



# EFCTC NEWSLETTER

## An update on fluorocarbons and sulfur hexafluoride

ISSUE 64 – February 2009

### GLOBAL FLUOROCARBON PRODUCERS FUNDS HALOCARBON MEASUREMENTS IN THE ATMOSPHERE

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Evaluating F-gases emissions by monitoring their concentrations in the atmosphere is one convincing way to demonstrate the success of the [F-gas Regulation](#).

This is a reason why the Global Fluorocarbon Producers' Forum ([GFPP](#)), of which EFCTC companies are members, has decided to sponsor the initiative to establish a central calibration laboratory for halocarbons as part of the multi-national Advanced Global Atmospheric Gases Experiment ([AGAGE](#)).

The F-Gas Regulation aims to [reduce emissions](#) and requires a high level of maintenance, containment and leakage control to be implemented.

GFPP is promoting the gathering of solid scientific and independent data on which to base sound policies. The collection of such data will encourage steps to reduce emissions of fluorinated (F)-gases and, in particular, to help make the implementation of the EU Regulation a success.

The AGAGE operates a network of [globally distributed stations](#) conducting real-time measurements of chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs), including all major natural and anthropogenic halocarbons.

The frequent measurements (12-18 per day) provide the basis for calculating regional emissions, such as those from Europe or East Asia, and this new calibration laboratory will help upgrade their accuracy.

AGAGE is part of the powerful global observing system that is measuring halocarbons, including bromocarbons, in the Earth's atmosphere. The ALE/GAGE/AGAGE stations occupy coastal sites around the world chosen to provide accurate measurements of trace gases whose lifetimes are long compared to global atmospheric circulation times.

Advanced Global Atmospheric Gases Experiment (AGAGE), and its predecessors (the Atmospheric Life Experiment, ALE, and the Global Atmospheric Gases Experiment, GAGE) have been measuring the composition of the global atmosphere continuously since 1978. The AGAGE is distinguished by its capability to measure over the globe at high frequency almost all of the important gases species in the Montreal Protocol (e.g. CFCs and HCFCs) to protect the ozone layer and almost all of the significant non-CO<sub>2</sub> gases in the Kyoto Protocol (e.g. HFCs, methane, and nitrous oxide) to mitigate climate change.



# EFCTC NEWSLETTER

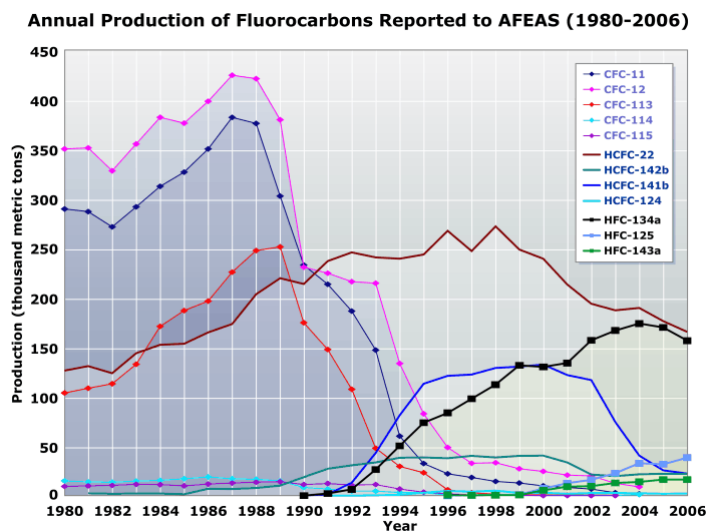
## An update on fluorocarbons and sulfur hexafluoride

### PRODUCTION AND SALES OF FLUOROCARBONS FOR 2006

AFEAS has published the [2006 production and sales](#) of Fluorocarbons from responding companies. Data are available through 2006 for [HCFCs](#) 22, 124, 141b and 142b and [HFCs](#) 134a, 125 and 143a. They do not include production in Russia, Korea, India and China.

Because the quantities of all CFCs had become so small, CFC production after 2004 is no longer reported to AFEAS.

All of the production and sales data through 2006 is available for download at the AFEAS [Data Download Page](#).

