MISUSE OF REFRIGERANTS IS GROWING CONCERN

As the phase down of HFC refrigerants gathers pace, fears are growing that there will be more accidents caused by people using the wrong alternative gases in air conditioning and refrigeration systems.

Graeme Fox*, senior mechanical engineer at the Building Engineering Services Association (BESA), explains the dangers and outlines the industry's global response.

An open letter signed by nine international trade associations representing 90% of the world's air conditioning and refrigeration manufacturers has brought into stark focus the growing danger of the misuse – and sometimes downright abuse – of refrigerant gases worldwide.

Manufacturers from Europe, the US, China, Japan, Brazil, Korea, Australia and Canada have registered their grave concerns about the increased safety and environmental risks created by people using refrigerants in the wrong equipment.

There have already been several accidents around the world with equipment catching fire or exploding – and this is not only happening in so-called 'backwater' countries. There have been two high profile cases in New Zealand, for example; one of which led to the death of a firefighter, where flammable hydrocarbon gas was used in a system that was not designed for its use.

DANGERS

The manufacturer bodies were eager to raise awareness of the dangers and stressed that only the refrigerant approved by the original equipment manufacturer (OEM) should be used. They added that refrigerants are carefully selected as an integral part of the overall system design taking into account safety; longevity of the equipment; energy efficiency; cost and environmental impact.

In the UK, we enjoy the support of a long established refrigerant handling registration scheme Refcom that has helped to drive up professional standards across our industry. It has been a legal requirement since July 2009 for all businesses that install, maintain or service stationary equipment containing or designed to contain f gas refrigerants to obtain an F gas Company Certificate.

Refcom, which was set up by BESA (then the HVCA) in 1994, was appointed by the government as a certification body to provide this mandatory service for the refrigeration and air conditioning sectors. It works with the Environment Agency to ensure the regulations are properly enforced and refrigerant reclamation carried out.

Refcom now accounts for more than 80% of company F gas certificates covering the UK refrigerant handling market making it a key component of the UK's efforts to control emissions of greenhouse gases and tackle global warming.

As a result of all that experience, we have been able to advise and support the programme to create a worldwide scheme for certifying refrigerant handling competence – an international 'driving licence' for refrigerant handlers – on behalf of the United Nations Environment Programme (UNEP).

Safety was one of the motives behind the creation of the scheme because UNEP is increasingly concerned about the alternative and flammable gases 'knowledge gap' in many parts of the world.

The phase-out of HCFCs and planned phase-downs of HFCs has sparked the development of alternatives with lower global warming potential – some of which operate at higher pressures; some of which are toxic and flammable – so that only those designated by manufacturers as suitable 'drop-in' replacements for their equipment should be used.

The US Environmental Protection Agency (EPA) – now under threat of abolition by Donald Trump despite its crucial role in safeguarding humans, wildlife and the environment – has also issued a warning about the dangers of using flammable hydrocarbon refrigerants as substitutes for R22 in existing US domestic, commercial and car air conditioning.

The issue of counterfeit gas is another alarming trend. Methyl chloride – a long banned substance – is reappearing; often masquerading as R134a. Today many modern compressors contain aluminium parts, unlike when methyl chloride was widely used, and this reacts with the gas to form explosive oxygen gas that can lead to compressor ruptures with sometimes deadly consequences.

We live in dangerous times. However, it is usually lack of training, knowledge and understanding – rather than deliberate mischief making – that leads to problems with refrigerants and, as an industry, we now have the opportunity though UNEP to improve awareness and deliver competence training that can make a real difference worldwide.

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