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Editorial

Dear Members,

AREA is not the place to discuss the issue of the European Constitution. It appeared that the average European citizen had not been explained what globalisation means. It appears also that there is a great emptiness of European leadership at a time when the Member States have to reconsider which Europe Europeans want.

I would like to say that the recent events should slow down even more the decision procedures (which are inadequate for 25 States). The European momentum has been perturbed and other political priorities have come up front. It is not possible to have MEP discussing about the F-gas issue for the time being: they concentrate on understanding what happened and what should be done on the political level.

However I see no reason why the substance of the subjects handled by Europe and involving the RAC sector (environment protection, standardization, harmonization, ...) should be affected.

Yours sincerely,

Robert Berckmans
Secretary General

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President Jacquin and Secretary Berckmans attended the XIth European Conference on innovations in air conditioning and refrigeration, held in the University of Milano (Ecole Polytechnique) on June 17-18. The international venue was organized by Centro Studi Galileo and our Italian Member ATF.

AREA was pleased to convey its key messages on behalf of the European RAC contractors: need for harmonized training, qualifications and certification, standardization of operating terms and conditions.
AREA joins a new project

MINIREF project proposal 012452
FP6-2003-SME-2
In the scope of the Collective Research Projects under the Sixth Framework Program of the European Community (2002-2006)

The 3-year European Project: MINIREF “New refrigeration concept for the reduction of greenhouse gas emissions by minimizing refrigerant charge” has been signed by its Coordinator TNO – Built Environment and Geosciences on June 7, 2005.

The overall project objectives are:

- development and demonstration of the MINIREF concept, an innovative technology for different sectors in refrigeration (commercial cooling, industrial cooling, air conditioning, heat pumps, …) resulting in a drastic reduction of greenhouse gases (up to 95%), covering the bulk of the refrigeration installations in Europe;
- dissemination of the concept mainly through the National RAC associations;
- training of European SME’s to implement the concept, training of installers and manufacturers. The project will help the European refrigeration sector – end users, manufacturers and installers, mainly SME’s – confronted with the consequences of various international obligations such as:
  - the obligations of the EU to reduce the emissions of greenhouse gases (Kyoto);
  - the safety for HFC alternatives, natural refrigerants (Seveso 2, PED, …).
MINIREF addresses the faced problems by minimization of refrigerant charge on an integral system level, this in contradiction to currently performed research focusing on minimization on component level.

Mr. Hoogkamer of NVKL will be the IPR Intellectual Property Rights Manager.

The phases of the project will be:
- study of the demands for the MINIREF concept (to be market attractive),
- development of the total system concept, study of the limitations of the system, design of a flexible test installation,
- heat exchangers development,
- compressor development,
- piping and expansion systems,
- controls, software and hardware,
- full scale prototype,
- feedback from the users group,
- development of the training package,
- dissemination and exploitation.

AREA is expected to play a major role in the training and dissemination sections.

President Jacquin signed the participation of AREA in the project consortium on June 21.

Our Members, NVKL (NL) and NRF (Poland) are Partners as well as our sister association ECSLA European Cold Storage and Logistics Association.

The total amount of the budget is 2,285,816 EUR of which 1,305,378 EUR will be funded by the European Commission. The budget allocated to AREA amounts to 98,700 EUR of which 70,841 EUR are granted by the EC.

Secretary Robert Berckmans asked Mr. Ronald Vermeeren of TNO for organizing a first meeting of the steering group on the occasion of the signature of the Partners’ Consortium Agreement.

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**Environment**

Extract of the latest speech of European Commissioner Stavros Dimas (GR), responsible for the Environment

**Climate Change: The Urgency of the Problem**

Opening debate Green Week
Brussels, 31 May 2005

**EU climate change policies:**

The EU has made the fight against climate change one of its major policies and is leading global efforts aimed at combating climate change. It was instrumental in bringing the Kyoto Protocol into force in February. Its emission reduction targets are ambitious. More than five years ago, in March 2000, the Commission launched the European Climate Change Programme, ECCP for short, under which 42 measures have been identified that will allow the EU to reach its Kyoto target cost-effectively. Nearly all the measures have been implemented.
Among them is the EU’s company-level Emissions Trading Scheme, which successfully kicked off on 1 January 2005. Other measures seek, for example, to improve energy efficiency, expand renewable energy, advance combined heat and power generation, regulate fluorinated greenhouse gases, reduce CO\(_2\) emissions from cars and methane emissions from landfills, and strengthen R&D into solutions and technologies of tomorrow and their deployment.

Looking at our efforts to bring down greenhouse gas emissions, we can say that we have made a start. Averaged over the latest five years, EU-15 emissions stand 2.9% below their 1990 levels.

But we know that far more needs to be done. Only with additional policies and measures will it be possible to reach the collective EU-15 Kyoto target: a reduction by 8%. Therefore the Commission intends to launch a new phase of the ECCP programme and identify further measures to reduce emissions. I am looking forward to discussing with you some of the key measures under the new ECCP programme over the coming days.

***

F-Gas Regulation : proposal

EPEE, European Partnership for Energy and the Environment, informed about a Council note to the Common Position on F-gases which includes detailed statements of the formal objections to the Common Position by Austria, Denmark as well Belgium, Sweden and Denmark (in a Joint Statement).

The Danish and Austrian delegations voted against; the Belgian, Portuguese and Swedish delegations abstained on the political agreement.

The note also includes information from the Commission as to the primary product targets for future reviews, this includes RAC equipment.

This note was prepared ahead of the EU 25 ambassadorial approval of the final translated text. The next formal step will be the official adaptation of the text at a Council Meeting (as an A point without discussion).

Austria and Denmark object to the legal base, the lack of additional bans and the individual Member States right to take action to meet their Kyoto targets.

The joint statement by Belgium, Portugal and Sweden also laments that there are no additional bans. The countries call for an efficient and timely review and states that they had hoped for "more far reaching and efficient restrictions to reduce f-gas emissions." The three countries state their intention to "improve" the text during second reading.

The note shows that we can expected a continued battle on the issue in council discussions and should expect the above mentioned countries to take action to effect the upcoming Second Reading in the Parliament.

AND THE LEGAL BASE AGAIN!

EPEE informed on June 15:
“Commissioner Dimas spoke to the Environment Committee in recent days on how EU environmental policy is developing. The speech itself touched on the climate change issue amongst others.

The speech was followed by a Q&A session with the MEPs on a wide range of issues. There last question of the session was on the legal base of the F-gases proposal.

The question was asked by MEP Dan Jørgensen (in the Danish Socialist Group of only three members in the environment committee and the only full member). He specifically asked if it would be possible to change the legal base back to an environmental one (175).

The Commissioner response was that this change would need to be agreed by the Parliament and the Council and would be a change from the current Common Position. EPEE spoke directly to the MEPs office to get their reaction to the response they read it ‘as a bit of an opening’ to a possible change in legal base, as the Commission did not repeat its position on keeping the dual legal base.

The office said Jørgensen is planning to get very involved on the F-gases second reading. This confirms the intelligence that the Danish government has been busy briefing Danish MEPs and trying to drum up interest for them to become active on the F-gases dossier.”