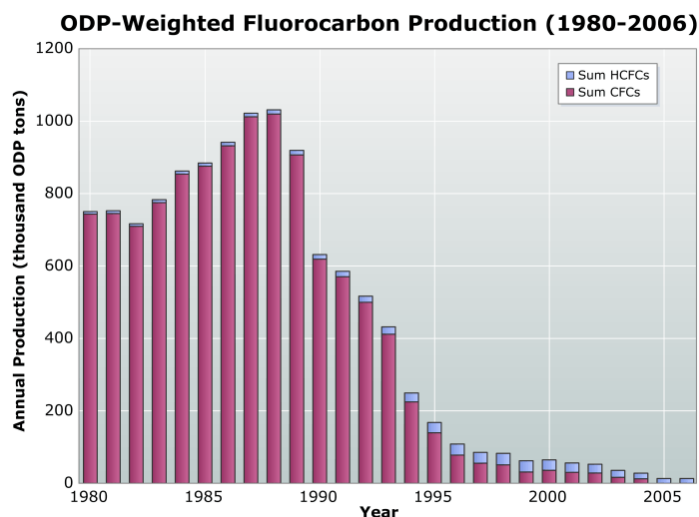


Fluorocarbon alternatives initially grew rapidly after their introduction to replace CFCs but now have varied growth rates, with most levelling off as they become more mature products. Production of HCFCs reported to AFEAS has fallen significantly since 1996. The increase in total HFC production has been modest compared to the decline in CFCs and HCFCs.

## An update on fluorocarbons and sulfur hexafluoride

### FLUOROCARBONS PRODUCTION IN 2006 REDUCED BY 97% in ODP WEIGHTED TONS AND BY 89% IN GWP WEIGHTED TONS FROM PEAK YEAR 1988

As a result of the [Montreal Protocol](#) implementation on CFCs and HCFCs, production of Fluorocarbons reported by [AFEAS](#), weighted according to the ozone depletion potential ([ODP](#)) of each compound, has been reduced by 97% from the peak year, 1988.

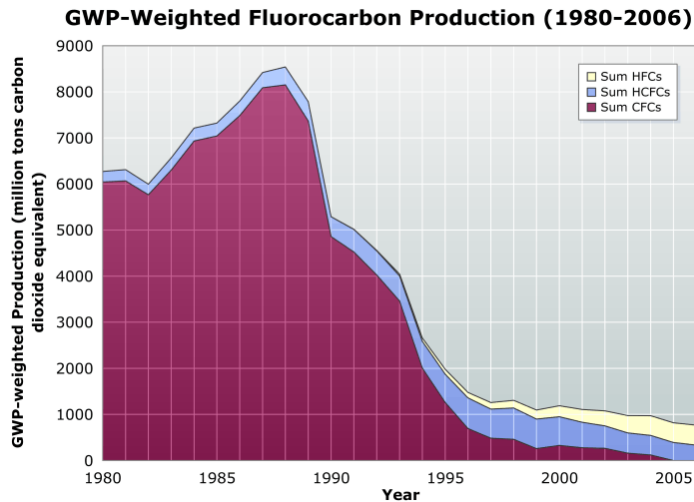


#### NOTES:

1. Calculated from production reported to AFEAS with ozone depletion potential (ODP) values from "Production and Consumption of Ozone Depleting Substances 1986-1998," UNEP, October 1999. The ODP of HFCs is zero because they do not contain chlorine. Therefore, they do not appear in the above figure.
2. CFC production was not reported to AFEAS after 2004.

Similarly, the production expressed in [GWP weighted tonnes](#) has declined by about 89% from 1988, the peak year.

## An update on fluorocarbons and sulfur hexafluoride



### NOTES:

1. Calculated from production reported to AFEAS with [GWP](#) (global warming potentials) for a 100-year time horizon from the [Scientific Assessment of Ozone Depletion: 2006](#) (which contains a homogeneous set of GWP values – pages 8-10 to 8-12).  
[Note: The [Kyoto Protocol](#) is based on actual emissions, not production.]
2. CFC production was not reported to AFEAS after 2004.

