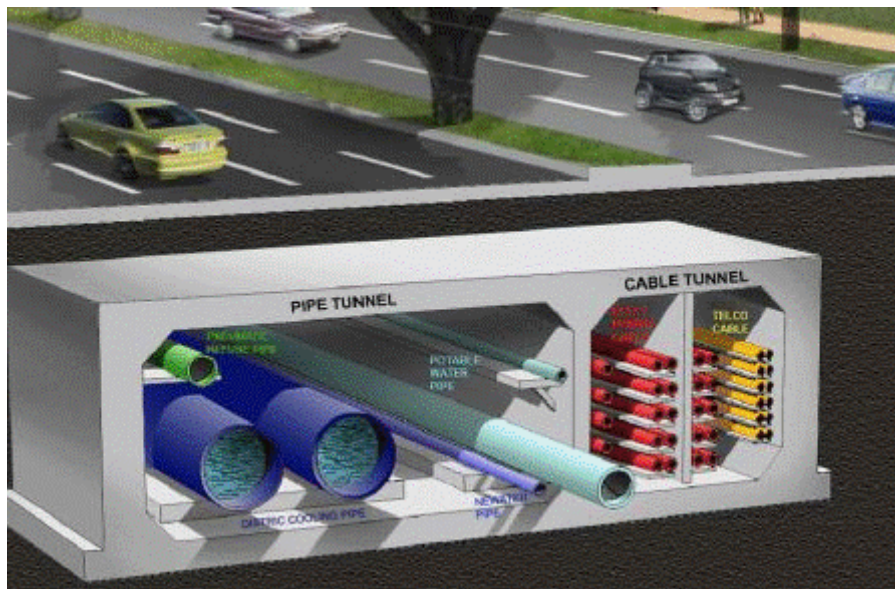


## An update on fluorocarbons and sulfur hexafluoride

ISSUE 42 – January 2007

### HFC CHILLERS FOR THE FIRST SINGAPORE DISTRICT COOLING NETWORK



The Singapore Marina Bay South urban development project will be fitted with a huge district cooling system, supplying chilled water to cool offices and shops.

Large HFC-134a electric chillers and ice storage systems will feature world-class thermal efficiency, delivering in the first stage 37 MW of chiller capacity, with an ultimate capacity of 150 MW which will be commissioned in stages in line with the pace of development at the new business district.

The District Cooling System eliminates the need to provide separate chiller plants and cooling towers for each building, achieving economies of scale advantages and greater efficiency, which result in energy saving for the whole area buildings air-conditioning.

It also allows the removal of cooling towers on rooftops, enabling roof areas to be put to better use, for example, rooftop gardens

Source : [Singapore Urban Redevelopment Authority](#) and Equipment Manufacturer



# EFCTC NEWSLETTER

## An update on fluorocarbons and sulfur hexafluoride

### **ENERGY EFFICIENCY AWARD FOR NEW SYSTEM BRINGING 10-20 % ENERGY SAVING**

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Energy saving between 10 and 20 % could be attained by a new system which enables the evaporator in a [refrigeration system](#) to remain filled with the boiling refrigerant.

This new device, not usual in small or medium sizes equipment, was honoured by the [Asercom Energy Efficiency Award 2006](#), announced on the occasion of [IKK 2006](#).

With this Award, Asercom is promoting [energy efficiency](#) as a key element of Refrigeration and Air Conditioning Sustainability; energy consumption over their whole lifetime is responsible for [more than 80 % of their Greenhouse Gases emissions](#).

IKK itself had put a strong accent on [Energy Efficiency](#) for its 2006 event.

### **ASERCOM VIEW ON CO<sub>2</sub> IN REFRIGERATION**

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[Asercom](#) (Association of European Refrigeration Compressor and Controls Manufacturers) has released its [position regarding Carbon Dioxide](#) (CO<sub>2</sub>) in Refrigeration and Air-Conditioning Systems (RAC).

CO<sub>2</sub> thermodynamic characteristics are very different from usual refrigerants; essentially its very low critical temperature of 31°C may require so-called trans-critical operation, leading to [lower energy efficiency](#) compared to sub-critical conventional systems. Nevertheless, in appropriate circumstances CO<sub>2</sub> systems can also be energy efficient.

In any case, [CO<sub>2</sub> technology cannot be seen as a general solution](#) for refrigeration systems, and its applications must require a careful assessment of system efficiency, [TEWI](#), life cycle cost, technical feasibility, reliability and [safety aspects](#).



