



KEEPING COOL

Sustainability through Energy Efficiency In Refrigeration and Air Conditioning

Tuesday, 3 October 2006
Concert Noble, 82 Rue d'Arlon, 1040 Brussels

CONFERENCE PROCEEDINGS

EPEE Chairman **Wolfgang Sandkoetter** opened the Conference by laying down the objectives of the day: to facilitate a dialogue and raise awareness in Brussels on the issue of energy efficiency in heating, ventilation, air-conditioning and refrigeration (HVACR) equipment and systems. He stressed that energy efficiency is an increasingly important issue affecting today's society and global economy, and that recent EU legislation demonstrates an overarching approach to the issue. By taking for its main focus the broad issue of energy efficiency, Mr Sandkoetter said, the Conference would aspire to allow the HVACR industry and stakeholders to look at the system and equipment performance as a whole, and to focus on impact over the life cycle of the equipment in a holistic way.





The first keynote speech was given by the former Executive Director of the UN's Environment Programme, **Klaus Toepfer**, who went over the main aspects of climate change. Dr Toepfer stressed the need to decouple development and growth from increased energy consumption and burning of fossil fuels. He said that it was a mistake to focus on the supply rather than the demand side as a first step – instead, he said that there is a need to re-examine the current system of 'subsidies' for energy prices which generally do not reflect environmental costs. His focal message to the delegates was a call for a revolution in energy efficiency, which would help to find out how to, for example, protect the ozone layer without contributing to global warming. A clear financial and scientific approach was needed for such a revolution.



- Werner Stenzig (Solfluor Iberica) asked about the marked change from a discussion on climate change to one on global warming. Dr Toepfer responded that this was not a predetermined change, and that climate change is simply a broader concept that includes global warming.
- John Goodall (FIEC) raised the question of whether climate change is a "lost cause," with no significant reversal possible. Dr Toepfer assured that such a view was unnecessarily cynical, and that the energy and energy efficiency structure in society was set to change anyhow. The variable concerns timing and how fast this change would take place.

PANEL 1: Sustainable Market for Energy Efficiency – A Challenge?



Emily Smith of the European Voice moderated this panel, and started out by asking panellists to consider in their discourses whether business was in competition with the environment as far as energy efficiency was concerned.

The first panellist, **Rainer Jakobs** of the IZW Information Centre for Heat Pumps and Refrigeration in Germany, approached the subject from an academic background. He explained the origins of the concept of sustainability, moving on to discuss the importance of air-conditioning and refrigeration in the world today and pointing out that they use 15% of the world's electricity. Dr Jakobs' research has led him to believe that sustainability of air-conditioning and refrigeration is based on a life-cycle perspective, consisting of the choice of the most energy-efficient design (including refrigerant choice) at the beginning of the life of an application and including measures such as the





prevention of leakages during the life cycle. In other words, it is necessary to consider the total system when considering cost and environmental impact. Dr Jakobs concluded by saying that eco-efficient innovation, namely one which considers not just the price and ozone-depleting potential of a refrigerant but also its global-warming potential and overall energy efficiency rating is not only good for the environment, but also for economic growth and employment.

Peter Liese MEP contributed the perspective of an EU legislator to the discussion. The Kyoto protocol, he said, was a long-term means to addressing climate change that needed time and the right conditions to “grow and prosper.” To this end, there is a need to reduce dependency on oil and gas, and high prices will help reduce demand. Moreover, there is a need to look at renewable energy sources (RES) and biofuels. Dr Liese conveyed to the participants that EU decision makers lack information on technical options for energy efficiency in the HVACR sector (among others) and particularly as concerns the use of RES and biofuels – he was keen to hear from experts what was technically possible. Dr Liese concluded by saying that everyone needs to be more ambitious with regard to energy efficiency.



As an American specifier, **Robert Mowris** gave an overview of the HVACR market in the US and discussed possible energy and demand saving measures that are universally applicable. In particular, he mentioned proper installation of heat sensor (TXV) bulbs, the correct refrigerant charge and airflow (RCA), and proper maintenance and servicing as measures that can greatly influence the energy efficiency of HVACR equipment. He also discussed the importance of choosing correctly-sized equipment. Mr Mowris concluded by stressing the importance of teaching and empowering people to make the right decisions regarding HVACR equipment use.

Kirsten Macey, from the Climate Action Network (CAN) NGO, brought up the issue of greenhouse gas and CO2 emissions from HVACR, and discussed some alternatives to HFC use, including hydrocarbons like isobutene, CO2 and ammonia. She also discussed the huge potential for energy efficiency policies for improving the climate change situation, including the setting of minimum energy efficiency standards for equipment and mandatory targets for demand reduction. Furthermore, she brought up energy saving measures such as insulation as being able to significantly contribute to energy in the HVACR sector. Ms Macey's conclusion was about the responsibility of governments in setting environmental limits.





Questions from the floor:

- Bernard Schrempp (TUV Industrie Service GmbH - TuV Sud) asked about EU legislation concerning new HVACR products from Asia, which have different (oftentimes lower) energy efficiencies which are not clear from their labels. Mr Liese responded that imported products are subject to correct labelling requirements just as EU-made ones are, and that the Eco-Label for Energy-using Products Directive is designed to streamline labelling and assist with compliance. Mr Toepfer added that there is a need for trade-neutral labelling.
- Hans-Jurgen Korte (Solvay) asked about the existence of an easy to use energy efficiency standard for HVACR, to which the reply was that the energy efficiency survey was just starting in HVACR.

The discussion was followed by a coffee break.