***

The Common Position approved by the Council after the First Reading is not yet translated into all the languages. It is anticipated that the real work in the Parliament’s Environment Committee, in the scope of the Second Reading, will not take place before early September.

IMPORTANT:
The AREA secretariat has been informed that DG Environment, in charge of the Regulation, is preparing a call for tender to find an advisor proposing the minimum requirements foreseen in the Article 5 – Training and Certification.
The following AREA mail was sent to Mr. Peter Horrocks, responsible for this issue: “You know that our Leonardo project has set up minimum qualifications (and skills) requirements for the EU refrigeration craftsmen, seen from the side of the contractors: i.e. a list of basic activities that the craftsmen have to be able to fully understand and perform. AREA plans to further study minimum certification criteria for RAC companies. We heard that DG Environment might be planning a call for tender for projects studying and preparing the Article 5 requirements. We would be grateful to be kept informed about this interesting initiative. Depending on the scope considered by DG Environment, AREA, bringing the field experience and expertise, may be motivated to join forces with VET and/or certifying bodies to answer such a tender.”

***

Position of ACEA European Automobile Manufacturers Association

Argumentation on MAC dates

Why should the ban of HFC-134a apply to new vehicles types from 2012 at the earliest?
ACEA strongly insists on 2012 as the earliest date for a ban of HFC-134a. The gradual phase out of the Commission proposal (quota system from 2009 onwards with the possibility of putting HFC-134a systems on the market until 2018) reflects the important remaining technical
and safety challenges of alternative systems to HFC-134a. Alternative MAC systems are tested in first prototypes. This is an early stage in the development of a technology for a volume-product, which has to fulfill high requirements concerning safety, functionality, and reliability. Further work on technological development of the system, testing of prototypes and integration into the final product will not be completed before 2012. This position is supported by the fact that the Commission still today offers research funding for alternative systems. In addition, a maintenance infrastructure for alternative systems is required all over the world before they can be marketed. Otherwise, EU manufacturers would have to build different vehicles for the EU and export markets, with unacceptable consequences for their international competitiveness.

Why is a “sunset date” (ban of HFC-134a for all new vehicles) of 2014 unacceptable?

Given product cycles of 6-7 years, a sunset date of 2014 would force manufacturers to either install CO2 systems in new models from 2007 onwards, or to later install alternative systems into vehicles already in production. This would have the most serious consequences, given that components of different MAC systems are not standardized or found in one specific location. Rather, they are distributed across the engine (and passenger) compartment. It is not possible to install components with different sizes without redesigning the surrounding areas. Similarly, additional components cannot simply be added due to space constraints. However, CO2 systems require at least two additional components (internal heat exchanger and accumulator), which need to be integrated into the very compact environment under the bonnet. Only a sunset date of 2018 would allow alternative systems to be introduced in new vehicle types.

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Other General Information:

Source: EPEE (June 20)

Coca-Cola Hellenic Bottling Company has released its sustainability report for 2004. CCHBC is one of the Coca-Cola Company's biggest bottler partners.

It includes extensive sections on environment which include reference to moving to non-HFC refrigerants.

Most relevant sections:

Atmospheric Emissions

Emissions to the atmosphere can affect human health and the natural environment. Particulate matter has adverse effects on cardio respiratory health for example, while acid rain damages soil, vegetation and water. Additionally, the accumulation of greenhouse gases in the atmosphere has been linked to global warming and climate change. Carbon dioxide (CO2) is the primary agent of climate change; other greenhouse gases including cooling agents such as chlorofluorocarbons (CFCs) and hydrofluorocarbons (HFCs). Coca-Cola HBC strives to minimise air emissions into the environment. There are no significant emissions of toxic substances from Coca-Cola HBC operations.

Emissions to the atmosphere from Coca-Cola HBC operations can be divided into three types:

- Air emissions from the burning of fossil fuels
- Loss of ozone-depleting substances from some cold drink equipment
- Emissions of greenhouse gases from energy use and cold drink equipment
In 2004, total emissions of gases with a global warming potential were equivalent to less than 680,000 tonnes of CO2, or 90 grammes per litre of produced beverage. This figure includes emissions from fossil fuels, CO2 used in carbonation (the non-recycled fraction of the 82,000 tonnes used) and coolants emitted from cold drink equipment. These coolants are estimated at 1.1 tonnes of CFCs (R12) and 7.8 tonnes of HCFCs (R134a), equivalent to approximately 20,000 tonnes of CO2.

**Air Emissions from Fossil Fuels**

Burning fossil fuels – such as heating oil, natural gas, petrol and diesel – to power Coca-Cola HBC manufacturing plants and transportation produces air emissions. Electricity consumption indirectly produces air emissions since the emissions occur where the electricity is produced rather than where it is used. Among these emissions, CO2 results from the generation of electricity, steam and combustion of fuels. CO2 emissions resulting from energy consumption were approximately 581,000 tonnes in 2004. In addition, nitrogen oxide (NOx) and sulphur dioxide (SO2) are also produced. Nitrogen oxide contributes to acid rain, global warming, summer smog and water eutrophication (over-fertilisation of rivers and lakes), while sulphur dioxide is the principal contributor to acid rain (see Environmental Data Table for a breakdown).

**Ozone Depleting Substances (ODS)**

Ozone in the upper atmosphere – known as the ozone layer – shields the earth from harmful ultraviolet radiation emitted by the sun. Chlorofluorocarbons (CFCs) such as R12 are substances that damage this ozone layer. Under the Montreal Protocol, the introduction of new cold drink equipment containing CFCs is prohibited. By December 1994, Coca-Cola HBC, like the rest of the Coca-Cola System, had stopped buying equipment containing CFCs. Simultaneously, a robust capture and recovery programme for all refrigerants was implemented. Coca-Cola HBC is phasing out CFC-containing units that are still in the marketplace with an equipment replacement programme. By 2004, only 9% (93,000) of coolers were CFC-containing units, down from 14% in 2003.

We expect the phase-out to be completed by 2007 and will report progress in next year’s report.

**Greenhouse Gas Emissions**

When the Montreal Protocol was first adopted, hydrofluorocarbons (HFCs) such as R134a were deemed ozone-friendly replacements for CFCs. However, their global warming potential was subsequently found to be significantly greater than that of CO2 and they were included in the list of greenhouse gases targeted under the Kyoto Protocol.

The Coca-Cola Company committed to move to HFC-free technologies wherever cost-efficient alternatives are commercially available. In 2004, after a three-year research and development programme to evaluate different technology options, The Coca-Cola Company announced that CO2-based refrigeration is best suited for the needs of the Coca-Cola System (see eKOfreshment programme on www.coca-cola.com). Coca-Cola HBC has been actively participating in this programme with its suppliers. At the 2004 Olympic Games in Athens, 600 hydrocarbon (HC) and 50 CO2 vending machines, all HFC-free units, were installed, representing the symbolic start to the roll-out of new HFC-free technologies.

