regulation. The EC received 261 responses; 63% came from stakeholder organizations, among which the EC, while 37% of the respondents identified themselves as individuals. Among those who responded, 84% found that the current status quo of implementing the existing regulation was not sufficient. In the absence of a global HFC phase-down, the preferred policy actions for organized stakeholders were strengthening containment and recovery, voluntary agreements for specific sectors, and limits to the placing of HFCs on the EU market, in that order. The EC is expected to bring forward new legislative proposals for review of the F-Gas Regulation by the end of 2012 and implementation by 2013.


■ AIR-conditioning market

According to BSRIA figures, in 2011, the world air-conditioning market increased by 13% compared with 2010: the value of the US market grew from USD 78.8 billion in 2010 to USD 88.2 billion in 2011 and is recovering from the 2009 downturn. The crisis most affected the Americas and Europe; America has slowly started to recover and Asia was the most affected region. Sales of split units: +13.1%; fan coils: -4.9%; air conditioners were produced in China (major production hub (70% of the world’s production). The geographical largest region in terms of air-conditioning sales remains Asia-Pacific (USD 48.2 billion, almost 55% of the world market in 2011). Asia is generally the major production hub (70% of the world’s air conditioners were produced in China alone in 2011). IIR members can consult an 8-page summary of the BSRIA report: www.iiri.org (under the News section/Thematic files/Exclusive files).

■ New global air-conditioning market

Eurovent Market Intelligence (EMI) has just released 2012 trends for the European heating, ventilation, air-conditioning and refrigeration market. For the 1st quarter 2012 market trends are the following: air-handling units: +13.1%; fan coils: +9.2%; chillers: -8.1%; rooftops: +3.9%. Thanks to an agreement with EMI, IIR members can consult more detailed trends: www.iiri.org (News and files/Thematic files/Exclusive files).

http://www.eurovent-marketintelligence.eu
China evaluates the real risks of hydrocarbons

According to JARN, China intends to switch half its production of split air conditioners to propane (R290) in order to meet the objectives of the HCFC Phase-Out Management Plan by 2020. The decision was taken following a comparison of the actual risk factors with the accepted public risk levels, a process known as quantitative risk assessment (QRA). This involved identifying potential leakage points and using computational fluid dynamics (CFD) to study the gas flow within a room and its tendency to concentrate near points of ignition such as electrical switches. The successive chain of probabilities which could lead to an explosion were as follows: a gas leak entering the room, no dilution of the air currents, build-up to a flammable concentration (2-10% in the air) and a close source of active ignition. The results showed that the real risk from R290 ignition events was 0.005 per million per year, far below the “acceptable risk level” of 100 per million per year.

The other main option considered by China for room air conditioners is R32 (difluoromethane).

www.jarn.com/news.asp?id=19783

Briefs

Renewable cooling could provide close to 100% of cooling demand

At an extraordinary meeting in June 2012 by the German Öko-Institut e.V. on behalf of NL Agency of the Netherlands and funded by the Dutch government, claims that at least 50% of the cooling demand in Europe could be covered by renewable energy applications by 2050 (i.e. about 370 TW(h)).

Technically it should be possible to provide 100% of the cooling demand by renewable cooling technologies by 2050. Hurdles and limiting factors for the contribution can be unsuitable geographical and climatic conditions, the lack of political awareness and human resources, the missing availability of marketable key components and low prices for fossil fuels and electricity.

Apart from direct and indirect cooling, this report highlights the potential of the “cooling with renewable heat”.

These can be absorption, adsorption, and desiccant and evaporative cooling systems. The required thermal energy can be provided by using solar energy delivered by solar thermal systems is expected to be the most important source in the future. This technology is most suitable for southern European regions with high solar radiation and high cooling demand. Other energy sources can be combined heat and power plants burning biomass or geothermal heat... Some applications are already available on the market, but generally there is still a high need for research and development. In order to ensure that at least 50% of the cooling demand in the EU is covered by renewable technologies, Öko-Institut e.V. recommendations include an EU-wide uniform definition and terminology for renewable cooling technologies.


New Zealand cold store explosion: licencing scheme required by the coroner

The coroner who conducted the inquest into the death of a New Zealand firefighter killed in the April 2008 Tamahere cold store explosion has called on the New Zealand Department of Labour to introduce a licencing scheme for refrigeration engineers involved in the installation or handling of hydrocarbon refrigerants. In his findings following the September 2011 inquest (see Newsletter of the 11th Nov., 48), he also recommended a scheme for the licensing and inspection for installations using hazardous substances posing a significant threat to life or property. The fatal incident, which also severely injured 7 firemen, occurred when the fire team, responding to an alarm at the cold store, was unaware that the refrigerant used was hydrocarbon-based and therefore highly flammable, since there was no signage warning them on site.