The second keynote speech was delivered by **Terry Wyatt**, Partner at Hoare Lea Consulting Engineers and Immediate Past President of the Chartered Institution of Building Services Engineers. Professor Wyatt highlighted the need for energy efficiency before the use of renewable energy, and illustrated this point by calling for a minimization of buildings which are not energy efficient. He also discussed the concept of 'low-carbon cooling,' which involved energy efficient design as well as energy efficient operation. Measures

include external shading, using cooling efficiency from local ground, air and water sources, more efficient ventilation, etc. He also said that ensuring effective operation was key to maintaining the energy efficiency of systems and equipment and called for an efficiency index on buildings and equipment.

- A question was asked on how to make sure that users go for the most effective option versus the cheapest one. Professor Wyatt said that clients, through their CSR requirements, drive suppliers to perform.
- John Goodall (FIEC) asked whether life-cycle analysis can really drive industry to produce the right kind of buildings. Professor Wyatt replied that, unfortunately, there was still no counting for carbon as far as buildings were concerned.

PANEL 2: Sustainable Operation – Good for the Planet and Your Wallet



Ewen Rose, Director of McGowen Rose Associates and a journalist with experience in the HVACR sector, moderated this discussion. He called on the audience to consider sharing any "bad habits" their organizations have as regards energy efficiency in HVACR and to rely on the panel to help them find concrete solutions to these problems.



Denis Clodic, a professor at the Ecole des Mines, was inspired by Mr Wyatt's keynote speech and the first panel to change the presentation he had prepared to a discussion of several specific issues. The focus of his talk was not on keeping cool, but keeping comfortable. He discussed the need for new thinking in HVACR which takes into consideration the recovery and reuse of waste water, hot air and ground heat. In particular, he discussed the Passive House movement, which is about greatly reducing or even completely eliminating the need for extra heating in housing through proper insulation and similar measures.

An official from the Enterprise Directorate of the European Commission, **Anna Sole-Mena** presented existing and upcoming EU legislation on energy efficiency. She started out by sharing with the participants the three objectives of the Common Energy Policy, namely security of supply, competitiveness and sustainability. The focus of her discussion was on the Action Plan on Energy Efficiency, which she assured is not being revoked and has simply been delayed by several weeks, as well as on the existing significant framework of legislation driving at energy efficiency. She singled the Eco-Design Directive, which aims to improve the energy efficiency of products throughout their life-cycle, the Energy Labelling Directive, which aims to increase the consumer's awareness of the energy consumption of household appliances, and the Energy Performance of Buildings Directive, which would apply minimum energy performance standards for new and renovated buildings. She concluded by saying that incentives were necessary to enable energy efficiency investments and that minimum performance standards & labels were powerful tools which could help transform the market.



Dieter Lorenzen of Emerson Climate Technologies focused on the sustainable operation of refrigeration in supermarkets. He discussed the value of store optimisation audits, system upgrades, and remote corrective actions, as well as continuous maintenance and monitoring. He showed that investment in these early on, and even corrective actions later on in the life cycle, meant that energy costs would be lower, over time, than without such investments and proper maintenance.



A manager of the Energy Efficiency in Buildings (EEB) Project at the World Business Council for Sustainable Development (WBCSD), **Christian Kornevall** explained that the vision which he and his team were working towards was buildings consuming zero net energy. The International Energy Agency estimated that buildings would soon consume more energy than transport and industry together, so there is a clear need for transforming the building industry, both on the supply and demand sides. The necessary innovations include integrated design and operations, as well as integration by automation based on new information technology.



Questions from the floor:

- Marc Chasserot (Shecco, Norsk Hydro) commented that natural refrigerants were an energy efficient alternative to HFCs which already exists. Professor Clodic replied by going back to the concept of the Passive House as even more energy efficient and an ideal to strive towards.
- Michelle O'Neill (Honeywell) commented on the fact that the problem in Europe wasn't with a lack of legislation but rather with a poor implementation record. She asked the Commission what kind of steps they themselves were taking, i.e. in terms of public procurement, to set the example for others. Anna Sole-Mena replied that there were a number of initiatives for the market to change, including a Green Paper currently under discussion. Furthermore, changes can be expected in the near future as a result of the Energy Efficiency Action Plan.
- Werner Stenzig (Solfluor Iberica) asked about incentives for renovation and retrofitting, which would integrate insulation and cooling. Kornevall said that this was good and important for protection and will result in better rules for containment. But can we manage it well?
- John Goodall (FIEC) commented on how frustrating it must be to promote energy efficiency, especially in Europe's old buildings – he claimed that retrofitting buildings costs too much money and that higher taxes on energy would disproportionately affect the poor -- and asked whether higher energy efficiency in buildings is not simply an unrealistic dream. Professor Clodic said that there was a problem with old houses in Europe, but that introducing energy efficiency certificates for houses might provide more of an incentive for both retrofitting old houses and building new ones. Mr Kornevall added that he cannot wait for a global framework for energy efficiency in housing.

In his closing comments, EPEE Chairman **Wolfgang Sandkoetter** stated that, while HVACR products are clearly necessary and offer irreplaceable health and safety benefits, as well as assuring comfort and productivity, these benefits cannot come at the price of the environment. It is imperative that the industry, for its part, develop products that are increasingly respectful of the environment. As was suggested by several speakers, these products can also make very good economic sense for business. Furthermore, it is up to legislators to create the most conducive environment for energy efficiency innovation and application. Mr Sandkoetter concluded by assuring participants that the European HVACR industry is actively involved in the energy efficiency debate, that making efficient products is a given in the day-to-day work of the sector, and that the industry looks forward to cooperating with all stakeholders on developing more energy efficiency equipment and lifestyles.

The conference was closed by a champagne reception.