A commercial test phase is taking place in 2005, after which the systematic installation of HFC-free units will be determined.
CO2 coolers will also be used at the 2006 Olympic Games in Turin. These units have no ozone-depleting potential, a very low direct greenhouse impact, and in tests, have proven to provide the safest, most reliable and most energy efficient refrigeration.

***

STEK BEING CHALLENGED!

The Institute for European Environmental Policy (IEEP) had released a report entitled “Is STEK as good as Reported? Uncertainties in the concept underling the propose European Regulation on Fluorinated gases.” Parties interested can obtain the 15 page report in pdf format at the secretariat.

The report was written by Mr. Jason Anderson previously of Climate Action Network Europe (Editor’s note : a rather aggressive green NGO) who is now employed by the Brussels office of the IEEP.

The report claims:

1. “…….potential emissions reductions brought about by the STEK system are hard to identify with great clarity. More detailed study of STEK-sponsored research shows that leak rates could be double the 4.8% figure that inspired the Regulation – depending on how the data are interpreted.”

2. “Comparing end-user leakage data with sales figures from HFC distributors shows potential leak rates of anywhere from 6.9% to 12.7% annually. The higher leakage figures should not come as a surprise for two main reasons: as was reported by STEK itself, there was likely to be a bias towards non-reporting of high emissions by companies worried about measures that they may face in future to reduce emissions; secondly, when looking at countries with very similar leakage reduction efforts, like Sweden, reported emissions rates are significantly higher.”

3. “An initial assessment of STEK-like measures across Europe showed a cost of carbon reduction of _18.32/tonne CO2; if reductions are half as effective as estimated, the costs could rise to over _50/tonne, which is well above _20 level the Commission has generally spoken of as being ‘cost-effective’ mitigation.”

4. “The European Parliament has considered and rejected more stringent measures to promote replacement of F-gases with less damaging compounds during its first reading of the Regulation in 2004; however, it is likely that the Parliament took the achievable reductions from containment as a given.”

EPEE and NVKL are preparing a detailed rebuttal.
Education & vocational training

AREA II European Skills Competition
Hanover, IKK 2005, November 2-4

So far we have 7 competing teams: DE, FR, HU, IT, NL, SE and UK.
Three more countries are invited to participate!
Please decide to register and contact Mr. Jan Reijmers (janreijmers@planet.nl).

Secretary's thought:

Our Leonardo da Vinci project has come up with a portfolio of activities that the F-gas refrigeration craftsman has to be able to perform. As AREA represents contractors and not trainers nor professors, the National educational bodies should have to take over with their own VET programs to match these activities.
The job is only partial so far: what about other refrigerants or different levels of competence? AREA has rightfully taken advantage of the article 5 of the proposed HFC Regulation to get the European attention. But the minimum requirements of the article 5 are only a start and are not sufficient.
The qualifications should not be related to the use of a particular type of fluid but more broadly to the performance of the total refrigeration system. Also it is questionable if the qualification of the technicians should be delegated to the ODS/GHG Management Committee: this level of detail would be better served if dealt with in the technical standards organizations. As our Slovak Member, Mr. Peter Tomlein, likes to remind it, EN 378 and EN 13313 seem to be the adequate starting points.
This is a call to the AREA representatives sitting in the CEN working groups.

Now we cannot address qualifications without continuing on the subject of certification. One way or the other, AREA Committees or assigned experts should not wait long before working on minimum criteria for RAC personnel and companies. It means that another European funded project appears to be advisable in 2006.

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Nearly 120 000 visitors in WorldSkills 2005 Helsinki

WorldSkills 2005 Helsinki Competition gathered 118 044 visitors to the Fair Centre on 26-29 May. Thursday and Friday were the most popular days with over 40 000 visitors on both days and most of them young students. On Friday there were more visitors than ever before in the history of the Fair Centre.

And the winners are..
The best countries in WorldSkills 2005 were Switzerland (5 gold, 7 silver, 6 bronze medals and 10 diploms), Korea (3+8+5+15), Germany (4+4+2+11) and Finland (4+1+3+17).

The Albert Vidal prize for the best score in the whole competition was awarded to Viridis Liew Mei Qi from Singapore with score of 571/600. She also won gold medal from IT PC / Network Support.

Now for section 38 **REFRIGERATION**, the results are:

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<tr>
<td>Florian Zebisch</td>
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EHPA (European Heat Pump Association) and partners from Austria, Czech Republic, France, Germany, Italy, Ireland, Sweden, Slovenia and UK, are making good progress in a project setting up a **EU Heat Pump Training**.

Information received through our Member FETA BRA:

The EU-Cert HP project, part funded by the European Commission, was set up to create common European certification for heat pump installers operating in the domestic market. Heat pumps are a key technology in the reduction of carbon emissions from the buildings and the underlying objective of the project is to guarantee the quality and performance of heat pump installations in a rapidly expanding market.

The project began in 2004 and involves 9 countries (Austria, Czech Republic, France, Germany, Italy, Ireland, Sweden, Slovenia, UK) and the EHPA. The project is led by Arsenal Research from Austria and the UK partner is BSRIA. BRE is also involved through EHPA.

Certification of installers will be based on a one week of full time training, including a practical day and written examination, at an accredited training institution. The training is focussed on domestic installations and includes heat pump theory, heating system design and installation and fault finding. All forms of heat pump are considered. The training also touches upon environmental issues and how to promote and sell heat pumps. Much of the material is based on existing installer courses in Austria and Sweden. Note that while the training provides specific information for heat pump installers it is intended to be carried out in conjunction with
other technical courses such as refrigerant handling and the product specific training offered by manufacturers.

The draft version of the training manual (in English) is now complete and the demonstration courses in each of the participating countries are scheduled for the end of 2005. The core of the training manual will be common to all countries but there are "national" parts to take account of differences in the building regulations and other local issues. Certification will be handled at a national level with a European level committee to oversee the development of the process and ensure consistency of qualification standards.

Further details of the project can be found at

http://www.fiz-karlsruhe.de/hpn/SAVE_EUCERT/eucert_home.htm

or by contacting

Reginald Brown
Head of Energy & Environment
BSRIA Ltd, Old Bracknell Lane, Bracknell RG12 7AH
Tel 01344 465539 (direct) Fax 01344 465626

Standardisation

Mr. Attila Zoltan, Managing Director of HRACA HKVSZ, attended the Annual Meeting of CEN CENELEC held in Budapest on June 8 and represented AREA.

The venue was organized in the beautiful neo-gothic Hungarian Parliament building. Mr. Zoltan informed the audience about HRACA and AREA, their work on minimum qualification requirements and certification schemes and the importance of having the feedback of the contractors when setting up standards. He also complained about the insufficient support when translating, transposing and disseminating the European standards into the national systems.
**Container filling**
The refrigerant container shall not be overfilled. When a container is filled with refrigerant, the maximum charge shall always be observed, taking into account that possible refrigerant-oil mixtures have a lower density than pure refrigerant. The usable container capacity shall therefore be reduced for a refrigerant-oil mixture. If no specific regulations are in place and if the liquid density of the refrigerant to be recycled is greater than 0.95 [kg/dm³] at 20°C, the containers shall be filled to a maximum filling factor of 0.75 [kg/dm³].