Technology

Cryogenics

Changes in the use of cryogenic propellants in space

According to W. Notardonato from Kennedy Space Centre, a new phase in US human space exploration is dawning with the retirement of the space shuttle fleet.

Near-term exploration beyond low Earth orbit will require the use of cryogenic propellants and in-space cryogenic propellant storage durations will exceed our current capabilities by at least two orders of magnitude. This will require the development of a whole range of technologies, including large-scale insulation systems, microgravity fluid control and active thermal control of cryogens for extended duration zero boil-off.

One of the challenges is to use common fluids in several operations in order to reduce space use and mass. Liquid hydrogen and oxygen are already used in primary in-space propulsion applications and exhibit the highest performance of any chemical propellant. They are ideal candidates for secondary propulsion, but require long-duration cryogenic storage. Currently, hypergols, another type of propellant, usually play that role due to their storability, reliability and a successful history of use. However, advances in active and passive thermal control in the near future should enable long-duration cryogenic storage and make liquid hydrogen and oxygen as storable as their competitor. Active control means control of both the state of the cryogen and that of the position of the fluid in the tank. This implies being able to regulate or govern the state of the propellant, including increasing the bulk fluid temperature or the system pressure when desired.

In his article, Notardonato even proposes the concept of a propellant-production and liquefaction spacecraft (PPLS) that could electrolyse water and liquefy hydrogen and oxygen for storage in spacecraft propellants. Many refrigeration cycles could be used for the liquefaction process, but the model he proposes considers two of them: a closed cycle multiple-stage Brayton system or a more conventional open-cycle liquefier. In all cases, very large solar arrays would be necessary to power the cooling process, until space-based nuclear power is developed.

Notardonato W. Active control of cryogenic propellants in space, Cryogenics April-June 2012 doi:10.1016/j.cryogenics.2012.01.003

“Promising new environmentally friendly rocket fuel” http://alternativeenergyecogreen.blogspot.fr/2011/05/promising-new-environmentally.html

http://alternativeenergyecogreen.blogspot.fr/2011/05/promising-new-environmentally.html


Hydrogen scooter sets a 365-km record

During Sustainability Week (la Semaine du Développement Durable 2012), 2 young men from Montpellier, France, rode through the streets of Paris between the stock exchange and the Opera House on a hydrogen scooter, and established a 365-km record during the 19-hour exploit. The technology used is simple and environmentally friendly. The scooter is also more compact than an electric scooter. The 3-wheeler, called BeKane H2, emits water vapour and nothing else, and consumed 1.2 kg of hydrogen during its 365-km journey. The vehicle attracted a great deal of interest, and the inventors intend to organize an awareness-raising trip from Los Angeles to Miami involving hydrogen and solar vehicles in 2013.

Out of the ordinary
Recycling greenhouse gases thanks to cryogenics

A new technology, developed and patented by ABB, enables comprehensive recycling of contaminated natural refrigerants (SF6 gas) by using an energy-efficient cryogenic process. SF6 gas is a volatile greenhouse gas (GWP +2 800) used extensively in the electrical industry. The purity of recovered SF6 gas using the newly developed technology is 99.99%, in accordance with technical grade IEC 60376 (the standard for new gas), which enables SF6 gas to be reused. The greatest advantage of the new process in comparison with existing technology is that it can efficiently recycle SF6 gas irrespective of its type or level of contamination. Other technologies are unable to treat all contaminants and all contamination levels in one process. The technology will be implemented at a new fully automated cryogenic SF6 purification plant in Sydney, Australia, including a novel gas separation chamber. Using recycled SF6 gas will help reduce carbon emissions and could result in a cost savings potential of up to 30%. The company hopes the technology can be expanded to recycle contaminated natural refrigerants.

Climate Control News, May 2012

Thermal storage and PCMs

**UK: project for virtual power plants**

In UK, according to RAC, feasibility studies and planning have started for a project that could be part of a new renewable energy infrastructure to run alongside and support the National Grid, Klima-Therm, with Green Structures, British Gas and Imperial College, envision a network of small-scale “virtual power plants”. These will generate heat and cool energy rather than electricity, then store it for delivery away from peak times to cool and heat businesses and homes, thus taking pressure off the grid. The project is looking at reverse cycle heat pump versions of Klima-Therm’s high-efficiency Turbomiser chillers, together with highly responsive “thermal accumulators” – based on phase-change materials – to store the heat and cool energy. By taking load off the grid at peak times, these virtual power plants would enable effective load-shifting, reducing costs and optimizing use of available renewable and conventional generation. Some 4000 MW of electricity generation capacity is expected to be removed in 2013, followed by the same by 2016. The next stage is to establish a commercial scale pilot plant to prove the concept, followed by full commercialization.

