EXCLUSIVE

The atmosphere is on the mend, but it's not the end of the fight for a clean environment

This is Cape Grim – one of the cleanest locations on earth from which to measure air quality.

The worrying hole in the ozone layer over Australia and the Antarctic is on the mend, according to the latest atmospheric findings of a world-leading search station at Cape Grim, in the north-western corner of Tasmania.

The ozone mend was confirmed during a recent inspection of Cape Grim by directors and executive members of Refrigerant Reclaim Australia (RRA), the industry authority that has helped substantially to fund the atmospheric research work being carried out there by the Australian Bureau of Meteorology and the CSIRO.

The Cape Grim research centre began in 1976 in a caravan initially used by NASA on the Apollo 13 mission but since then, thanks to RRA support, has grown substantially into a world class research facility.

Dr Paul Fraser

The recent Cape Grim briefing by world renowned scientist and CSIRO fellow Dr Paul Fraser was attended by SuperCool Australia and Unicla Australia managing director Mark Mitchell in his capacity as a director of RRA, and a dedicated long-term supporter of controls over the release of environmentally damaging refrigerants into the atmosphere. Cape Grim has recorded that CFC emissions by Australian industries have dropped by 90 per cent since 1988 and peak atmospheric concentration levels have fallen 5 per cent since 2003-2004.

In more recent times, emissions are showing a 7 per cent decline per year – quite significant considering the popularity of CFC-12 when it was the most commonly used refrigerant in air conditioners and refrigerators globally.

The reduction in all CFC levels has contributed to a decline in chlorine levels in the stratosphere of 10 per cent since the 1990s, and is expected to reach 1980 levels by 2045, which means ozone is able to regrow in the atmosphere.

Dr Paul Fraser has confirmed that the Cape Grim station is already measuring ozone recovery above Australia and Antarctica. He said that without the industry and funding support from RRA, the fate and long term success of the station could have turned out quite differently.

The air conditioning and refrigeration industries first took an interest in atmospheric research in the late 1980s when it became apparent that emissions of CFC refrigerants were destroying the ozone layer, and something had to done.

RRA FORMED TO DESTROY UNWANTED REFRIGERANTS

Industry motivation stimulated by the international Montreal Protocol and some government legislation in Australia, triggered the formation of RRA as a product stewardship scheme to promote non-emissions of CFC refrigerants and to take care of all the contaminated and unwanted refrigerants would normally end up in the atmosphere.

The Cape Grim research facility developed a capability to measure emission levels of a wide variety of gases and unwanted substances in the atmosphere, including the prolific ozone depleting substances such as CFCs for which RRA assumed some responsibility.

Even in the early days of RRA, its directors agreed that assistance should be provided to the CSIRO and the Cape Grim facility to ensure this very worthwhile research continued.

The results have allowed all interested stakeholders, particularly government and environmental groups responsible for the health of the atmosphere, to gain access to valuable measurements showing the movements and fluctuations of both natural and synthetic gases in the stratosphere.

Mark Mitchell recalls his own efforts in emissions control when, in 1988, his retail company SuperCool built the first recovery system in Australia designed to remove CFC-12 from motor vehicles during servicing, a practice which become mandatory by legislation some years later.


Local product helps protect ozone layer

MADE PERFECT SENSE TO RECOVER REFRIGERANT

Mark said it made perfect sense, 'even before we knew everything about chlorine and the relationship to ozone, we were letting all this product into the atmosphere which was money wasted on one hand, but on the other we somehow instinctively knew nothing should go into the atmosphere unnecessarily.'

'In addition to stopping emissions of CFC-12, our industry started looking at alternatives pretty quickly, and once again both our companies, SuperCool and Unicla were at the forefront of this in mobile air conditioning systems.

We tested and built some of the first HFC-134a systems and compressors in 1992, which of course was a major part of the ozone depleting solution but has now presented itself as a contributor to the growing greenhouse gas issue.

CAPE GRIM MEASURES ALL GREENHOUSE EMISSIONS

'This is where Cape Grim comes into its own,' Mark said. 'The fantastic work at this research station includes measuring all the greenhouse gas emissions such as carbon dioxide, methane and nitrous oxide created from farming, power generation, motor vehicle tailpipes and manufacturing industries.

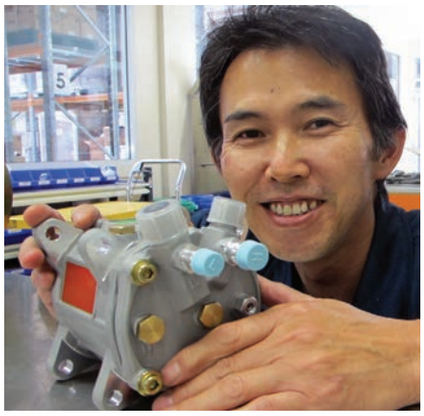
'The synthetic greenhouse gas emissions such as hydrofluorocarbons (HFCs) used in common applications such as aerosols, foam-blowing air conditioning and refrigeration systems were once labelled as ozone depleting substances (CFCs). Now, they are included in control measures, due to their contribution to overall greenhouse emissions and their unfortunate growth in the atmosphere in recent years,' Mark added.

Dr Paul Fraser told the RRA group that in the last 50 years, Cape Grim had measured that about 81 per cent of greenhouse gas emissions had come from fossil fuel burning and agriculture and about 19 per cent from the synthetics.

While the main synthetic today (HFC) is growing globally, Cape Grim has measured a decline in emissions from Australia – good news reflecting the greatly improved work practices and recovery procedures by industry.

Mark Mitchell said the air conditioning and refrigeration industry acknowledges this point.

'The engineering team at Unicla began testing compressors operating with the new HFO-1234yf refrigerant four years ago.



'These compressors are now ready for the market as the automotive industry prepares to migrate once again to a new family of refrigerants. The HFOs represent another giant step for the automotive air conditioning industry.

'The HFO-1234yf approved by most car makers in the world is class A2L and mildly flammable, but it has a global warming potential of less than one, and contributes nothing to greenhouse gas emissions.

'The Cape Grim visit was very inspiring but the stand-out attraction was the banner displayed in the foyer showing greenhouse concentrations in the atmosphere taken from the combined measurements at Cape Grim and the ice cores at Law Dome in Antarctica.

THE INDUSTRIAL REVOLUTION WAS GOOD – BUT CATASTROPHIC

'The banner clearly shows how, since 100 AD, the concentrations of methane, carbon dioxide and nitrous oxide were virtually constant for nearly 1900 years until the industrial age in the mid-1800s.

'The rise in concentrations of these harmful substances is so dramatic and steep at this point it could be classed as a catastrophe. The graphs on this banner are enough to keep you awake at night.

'It is vitally important for all humankind to do something about this. As a component manufacturer and industry leader, our companies will do everything we can to help reverse this dangerous cycle,' Mark added.

It's enough to keep you awake at night