**NOTE 1** Special valves may be fitted to the refrigerant container to avoid the possibility of overfilling.

**NOTE 2** Most commonly used halogenated refrigerants have liquid densities above 0.95 at 20°C

**Filling Factor**
Refers to the charge of a refrigerant container and is given by the charged mass of refrigerant [kg] divided by the internal volume of the container [dm³]

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**ISO 5149: Draft, Refrigerating systems and heat pumps – Safety and environmental requirements**

**Part 1 Definitions, classification and selection criteria**

**Annex A (Normative): Safety requirements for multi-split heat pump and air conditioning systems**

**A.1 Introduction**
Multi-split heat pump or air conditioning systems generally consist of a single refrigeration circuit with multiple indoor units designed for individual operation and one or more outdoor units each containing one or more compressors. Generally the indoor units are matched to the requirements of each occupied space. Where an indoor unit is in or the piping passes through an occupied space having a volume of such size so that the total charge exceeds the allowable charge specified in part 1 of ISO 5149, then special provisions can be made to ensure safety.

Such special provisions are applicable to A1 and A2 refrigerants, as they are not considered to pose a significant hazard due to local concentration. These provisions may be applicable to B1 and B2 refrigerants that have a low acute toxicity, however they have been excluded since current refrigerant classification is by chronic toxicity. Highly acute toxic refrigerants and highly flammable refrigerants are excluded to avoid the hazard due to local concentration.

**A.2 Scope**

**A.2.3** This annex applies only where the refrigerant charge in the system does not exceed 150 kg of A1 refrigerants and 75 kg of A2 refrigerants.

**A.4.1.1 General**
Indoor units and piping shall not have any internal space that has the capacity whose product of maximum allowable pressure (bar) and internal volume (litre) exceed 50 for A1 classified refrigerant and 25 for A2 classified refrigerant. The maximum volume of the internal space shall be less than 1 litre. Piping is not considered as this type of internal space.

**Annex B (Normative): Location of refrigerating systems**

**A.3 Factory sealed units with a charge of less than 0,15 kg of A2 or A3**
refrigerant
For factory sealed systems with up to 0.15 kg of A3 refrigerant the requirements of IEC 60335-2-24, 89, 40 shall be applied.

ISO 5149: Draft, Refrigerating systems and heat pumps – Safety and environmental requirements
Part 2 Design, construction, testing, marking and documentation
5.2.2.1.1 Requirements
Pressure-limiting devices shall be provided on all systems operating above atmospheric pressure, except that a pressure-limiting device is not required on any factory-sealed system containing less than 10 kg of Group A1 refrigerant that has been listed by an approved, nationally recognized testing laboratory and is so identified.

5.2.3.3.1 General
For proper arrangement of piping the physical layout, in particular the position of each pipe, the flow conditions (two-phase flow, oil supply operation on partial load), condensation processes, thermal expansion, vibration and good accessibility shall be taken into account.

NOTE Routing and supporting of piping have an important effect on the operational reliability and serviceability of a refrigerating system. As a general rule, piping shall be installed so as to avoid damage from any normal activity.

The following considerations shall apply to the installation of piping for safety and environmental protection:

a) there shall be no hazard for persons and free passage in escape and access routes shall not be restricted. No valves and detachable joints shall be located in areas accessible to the general public where group A2, B1, B2, A3 or B3 refrigerants are used. For other refrigerants, they shall be protected against unintended operation or disconnection;

b) piping shall be protected against heat by segregation from hot pipes and heat sources;

c) a brazed, welded, or mechanical connection shall be made before opening the valves to permit refrigerant to flow between the refrigerating system parts. A vacuum valve shall be provided to evacuate the interconnecting pipe and/or any uncharged refrigerating system part.

5.2.4.5 Arrangement of shut-off devices
Shut-off devices shall not be mounted in crawl spaces. Where shut-off devices in systems utilizing group A2, B1, B2, A3 or B3 refrigerants are mounted in a piping shaft designed for human entry, the shaft shall have more than one escape exit.

5.2.6.5 Indication device for pressure relief devices
For systems with a minimum charge of 100 kg A1 refrigerant, 25 kg A2, B1 or B2 refrigerant and 2.5 kg of A3 or B3 refrigerant, an indicating device shall be provided to check whether the relief valve has discharged to atmosphere. Examples are as follows:

- upstream installation of bursting discs with interspace monitoring and pressure alarm device (pressure limiter). The actual relieving pressure of the type-tested pressure limiter monitoring the inter-space should be set to a pressure of less than or equal to 0.5 bar resp. 0.05 MPa;
- gas sensor in the discharge line; or
- use of safety valves with a soft seal, with pressure monitoring of the protected section and alarming of the permanently attended station when a level of 2 bar resp. 0.2 MPa below the actual relieving pressure of the safety valve is reached.
5.2.7.2.1 General
Each pressure side or distinct pressure stage of a refrigerating system shall be equipped with pressure indicators where the refrigerant charge exceeds:
— 100 kg for group A1 refrigerant;
— 25 kg for group A2, B1 or B2 refrigerant;
— 2,5 kg for group A3 or B3 refrigerant.
For systems containing more than 10,0 kg of group A1 refrigerant or containing more than 2,5 kg of group A2, B1 or B2 refrigerant, or containing more than 1,0 kg of group A3 or B3 refrigerant, pressure indicator connections for each pressure side or distinct pressure stage shall be provided (the fitting of permanent pressure indicators being optional).
When a pressure gauge is permanently installed on the highside of a refrigerating system, its dial shall be graduated to at least 1,2 times the design pressure.
If replaceable oil strainer is provided in the lubricating system of the open type compressor, an oil pressure gauge shall be provided to detect insufficient lubrication pressure.

5.2.7.3.1 Refrigerant receivers
Refrigerant receivers in systems containing more than:
— 100 kg of group A1 refrigerant;
— 25 kg of group A2, B1 or B2 refrigerant;
— 2,5 kg of group A3 or B3 refrigerant;
and which may be isolated shall be provided with a liquid level indicator to show at least the maximum refrigerant level.

5.2.12 Safe handling of equipment
For equipment containing liquid refrigerant A2, A3, B1, B2 or B3 and having a pressure relief device on the section containing liquid refrigerant, following shall apply:
The pressure in the parts containing liquid refrigerant during transport and that are protected by a pressure relief device shall not be higher than 0,9 times the set-point of the pressure relief device.
The pressure shall be calculated or tested considering that the unit is submitted for 12 hours at the highest transport temperature.
For normal transport 55 °C shall be used as the highest transport temperature.
For transport under tropical conditions 70 °C shall be used as the highest transport temperature.
If the design of the equipment is such that it cannot withstand certain temperatures during transport, then this should be clearly marked on the packaging of the unit.