RAC, May 2012

**Phase-change materials result in huge cost savings**

Phase-change materials (PCMs) are being used in a new building for the molecular engineering department of the University of Washington, in Seattle. The 750m² building has PCMs encapsulated in its wall and ceiling panels, and the expectation is that costs could be as much as 90% lower than those of a building without PCMs. The PCM used in the Seattle building is a gel derived from vegetable oils and the phase change occurs at room temperature. It remains a gel when the air in the building is cool, but gradually absorbs heat and liquefies as the building’s heat load increases during the day. The result is an indoor environment with small temperature fluctuations. The PCMs are set during manufacture to maintain a temperature of about 23°C. As the building’s heat load increases, the PCMs melt, storing heat and cooling the building’s interior. Then, at night, as the heat load diminishes, the PCMs change back to gel. In Seattle’s climate, the overnight cooling will be accomplished by having automatic windows open to flood the interior with cool night air.

www.dronl.com/article/c44831

**Research and Development**

**US research projects to cut AC energy consumption**

The 15 projects selected by Advanced Research Projects Agency-Energy (ARPA-E) – within the Building Energy Efficiency Through Innovative Thermoderives (BEETIT) are developing new approaches and technologies for building cooling equipment and air conditioners. These projects – funded USD 30.3 million by the US Department of Energy – aim to improve the energy efficiency of HVAC systems by at least 50% at a cost comparable to current technologies.

- **United Technologies Research Center** is developing an air-conditioning system that is optimized for use in warm and humid climates. UTC’s air-conditioning system integrates an advanced desiccant or desiccant and a traditional vapour-compression system. The desiccant reduces the humidity in the air before it is cooled, using less energy. The technology uses a membrane filter and the liquid salt stream allowing only water vapour to pass through and not the salt molecules. If successful, UTC claims this system would be 50% more efficient than conventional air conditioning.

- **Finaflex**, a rubber and infusion impact air conditioner based on the Stirling engine, where a motor with a piston removes heat to the outside atmosphere using helium as a refrigerant. Finaflex is using chip cooling technology from the computer industry to make a larger heat exchanger and improve system performance.

- **University of Notre Dame** is developing an air-conditioning system with a new fluid comprising CO2 and ionic liquid that will allow CO2 to be used at lower pressures than is possible currently and will enable use in existing equipment, which could open up a wider air-conditioning market using CO2.

- **University of Maryland** is working in the area of thermoelectric cooling systems that use a solid-state material – an elastic shape memory metal alloy – as a refrigerant and a solid to solid phase transformation to absorb or release heat.

To read the whole article please visit: http://arpa-e.energy.gov/ProgramProjects/BEETIT.aspx RAC, May 2012

**EU research to extend food shelf life and cut waste**

A GBP 3.185 million EU-funded research project designed to extend food shelf life and slash waste was launched recently. The aim is to develop sustainable, active, intelligent packaging derived from microbes! The packaging should drastically reduce the amount (up to 75%) of fresh produce wasted before consumption. A microbial fermentation process will be used to produce a polyhydroxybutyrate polymer used to form stretch-wrap films with gas barrier sheets. Time-temperature and freshness indicators will also be used. Initially, the new packaging concept will be tested on bananas, but will subsequently be used for a broad range of fresh produce including meat, fruit and dairy product. Ten EU organizations are conducting the research spearheaded by the UK Materials Technologies Research Centre, with www.foodmanufacture.co.uk/Packaging/EU-research-to-extend-food-shelf-life-and-cut-waste

**Briefs**

**Multicentre clinical trial for hypothermia treatment of stroke patients obtains funding**

The European Stroke Research Network for Hypothermia (EuroHYP) is to perform a large, multicentre clinical trial which will assess mild hypothermia as a novel treatment for ischaemic stroke. The trial has received European Union funding with a total project cost of 14 970 000 €.

Stroke is the second cause of death worldwide and the second most expensive health care cost in the USA. Current treatment options for the 80 to 85% of all strokes due to cerebral ischaemia - around 900 000 events in Europe every year, or every 40 seconds - are extremely limited. Systematic reviews and studies suggests that hypothermia is the most promising intervention identified to date. Cooling has so far been tried on stroke patients only in a few relatively small studies. The most promising intervention identified to date, Cooling has so far been tried on stroke patients only in a few relatively small studies. The most promising intervention identified to date, Cooling has so far been tried on stroke patients only in a few relatively small studies. Dignitana AB has developed technology used to provide selective cooling of the brain with a view to lowering the brain temperature without lowering the body temperature more than marginally and recommends application of cooling in an early phase following stroke in order to avoid potentially dangerous consequences for the immune system and a greater risk of bleeding and infection. The results of the clinical trial are expected to form the reference for cooling of stroke patients as part of the standard treatment for patients with acute ischaemic stroke.