Estimates of atmospheric releases of the individual HCFCs and HFCs are also provided. The emission patterns and release delays are under continuing review because of the changes in use practices in the wake of the Montreal Protocol.

These revised emission functions have been used in calculating the emissions.

### **INSTANTLY CALCULATED ENERGY EFFICIENCY OF AIR CONDITIONING AND REFRIGERATION UNITS**

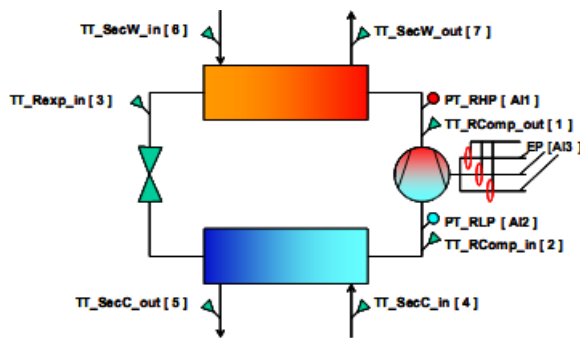
A new system could reduce the guesswork in assessing air-conditioning and refrigeration equipment for energy performance certificates.

The system can be used by consultants and end users reliable energy efficiency assessments, as will become mandatory under the [Energy Performance of Buildings Directive](#) (Note). It provides instantly a quantitative measure of the coefficient of performance ([COP](#)) of a working system that would otherwise take significant time and money to achieve. It is non-invasive so does not interfere with the refrigeration circuit.

## An update on fluorocarbons and sulfur hexafluoride

Operational temperature and pressure readings, power input data, thermodynamic properties of the refrigerant in use are fed to a software which calculates essential performance parameters, such as COP cooling and heating, Capacity cooling and Heating; Compressor efficiency (to detect its possible wear), etc.

The figure is a simplified template for an R407C chiller.



The system can identify within minutes faults and defects, or where component wear is affecting performance and likely to result in breakdown. It therefore has a role in preventive maintenance.

Almost any type of Refrigeration, Air Conditioning or Heat Pump system may be analysed, any refrigerant may be selected, and customised configurations for particular inputs, outputs and system types are possible.

Note: EU Member States must introduce a system of mandatory inspections for air-conditioning as part of the [Energy Performance of Buildings Directive](#).

In the [case of UK](#), all AC systems over 250kW must be inspected by January 2009 and all systems between 12kW and 250kW must be inspected by January 2011. Systems of more than 12kW will have to be re-inspected at least every five years.

Source: Equipment Manufacturer



# EFCTC NEWSLETTER

## An update on fluorocarbons and sulfur hexafluoride

### SWEDISH ARTIFICIAL CROSS-COUNTRY SKIING RING COOLED WITH HFCs

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Near Sandviken, 180 km North of Stockholm, the world longest artificial cross-country ski ring was inaugurated in October 2007.



A 2 km long artificial snow ring, 3m wide allows thousands of people, professional or amateur, to practice Cross-country skiing even during summertime, thanks to 4 HFC-based Chillers, supplying water at  $-10^{\circ}\text{C}$  into a piping system that keeps the snow ring at the right temperature and preventing it from melting at high outdoor temperatures.

Source: Equipment Manufacturer

### NEW ON FLUOROCARBONS.ORG

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Page **OZONE DEPLETING SUBSTANCES –Europe**

Added key elements of the EU Commission [ODS Regulation](#) Revision Proposal.

### NEW ON FIGAROO.ORG

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Links to useful [REALZero](#) documents in [Case Studies](#) and [Containment](#) Sections



# EFCTC NEWSLETTER

## An update on fluorocarbons and sulfur hexafluoride

### NEW LINKS ADDED

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#### Useful links - Press

**REFRIPRO** - Essentials of refrigeration and air-conditioning;  
Exists in English, French, German and Italian. Provides useful information on refrigerants, legislation, dictionary, jobs, etc.

<http://www.refripro.eu/index.php?lg=en> (in English)

<http://www.refripro.eu/> (in French)

<http://www.refripro.eu/index.php?lg=de> (in German)

<http://www.refripro.eu/index.php?lg=it> (in Italian)