# EFCTC NEWSLETTER

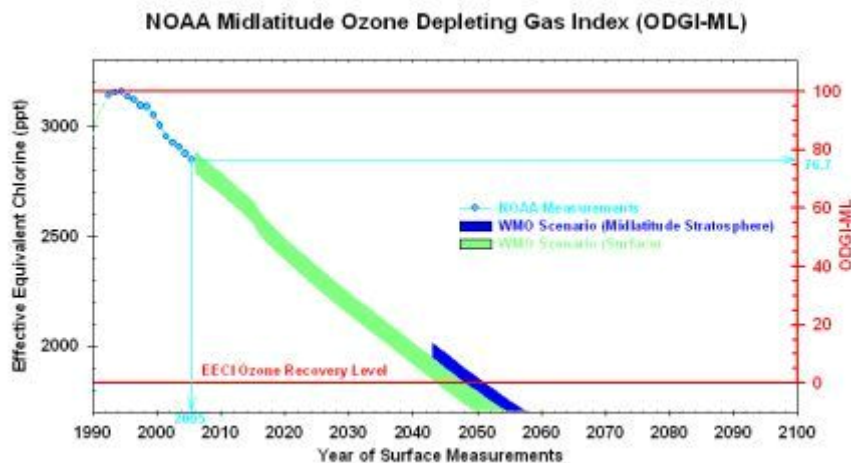
## An update on fluorocarbons and sulfur hexafluoride

### THE ODGI INDEX PROVIDING INFORMATION ON OZONE HOLE RECOVERY

The [NOAA Earth System Research Laboratory](#) has developed the [Ozone Depleting Gas Index](#) (ODGI), derived from atmospheric measurements of [Ozone depleting substances](#) (ODS) at sites across the world.

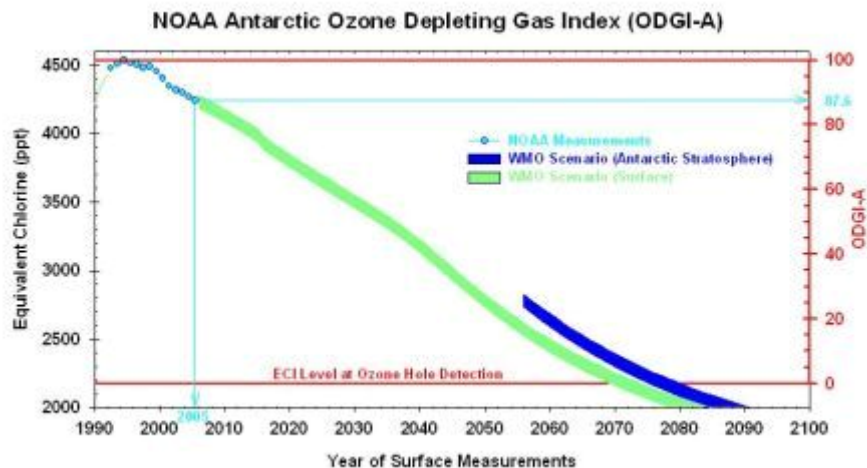
It is defined as being 100 at the time that observations indicate a maximum in ODS, and zero for the level we anticipate will correspond to recovery of the ozone layer.

The ODGI consists of two indexes: ODGI-A tracks the Antarctic ozone hole itself, while ODGI-ML tracks ozone depletion over the mid-latitudes—where a majority of the Earth's population lives. Both indexes are based on the same [atmospheric](#) measurements, but separate indices for these different stratospheric regions are necessary to account for the unique nature of the Antarctic stratosphere compared to the stratosphere at mid-latitudes.



NOAA estimates that the mid-latitude ozone layer should recover by about 2045-2050, and the Antarctic ozone hole by 2075-2080. However, other factors, such as climate change, could affect long-term recovery.

## An update on fluorocarbons and sulfur hexafluoride



Measurements of long-lived chlorine and bromine containing gases are converted into the Equivalent Chlorine burden of the atmosphere (or ECI), whose highest historical value corresponds to an ODGI of 100. Results show a constant decline of the contribution of nearly all ODS to the ECI.

Interestingly, HCFCs, despite their continued increase of consumption, currently contribute relatively little to the atmospheric burden of ECI. At mid-latitudes, as they are only partially degraded in the stratosphere, they account for an even smaller increase of the ECI burden

For CFC-11 and CFC-12, which represent the two major ECI components, the decline is relatively slow, because of their long lifetimes (50-100 years).

### NEW LINKS ADDED

#### INFORMATON SOURCES - OZONE

**The NOAA Ozone Depleting Gas Index**

<http://www.cmdl.noaa.gov/odgi/>