5.4.2.3 Machine card
An adequately protected card shall be situated near the operating site of the refrigerating system and be clearly readable.
NOTE In the case of split or multisplit systems, the operating site may be considered as the outdoor unit.
This card shall at least contain the following information:
d) details of the flammability if a flammable refrigerant is used (group A2, A3, B2, B3 refrigerant);
e) Details of the toxicity if a toxic refrigerant is used (group B1, B2, B3 refrigerant).

ISO 5149:Draft, Refrigerating systems and heat pumps – Safety and environmental requirements
Part 3 Installation site
Piping and ducting
All piping and ventilation ducting, which passes through walls, ceiling and floors of machinery rooms, shall be sealed where it passes through the walls ceiling or...
floors. The sealing shall have at least equivalent fire resisting properties as the walls, ceiling or floor.

NOTE 1 Discharge pipes from relief devices, safety valves and fusible plugs may diffuse the charge into the by adequate means but away from any air intake to the building or discharge into an adequate quantity of a suitable absorbing material.

NOTE 2 Relief devices for refrigerants in group A1 may discharge into the machinery room provided the system charge is less than the limits set in Annex C of 5149-1. Such discharges of refrigerant shall take place so that persons and property are not endangered.

ASHRAE Standard 15

7.5.2 Applications for Human Comfort. Group A2, A3, B1, B2, and B3 refrigerants shall not be used in high-probability systems for human comfort.

9.7.8 Pressure-relief devices and fusible plugs on any system containing a Group A3 or B3 refrigerant; on any system containing more than 6.6 lb (3 kg) of a Group A2, B1, or B2 refrigerant; and on any system containing more than 110 lb (50 kg) of a Group A1 refrigerant shall discharge to the atmosphere at a location not less than 15 ft (4.57 m) above the adjoining ground level and not less than 20 ft (6.1 m) from any window, ventilation opening, or exit in any building. The discharge shall be terminated in a manner that will prevent the discharged refrigerant from being sprayed directly on personnel in the vicinity and foreign material or debris from entering the discharge piping. Discharge piping connected to the discharge side of a fusible plug or rupture member shall have provisions to prevent plugging the pipe in the event the fusible plug or rupture member functions.

9.9 Pressure-Limiting Devices

9.9.1 When Required. Pressure-limiting devices shall be provided on all systems operating above atmospheric pressure, except that a pressure-limiting device is not required on any factory-sealed system containing less than 22 lb (10 kg) of Group A1 refrigerant that has been listed by an approved, nationally recognized testing laboratory and is so identified.

9.13 Fabrication

9.13.1 The following are requirements for unprotected refrigerant-containing copper pipe or tubing:

(c) For groups A2, A3, B1, B2, and B3 refrigerants, protective metal enclosures shall be provided for annealed copper tube erected on the premises.

9.13.2 Joints on refrigerant-containing copper tube that are made by the addition of filler metal shall be brazed.

Exception: A1 refrigerants.

10.1.2 Testing Procedure. Tests shall be performed with dry nitrogen or another nonflammable, non reactive, dried gas. Oxygen, air, or mixtures containing them shall not be used. The means used to build up the test pressure shall have either a pressure-limiting device or a pressure-reducing device and a gage on the outlet side. The pressure-relief device shall be set above the test pressure but low enough to prevent permanent deformation of the system’s components.

(d) Systems erected on the premises using Group A1 refrigerant and with copper tubing not exceeding 0.62 in. (16 mm) outside diameter shall be tested by means of the refrigerant charged into the system at the saturated vapor pressure of the refrigerant at 68°F (20°C) minimum.

International Mechanical Code

1101.8 Change in refrigerant type. The type of refrigerant in refrigeration systems having a refrigerant circuit containing more than 220 pounds of Group A1 or 30 pounds of any other group refrigerant shall not be changed without prior notification to the code official and compliance with the applicable code provisions for the new refrigerant type.
**1104.3.1 Air-conditioning for human comfort.** In other than industrial occupancies where the quantity in a single independent circuit does not exceed the amount in Table 1103.1, Group B1, B2 and B3 refrigerants shall not be used in high-probability systems for air-conditioning for human comfort.

***

ISO/TC 86/SC 1/WG 1 N 246
CEN/TC 182 N 1084
## Classification

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European Council

Published by Euractiv on June 15:

Who finances the EU budget?

In Short:

At the Brussels summit on 16 and 17 June, attempts by EU leaders to agree a framework budget for 2007-2013 failed. Efforts to reach a deal on the overall level of spending and the individual contributions from each member state have been unsuccessful. EurActiv brings an overview of the main figures.

Historically the contribution from every member state corresponds to the size of their economy. Countries with struggling economies or inefficient farming sectors and weak infrastructure have received more significant cash injections. Following a re-draft of the budget it is anticipated that some of the new member states from central Europe will become major net recipients of EU funds.

The EU-15 country that has received the most from the EU budget is Spain, followed by Greece, Portugal and Ireland. They all stand to lose some of the previous funding if the EU wants to help the new member states. No country has so far volunteered to foot the bill. The biggest contributors per head of population have been the Netherlands and Sweden.

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SOURCE: European Commission report (Allocation of 2003 operating expenditure by member state)  
*Figure includes deduction for UK rebate

**European legislation**

**EUPD**


Mr. Cedric Sloan, Director General of FETA BRA had the courtesy to forward to the AREA secretariat the presentation from a UK DTI/DEFRA meeting for "stakeholders" interested in the EC Eco-Design of Energy using Products Framework Directive (presentation, which is self-explanatory, reproduced here below).

Mr. Sloan said that, to summarise the attitude of the British officials who have been tracking this issue most closely, they:

1. Are very relaxed about the implications for industry  
2. Feel that there is no action for manufacturers to take at the moment, because it requires a nationally approved Implementation Measure to be approved before any obligation can be placed on suppliers  
3. See the directive as a means of curbing the enthusiasm of the EC for regulation / centralization.

**Framework Directive for the Eco-design of Energy Using Products**

10 June 2004

*History*

Original proposal tabled Aug 2003  
Member States reached agreement on text at June 2004 Energy Council  
2nd reading deal reached with European Parliament April 2005
Eco-design Framework Directive – A Brief Outline

A framework for setting eco-design requirements for energy using products (EuPs) provides for setting of requirements which EuPs must fulfil before they can be placed on the market. Which aims to...
...ensure the free movement of products...
...contribute to sustainable development, security of supply, etc.

Scope

In principle: any energy using products...
...except for means of transport
Also covers parts which are intended to be incorporated into energy using products

Products which...

Represent a significant volume of sales and trade, indicatively more than 200,000 units a year within the Community according to most recently available figures.
And... have a significant environmental impact.
And... present significant potential for improvement without entailing excessive costs.

