



EFCTC NEWSLETTER

An update on fluorocarbons and sulfur hexafluoride

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BRITISH REFRIGERATION ROAD MAP HIGHLIGHTS ENERGY SAVING OPPORTUNITIES FOR REFRIGERATION USE IN THE RETAIL SECTOR

The Refrigeration Road Map was developed for the British [Carbon Trust](#) to identify technologies that can be implemented by retailers to enable them to save energy and limit CO₂ and refrigerant emissions.

The Road Map reviews the technologies that will eventually reduce emissions associated with refrigeration:

- Direct emissions (refrigerant leakage) and
- indirect emissions (originate from the energy used by supermarket cabinets).

The report prioritises these technologies in terms of CO₂ equivalent saving potential, relative cost and commercial maturity.

The Application timescale have thus been divided in term of:

- Technologies available now to retrofit;
- technologies available at short term to retrofit an existing store;
- technologies available at medium term for new stores or concepts;
- potential future technologies.

Of the many reviewed actions, many are part of EFCTC's commitment on the [responsible use of HFCs](#).

Most relevant to-F-Gas stakeholders are the following:

- Refrigerant change to R407A (instead of R404A);
- appropriate training for staff and engineers;
- maintenance and cleaning (notably the cleaning of condensers and evaporators);
- introduction of [HFC-134a](#) or [HFO-1234yf](#).

The Road Map has been produced in partnership with the [Institute of Refrigeration](#) and the British Refrigeration Association. It will be key reading for anyone involved in the design, specification, purchasing or innovation of retail refrigeration.

Copies can be downloaded at [Visit Carbon Trust](#) (requires login).



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OEWG MONTREAL PROTOCOL MEETING DISCUSSING HFC REGULATION

At the [June 2010 OEWG](#) meeting (Open-Ended Working Group of the Parties to the [Montreal Protocol](#)), two amendments were presented to control future HFC consumption and production, in the frame of the [Montreal Protocol](#), the first one by the US, Canada and Mexico together, the second one by Micronesia.

Under the US, Canada and Mexican proposal, the following production and consumption phase down schedule for HFCs in developed countries would be established:

Freeze in 2014 (measured against a 2004-2006 average baseline);
20% reduction in 2017;
30% reduction in 2020;
50% reduction in 2025;
70% reduction in 2029;
85% reduction in 2033; there is a production allowance of 10% for basic domestic needs of developing countries.

Developing countries would benefit from a delay of a certain number of years (to be fixed at a later date) before they should start the phase down.

However, the meeting did not come to any conclusion on the issue, mainly because of objections expressed by developing countries:

- Noting that the phase-down of HCFCs has only just started, that it is not yet fully funded, and that it is therefore too early to consider phasing out alternatives;
- insisting keeping HFCs within the Kyoto Protocol as they are today (a major factor being the question of financing a phase down of HFCs).

Although the meeting did not take any decision, the proposals can and will most probably be presented at the 22nd MOP (Meeting of the Parties) in November 2010.

HFC-245fa WORKING FLUID IN A 10 MW GEOTHERMAL POWER GENERATION PLANT

Geothermal energy from underground water is used to generate 10 MW of electric power from [HFC-245fa](#) based Organic Rankine Cycle (ORC) modular units installed in the state of Utah (USA).



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An [Organic Rankine Cycle](#) is similar to the universally used Rankine Cycle on which practically all power plants are based. Its specificity is to be designed for much lower temperatures; for that purpose, high molecular weight and low boiling temperature working fluids, such as HFC-245fa or HFC-134a, are required.

The plant is equipped with 50 binary HFC-245fa ORC generator modules that are combined in parallel in an energy network to produce an output of 14MW, of which 4MW are used for pumping the water up from the hot reservoirs and then back down.

By using HFC-245fa the plant recovers energy at temperatures ranging from 95°C to 150°C, making use of geothermal resources previously considered unusable.

Depending on the type of organic fluid used, temperatures as low as 70-80°C could be used in an ORC to generate electricity, opening the door to vast resources of underground heated water that heretofore were believed to be useless for generating electricity. In addition, unlike other renewable power generation systems, such as solar or wind, a geothermal plant can generate base load 24 hours a day.



Source : Equipment manufacturer

See also the previous [News](#) HFC USED TO CONVERT LOWER TEMPERATURE WASTE HEAT INTO POWER.



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A LIFE CYCLE CLIMATE PERFORMANCE MODEL TO BE DEVELOPED FOR REFRIGERATION AND AIR CONDITIONING

The Air-Conditioning, Heating, and Refrigeration Technology Institute (AHRTI) has launched a [project](#) to develop a standardized methodology to calculate the LCCP, or carbon footprint, of refrigeration or air conditioning systems. (Note)

A similar model, the [GREEN-MAC-LCCP](#) was recently developed for MAC (Mobile Air Conditioning), assessing the lifecycle energy and greenhouse gas (GHG) emissions associated with the production, use and disposal of various refrigerants in mobile air conditioning (MAC).

Currently, there is no standardized methodology for evaluating the LCCP of stationary Refrigeration & Air Conditioning equipment and AHRTI wants to develop a similar tool for the product classes or applications of interest.

The standardized methodology in view will be as generic as possible, in order to be able to eventually produce LCCP data on:

- Different classes of equipment (such as residential air conditioning, commercial air conditioning, residential heating, etc.);
- different refrigerants : HFCs such as R-410A, CO₂, hydrocarbons and very-low GWP refrigerants such as HFO-1234yf;
- different systems layouts and types (for example split or packaged, central or distributed, etc);
- various cooling capacities and energy efficiency ratings;
- various climate regions.

A multi-phase project, the research will address one class of equipment in each phase.

For the first phase, the scope of the 6-months research project is limited to residential heat pumps.

Note on LCCP

Over the lifetime of a refrigeration or air conditioning system, its direct climate impact results from refrigerant emissions during the manufacturing, installation, servicing and disposal at the end of the equipment's useful life.

Over the same period, its indirect climate impact results from the associated energy consumption to manufacture the equipment, to ship it, to provide the input power for it to operate and to dispose of it at the end of its life.



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To fully cover the total global warming impact of refrigeration or air conditioning equipment, both direct and indirect effects have to be considered. **Life Cycle Climate Performance (LCCP)** is a concept that identifies all the warming impacts due to the use of a certain product through its lifetime, including both the direct effect of refrigerants and possible blowing agent emissions from the product and the indirect effect of carbon dioxide emissions related to the energy consumption of the product.

Source : <http://www.ahrinet.org/ARI/util/showdoc.aspx?doc=1747>

NEW ON FLUOROCARBONS.ORG

The F-Gas regulation Review: a new section dedicated to the Regulation Review process.

NEW ON FIGAROO.ORG



More than 500 people already downloaded the EPEE-EFCTC log-book

The Logbook is provided free of charge.
Register to download it. [Log-book in English](#)

On **Figaroo in French**:

Formation et Certification
Conseils aux installateurs
Guide pour contrôles de fuites

Avec l'aimable autorisation de RealZero et de l'IOR, l'AFCE a souhaité proposer ce manuel anglais, adapté aux conditions françaises à l'ensemble des opérateurs et utilisateurs de froid.

NEW LINKS ADDED

Press - UK

The new RACplus, the companion website to Refrigeration and Air Conditioning magazine.
<http://www.racplus.com>