**Asia’s largest cold storage facility to run on ammonia**

Ocean Star Aquatic Products Co., Ltd., a seafood processing company in Zhengzhou, Fujian Province, will soon complete the installation of a cold storage facility that is claimed to be the largest not only in China but in the whole of Asia. Large cold storage construction projects of local governments in China bring ammonia refrigeration a golden period of development. The facility has 12 production lines with an annual seafood processing capacity of 800 000 tons worth 625 million €. The cold storage will be mainly used to process and store seafood including fish, crab, soft cephalopods, shrimp and abalone and the total investment is 250 million €.

In China, there are many local governments are building large-scale cold storage facilities to meet increasing demand

New combined refrigerated transport operation in France
A dairy product company, Yéo frais, and Stefa, a logistics company, are launching a combined rail/route refrigerated transport route. The products are transported from their production site near Toulouse to a distribution hub near Paris. The delivery operation takes place 5 days a week and uses an intermodal container that can contain up to 21 tonnes of goods under controlled temperature at 2-4°C. The train section of the journey lasts 13.5 hours but is preceded and followed by sections involving transport by truck. Eventually, five containers will be used and substantial savings are expected: the equivalent of removing 1250 trucks from the roads. 875,000 less kilometres travelled and a 769 tonne reduction in CO2 emissions.

Supply Chain Magazine, June 12, 2012

Tetra Pak works on smart milk cartons
Tetra Pak is developing a smart carton that will alert consumers when milk is past its best consumption. The carton will change colour when the milk is left out of the refrigerator for too long. Tetra Pak will target BRIC countries (Brazil, Russia, India and China) concerned about sustainability issues. According to the Financial Times, the company is developing a chip that can be embedded in the cartons in order to provide information about how long the product has been out of the fridge.

The US Department of Energy (DOE) will provide up to USD 2 million towards a study of hydrogen refueling stations in an effort to collect more data on the use and effectiveness of fueling cars with H2. The study will be used to determine the components that may be developed to facilitate the rollout of more hydrogen stations over the next 5 years, including better compressors and hydrogen tanks. The DOE lists 56 hydrogen fueling stations throughout the USA, including 23 in California alone.
http://green.autoblog.com/2012/03/27/

Regulations - Standardization

New European ecodesign regulation for air conditioners
In March 2012, the European Commission published Regulation 206/2012 that sets minimal performance requirements of air conditioners. The Regulation implements Directive ERP 2009/125/EC on ecodesign requirements for air conditioners and comfort fans. It defines minimal performance requirements for air-conditioning equipment under 12 kW, in order to limit system energy consumption and the impact of fluorinated gas (F-gas) refrigerants. The classification uses COP and seasonal performance indicators (SEER for summer cooling and SCOP for heating). It also sets a GWP limit of 150, which provides natural refrigerants, including hydrocarbons or new-generation HFO-mixture refrigerants, with an advantage. It also addresses the issue of noise levels. The regulation enters into force in January 2013.
http://eur-lex.europa.eu

Prices of AC equipment in India pushed up by energy standards
White goods makers in India said they would raise prices of air conditioners and AC equipment by 5-10%, in response to the greater investments required by an update in energy standards set by the Indian Bureau of Energy Efficiency (BEE). The conventional rating of split air conditioners and frost-free refrigerators will change: previously 5-star appliance will be rated 4 star as of 2013, etc. Furthermore, products that were previously rated one star will no longer be available on the Indian market as of this year. The standards are designed to reduce on energy consumption, but companies will have to launch new products that can comply with the new 5-star rating. The makers also complain about high raw-material costs in the context of a weak rupee (earlier this year, prices were said to have increased by 15% since April 2011). They claim that the current extra expenses paid by consumers will soon be compensated by lower energy spending.

Air Conditioning and Refrigeration Journal, January-March 2012

The Association of Home Appliance Manufacturers (AHAM), CSA Group, and UL Environment today announced the release of AHAM 7001-2012/CSA SPE-7001-12/UL 7001, Sustainability Standard for Household Refrigeration Appliances, the first voluntary sustainability standard for home appliances. This standard is based on a lifecycle approach for identifying the environmental impacts of refrigeration products in five key areas: energy, materials, end-of-life, performance, and manufacturing.
This standard will serve as an objective and practical measurement tool to assist refrigerator manufacturers in evaluating the environmental sustainability of home appliances.
www.aham.org/h/a/GetDocumentAction/1/61330