Legal Basis and Declaration

Article 95 - Free movement - CE marking for the products conforming to the eco-design requirements laid down in the implementing measures
Manufacturer or authorised representative responsible for compliance with Directive – normally to be based on self declaration
Declaration will be via CE marking regime

Immediate Obligations

No immediate obligations for manufacturers
...but defines rules and conditions for establishing implementing measures
Commission intention to engage with industry on issues and encourage proactive self-commitments in order to pre-empt mandatory approaches

Assessment of Self-commitments

Annex VIIa sets out 9 areas to consider when assessing suitability of self regulatory initiatives i.e. open participation, added value, representativeness, quantified and staged objectives, involvement of civil society, monitoring and reporting, cost effectiveness of administration, sustainability, incentive compatibility

Implementing Measures will

...be established by Commission advised by a regulatory committee and consultation forum
...define requirements, assessment procedures and dates
...involve stakeholders in their development process

Process

Within two years, Commission (in consultation with stakeholders via Consultation forum) to establish a 3 year work plan
In the interim, Commission to bring forward proposals for implementing measures following priorities in EU Climate Change Programme

EU Priority List

Heating and water heating equipment, electric motors, lighting, domestic appliances, office equipment, consumer electronics and HVAC systems
And stand by losses for a group of products
Existing Regulations
Existing directives on minimum energy efficiency requirements to become implementing measures under Eco-design Directive – e.g. those for domestic refrigeration appliances and ballasts for fluorescent lighting

Benchmarks
In seeking to establish specific eco-design requirements the performance of product available on international markets and benchmarks set in other countries legislation should be taken into consideration during analysis and setting requirements

Consumer Information
Art 11 requires manufacturers to provide consumers with information, in the form they deem to be appropriate, on the role that they can play in the sustainable use of that product and when required by implementing measures the ecological profile of the product

Key actions
To raise profile of Eco-design Directive among stakeholders
To establish UK priorities for implementing measures under the Eco-design Directive
To establish publicly available UK minimum standards for Eco-design directive priority products

European funding
Following up on a suggestion of SNEFCCA during the last General Assembly, the secretariat wrote to DG Employment:

European Commission
Directorate General Employment, Social Affairs and Equal Opportunities
Mrs. Kristin SCHREIBER
Head of Cabinet

May 31, 2005

Dear Mrs. Schreiber,

The Air conditioning and Refrigeration European Association AREA (please visit www.area-eur.be) (European non profit organization) is composed of National associations from Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Netherlands, Norway, Poland, Slovakia, Spain, Sweden and United Kingdom.

The associations which are members of AREA, represent, in their own country, the enterprises responsible for the design, installation, maintenance, servicing and repair of refrigeration and air conditioning equipment in the various applications.
AREA members globally represent today more than 9,000 companies (mainly SME), a workforce of >125,000 and a turnover of approx. 20 billion € in the refrigeration and air conditioning sectors.

There is a recurrent and important shortage of skilled refrigeration craftsmen in all EU Member States. Young people need to be better informed and attracted to our trade. Our industry would be served by transnational movements of skilled personnel managed in the proper way.

Important differences in the educational schemes do exist between European countries. Advanced countries do not want to accept craftsmen from other Member States with insufficient qualifications and competence. This cannot be a long lasting situation while building up an operational European Union (Lisbon strategy). The educational programs have to follow fast technological changes and to monitor an increasing number of changing rules, environmental legislations and European norms. The vast majority of the refrigeration and air conditioning installation companies are SME. As the issues to be dealt with, are global issues, the question of a minimum level of professional competence has to be addressed in the European context.

The proper level of education and vocational training in the countries of the European Union and the setting up of the adequate national certification schemes are a sine qua non condition of the applicability the mutual recognition concept.

The purpose of our letter is to find out if DG Employment or the European Social Fund could have subsidies available to allow us to efficiently work and get concrete results on the issues explained here above.

Thanking you for considering our request and possibly forwarding our question to your Staff, we remain,

Yours sincerely,

Robert Berckmans

,No answer yet)

**News from our Members**

**KYL**

AREA has supported the KYL position against a new accreditation for pressure testing by writing on June 7 to the Swedish Work Environmental Authority with copies to the Swedish Board of Trade, DG Internal Market and DG Enterprise.

Extract :

…
We have been informed by our Swedish Member that the Swedish Authorities consider changing the existing authorization procedure for companies performing pressure tests with a testing pressure > 3 bar to an certified “accreditation” procedure in accordance with EN 45004 (ISO/IEC 17020). It would mean that a foreign company will have to obtain the proposed Swedish accreditation or to prove that its national certification scheme complies with the same requirements.

AREA has held its General Assembly on April 30, 2005 and this issue has been discussed. The Swedish initiative is unique and no other EU Member State is contemplating a similar step.

Such a measure would create disparities between national legislation across Member States, creating barriers to trade and the free movement of workers, and bringing distortion in the good functioning of the Internal Market.

Such a measure is not necessary because the existing and proposed European legislation (for instance the Pressure Equipment Directive 97/23/EC and the proposed EC F-gas Regulation) as well as the applicable European norms (for instance EN378) are already supplying the proper specification for testing.

Therefore AREA is supporting the position of Kylentreprenorernas Forening that states that the establishment of a new accreditation scheme for companies performing pressure testing would be unnecessary and would be the reason for strong “EU internal market” arguments that would generate reactions from the partners of Sweden in the European Community.

…

**Sister Associations**

**EPEE European Partnership for Energy and the Environment**

Message from the Director General

Since its start in September of 2000 EPEE has pursued its activities in strict compliance with competition law. Recently a number of important developments have taken place in the EU’s competition policy which have prompted the Steering Committee, at its meeting in February of this year the to review the situation with a view to determine whether any changes to the existing EPEE Governance and Compliance Policy were needed. Concrete proposals may be presented to the AGA later this year.

The developments which have prompted the review affect both the EU’s competition rules and its enforcement:

*the EU has “modernised” the application of Articles 81 & 82 of the Treaty by adopting new legislation and related implementing rules that apply since 1 May 2004. The main elements of the new enforcement system are:

- notifications to the Commission will no longer offer companies and associations the advantages of temporary validity and protection against fines. It is therefore even more crucial that compliance of all EPEE activities with competition law is ensured from the very early stages of their preparation.
• National Competition Authorities (NCAs) will play an active role including with regard to EU competition cases, for which they have been granted powers similar to those of the Commission. The national courts will also play an increasing role in this context.
• There will be effective co-operation, in particular with regard to cartel cases, between the EU authorities and those of the USA, Canada, and Japan, as well as within the EU Network created between the Commission (DG Competition) and the NCAs.
• The Commission will have increased powers of inquiry (e.g., the ability to search together with the help of the NCAs in private homes, the right to interview employees…) In addition, it is worth noting the tendency in a number of member states (including in particular the UK) to impose criminal sanctions, including prison terms for competition offences.
• Fines can be imposed directly on associations (see the attachment for related rules, including on the payment of such fines).

*Leniency: this policy has existed at EU level for several years. It promises immunity from fines or at the very least much lower fines to companies which denounce the details of a cartel in which they are involved to DG Competition. This policy has already resulted in a huge increase in the amount of information the Commission now has about anti-competitive activities and makes it much easier for the Commission to become aware of cartels and other infringements of the competition rules.

This is only one way in which the Commission may obtain information about possible cartels and initiate inquiries. It is part of the Commission’s stated policy to increase its fight against cartels.

Given these various developments it has been decided that EPEE should further strengthen its commitment to strict compliance with the competition rules and take a number of concrete measures. This letter constitutes the first step in this process and is intended not only to draw your attention and that of your collaborators to the new developments mentioned above but also to emphasise once again that EPEE is committed to ensuring strict compliance with competition law with regard to all of its meetings and activities, including those of the working groups, associated associations and other groups recognised under article 4 of the EPEE By-Laws.

It is therefore essential that you ensure that this policy is actively complied with both by you and by those working for you and that you review all activities you are conducting under the EPEE umbrella to ensure full and effective competition compliance, and apply the utmost vigilance in this regard in all activities.

In order to help you in this regard it has been decided that:

• the Secretariat will re-distribute EPEE’s statement as well as copies of this letter to all groups and ask its members to sign a document confirming receipt at this occasion.
• to make the statement available at all EPEE meetings while spare copies can also be obtained at any time from the Secretariat.
• the Secretariat shall include in the invitations and in the subsequent minutes the exact time of the beginning and end of all meetings.
• the Secretariat will ensure that the statement, this letter and a copy of art. 81 and 82 will be loaded on EPEE’s website.
• The situation will be reviewed by the steering committee at regular intervals and additional measures will be proposed whenever necessary.
I appreciate your co-operation on this important issue.

Respectfully

Friedrich P. Busch
Director General EPEE

***

EHPA European Heat Pump Association

E-mail sent by the Secretariat to Mrs. Brigitte Bach and Mrs. Raphaela Bösworth (both of Arsenal Research in Austria), chairing the Education Committee of EHPA:

AREA's opinion is that refrigeration and air conditioning technicians and the companies that employ them should be certified. Also our industry needs EU harmonized education and training.

The European Institutions have to specify minimum/essential requirements but the Member States have to organize their own VET and certification systems in compliance with the EU requirements set.

AREA did some work on minimum qualifications and skills of the basic F-gas refrigeration craftsman but much more has to be worked on in the coming years: different levels on competence, different refrigerants, different families of equipment, criteria for certification, and so on.

AREA members are able to specify what a technician should know and be able to perform and what a company has to comply with to be certified as an authorized RAC installer. So AREA can advise the European Commission on the minimum requirements. But the design of the educational and training tools and the setting up of certifying bodies are the responsibility of the Member States and should be established with the National VET bodies, schools and research institutes.

This being said, AREA is interested in cooperating with EHPA given the potential and the development of heat pump applications.

As I mentioned, our last General Assembly has decided not to apply (alone) for a new Leonardo project in September 2005 (the current Leonardo project will come to an end in early 2006).

I believe that an application in one year (i.e. September 2006) could be accepted by our Members.

Next to DG Education, there are other Directorates General with project funding opportunities: for instance Research, Enterprise or Employment.

For your information, AREA has applied (6th Research Programme - no final decision yet) for a project about the reduction of refrigerant charge to a minimum in a refrigerating system, with as partners TNO (NL) and FKW (D).

I would welcome future meetings between our associations to study the possibility of a common project, primarily on the issues outlined here above.

***
ACCA Air Conditioning Contractors of America

The secretariat wrote to Mr. Paul T. Stalknecht, CEO of ACCA about the issue of guarantee on equipment sold.

“…

In Europe, the RAC installers, mostly composed of SME, generally consider that warranty allowances and conditions, granted by equipment manufacturers and distributors, are insufficient to cover all costs incurred by contractors in putting right manufacturing defects in many cases.

We identify three priority issues to be discussed with the equipment manufacturers:

- **Definition of causes of manufacturer’s failures** (concerns materials, workmanship, performance and clear instructions)

- **Scope of coverage of the guarantee** (concerns cost of labour, travelling expenses, loss of refrigerants, …)

- **Recognizing the advantages of having certified equipment installed by qualified and certified contractors.**

The reason of our letter is to find out if your association, representing the American AC contractors, has experienced a similar situation and whether discussions have taken place in the US between Representatives of the manufacturing and contracting sides of the RAC sector.

…”

***

EFCTC European FluoroCarbon Technical Committee

You may want to visit:

[http://www.fluorocarbons.org/frame.htm?chfamilies/HFCs/g_properties/proper.htm](http://www.fluorocarbons.org/frame.htm?chfamilies/HFCs/g_properties/proper.htm)

giving useful information and the general properties of HFC refrigerants.

***

Communication from Mr. Didier Coulomb, Director General of IIR:
IIR listing refrigeration research priorities

The International Institute of Refrigeration (IIR) is an intergovernmental organization bringing together 61 countries on all continents, and is a forum for exchange and enhancing of knowledge on refrigeration technology and applications. The IIR's Science and Technology Council comprises 10 commissions spanning all refrigeration spheres:

A1 - Cryophysics, cryoengineering
A2 - Liquefaction and separation of gases
B1 - Thermodynamics and transfer processes
B2 - Refrigerating equipment
C1 - Cryobiology, cryomedicine

C2 - Food science and engineering
D1 - Refrigerated storage
D2 - Refrigerated transport
E1 - Air conditioning
E2 - Heat pumps, energy recovery

Almost 550 specialists in universities, research centres and companies belong to the IIR's worldwide commission network.

The refrigeration sector is today facing two great challenges: health and environment.

The quality of foods, in terms of safety, along with the quantity of foods available, is directly linked to the quality of the preservation process over time. Thus for many foods that are vital to human health, it is the quality of the cold chain that governs safety and availability. Too many foodborne diseases and deaths still occur through non-compliance with the preservation temperatures required.

Refrigeration is also vital to the preservation of products used in healthcare such as vaccines, organs awaiting transplant, etc. and is thus vital technology in medicine and surgery, playing both preventive and healing roles. A great deal of improvement can still be achieved in this field in order to protect human health.

Use of refrigeration is expanding worldwide, in order to address vital needs and to ensure optimal living and working conditions (air conditioning in vehicles, computer rooms,..) and also in ultra-high-tech applications such as those used in the space industry, where refrigeration plays a key role. A striking example of expansion: the number of domestic refrigerators has almost doubled in 10 years.

Refrigeration technology consumes large amounts of energy; this consumption accounts for 15% of all electricity consumed worldwide. Refrigeration technology thus contributes indirectly to global warming. Moreover, refrigeration plants use refrigerants that in certain cases exert a very marked greenhouse effect where leakage into the atmosphere occurs. Certain other refrigerants, although used to a decreasing extent thanks to the Montreal Protocol, exert ozone-depleting effects where leakage into the atmosphere takes place.
Thus, refrigeration technology must be improved continually in order to meet the following objectives: greater control and safety, better efficiency and lower energy consumption.

The IIR therefore decided, within the framework of its Strategic Plan, to draw up a list of research priorities for the future. It hopes that these priorities will be a valuable guiding force for decision-makers in the public and private research sectors, and at governmental and corporate levels, in order to fund and promote technology needed to ensure the well-being of humanity and to provide protection for the future. Regrettably the IIR is not in a position to provide research funding itself.

Over a 1-year period, the IIR commissions worked on the definition, separately, then overall, of research priorities making it possible to achieve these objectives. The priorities were initially classified on a per-commission basis, then on a refrigeration-field basis, in order to reflect priorities in each sector.

Priorities were also grouped together in overarching themes, given that many research fields are common to several commissions and would benefit from interaction.

The research priorities are divided into 7 key themes:

1/ **Understanding, improvement and optimization of present equipment and systems**: although refrigeration technology is in many cases not new, the heat-transfer processes are complex and require better modelling, flow measurement and investigation of interactions. The design of various components used in refrigeration systems can be improved, thus enhancing energy efficiency and reliability.

2/ **Performance of new energetic systems**: refrigeration can be the source of and benefit from new technologies in the fields of superconductivity, liquefaction of gases, cryogenics, nanotechnologies, etc. Less widely used refrigeration systems such as adsorption-absorption systems are attracting interest in today’s context of environmental issues to be addressed. Combined use of widely used and recent technologies can give rise to new approaches to optimisation and must be explored.

3/ **Optimization of the whole chain, including connected Installations**: the cold chain, from harvest to the consumer’s plate, forms a single entity. Improving one link in the cold chain is not enough: an overall approach taking into account overall energy consumption and compliance with the temperatures required in order to preserve foods, for instance, is required. A lot of work remains to be done on overall approaches involving control, measurements and monitoring.

4/ **Behaviour of refrigerated and frozen live products**: in both the medical and food fields, the use of refrigeration must not induce deterioration of the intrinsic quality of the product, even if refrigeration prevents contamination. Biological systems are fragile. The manner in which cells are frozen must be perfectly mastered in the field of preservation of genetic resources or human and animal tissues. In the case of foods, safety, nutritional value and sensory quality must be maintained.

5/ **Performance of refrigerants**: beyond the value of previous work, targeted research on the properties of refrigerants with no ozone-depleting potential and little or no global warming potential (CO₂, hydrocarbons...) is now needed in order to encourage their use where the energy efficiency and running costs of the equipment used are competitive.
Events

Event Name: 2005 Benchmarking & Key Performance Indicators
Date: Thursday, June 30, 2005
Location: BSRIA
Old Bracknell Lane W
Bracknell, Berkshire RG12 7AH
UK
Phone +44 1344 465 600
bsria@bsria.co.uk

Key Performance Indicators (KPIs) and Benchmarking are now accepted as valuable
techniques which make a significant contribution to these and other key business areas.

BSRIA has vast experience in this area, having produced the fifth set of KPIs for M&E
Contractors. This includes the ten headline KPIs, 22 secondary KPIs and supporting
correlations. Because of their precise focus and frequency of review, these are widely
recognised as the most relevant and accurate for the M&E sector.
The headline KPIs include:

• Client satisfaction - service
• Client satisfaction - quality of O&M manual
• Client satisfaction - design
• Client satisfaction - installation
• Client satisfaction - defects on handover
• Predictability of time
• Predictability of cost
• Safety (accident incidence rate)
• Productivity
• Profitability.

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2005 Cooling Industry Awards

The Cooling Industry Awards are organised by RAC Magazine and Emap Maclaren.

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REHVA WORKSHOPS AT CLIMA 2005 CONFERENCE
15 REHVA workshops are organised during the conference by the REHVA Task Forces and projects. The purpose of these workshops is to disseminate the latest information to the conference participants and get feedback from the participants for the future work of REHVA. The workshops are open for all registered conference participants. Prominent European experts chair the workshops.

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MONDAY, 10.10.05:
Indoor climate and ventilation of schools
Ben Bronsema, The Netherlands
Indoor environment is problematic in schools in many European countries. This workshop focuses of new technical solutions for better indoor environment and learning in schools and for development guidelines for better indoor environment in schools.

Improving the reliability and value of building services
Derek Clements-Croome, UK
The objective of workshop is to present the progress of REHVA Task Force 10, and discuss how to communicate the work to building clients. The aim is also to establish a European programme of research and practice on whole life performance of building services.

Implementation of the EU directive on energy performance of buildings (EPBD)
Francis Allard, France
Current situation of the implementation of EPBD in some European countries is presented and discussed in this workshop.

Modern air distribution systems in occupied spaces
Maija Virta, Finland
A new REHVA guidebook on Chilled beam cooling will be presented.
The workshop will discuss the future REHVA work in the area of modern air distribution systems.

Future trends in the development of industrial ventilation
Esko Tahti, Finland, Håkon Skistad, Norway, Jorma Railio, Finland
Workshop focuses on the continuation of the work by COST G 3 in industrial ventilation within new Rehva commission.

TUESDAY, 11.10.05:

Ventilation for reducing exposure to environmental tobacco smoke
Håkon Skistad, Norway, Ben Bronsema, The Netherlands
A new REHVA guidebook on how to reduce exposure to environmental tobacco smoke will be presented in the workshop. The future REHVA activities in the area will be discussed.

New guidelines for maintenance of clean and hygienic air handling systems
Pertti Pasanen, Finland
REHVA guidelines for controlling the cleanliness in air handling units and ducts will be presented and the future Rehva activities planned.

Evaluation of cost effectiveness of indoor climate
Olli Seppanen, Finland, Pawel Wargocki, Denmark
A procedure developed by REHVA task force how to evaluate quantitatively the effects of some parameters of indoor environment on health and performance will be presented and future activities planned.

Control of indoor air quality in museums and historical buildings
Livio de Santoli, Italy
Criteria and technology to control indoor environment in museums and historic buildings will be presented and discussed. This workshop is the follow up and continuation of the workshop on the same topic at Indoor Air 2005 conference.

Electronic guidelines for implementation of the energy performance buildings directive (EPBD)
Denia Kolokotsa, Greece, Francis Allard, France
The workshop focuses on the use of the modern IT-technology in dissemination information how to implement in practise the requirements set by EPBD.

WEDNESDAY, 12.10.05:

New European standard for inspection of air conditioning systems for energy efficiency
Jorma Railio, Finland
The workshop presents Draft European Standards on Inspection of air conditioning and ventilation systems. The implementation of these standards will be discussed, including possible REHVA work for further guidelines to support the implementation in real practise.

Low temperature heating and high temperature cooling
Dusan Petras, Slovakia, Peter Novak, Slovenia, Bjarne Olesen, Denmark
The workshop presents a draft of REHVA guide on the technology for low exergy systems for buildings. Various technologies such as surface heating and cooling and use of temperature gradients will be discussed and evaluated.

Data Base for European high quality low energy buildings
Joerg Schlenger, Germany, Francis Allard, France
The workshop highlights some high quality, low energy European buildings (educational facilities, recreational buildings and government administration buildings) to be included in the database. The final contents and use of the database will be discussed.

Energy efficiency and ventilation – development of distance training
Maria Kolokotroni
The workshop focuses on the methods of teaching ventilation technology using modern IT-technology and its applications.

Multicomponent sensors for ambient intelligence in indoor climate control
Andy Drysdale, Denmark, Jorma Säteri, Finland
The workshop summarises the state-of-the-art technology on sensors and their application for the objective measurement of indoor air quality and climate, and discusses the future needs for development and dissemination.

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