



July 2018

1 OBJECTIVE OF THIS TECHNICAL GUIDANCE BULLETIN



The objective of this technical bulletin is to remind contractors of the importance of effective recycling of as much recovered gas as possible in order to alleviate the pressures being experienced in the field with shortages of virgin and reclaimed gas causing gas prices at the wholesalers to rise to extremely high levels and causing contractors to have to leave wholesalers without the gas supplies required to carry out their tasks due to the lack of availability.

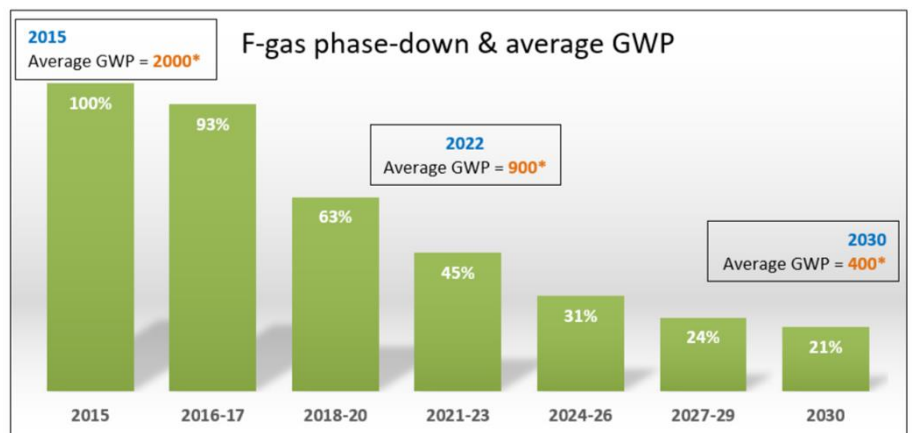
The need for this guidance has come from widespread concerns within the RACHP industry sector of a lack of available gas supplies and a number of our members asking for guidance on the subject.

Discussions with industry stakeholders, contractors, F-Gas audit inspectors, industrial gas manufacturers and suppliers, and wholesaler representatives has highlighted concerning trends and bad habits that are exacerbating the issue and putting increased and unnecessary pressure on the HFC phase down imposed by the F-Gas Regulation.

2 F GAS REGULATION PHASE DOWN STEPS - THE URGENT PROBLEM

The phase down steps introduced in the 2014 review of the F-Gas Regulation have been well documented and discussed but have still seemingly taken the industry by surprise to some extent.

The diagram on the right was designed by the European Commission to highlight each step of the phase down and to draw attention to how the phase down could be made to work by averaging out the GWP levels of all gases being placed on the market for the first time.



* Source: European Commission

It is essential, in order to maintain sufficient quantities of virgin refrigerant being available, that significant effort is made in recycling existing stock wherever possible. The more refrigerant gas in use that has previously been placed on the market, the less virgin refrigerant is needed and, thus, the lower the pressure on the supply chain to maintain stocks and supplies as the phase down bites. **Where recycling is not possible or practical then reclamation should be considered.**

3 RECOVERY OF REFRIGERANT GASES FOR RECYCLING — AN IMPORTANT PART OF THE SOLUTION



It is a legal requirement under EC517/2014 (the EU F-Gas Regulation) to properly recover refrigerant from systems. This process applies to all systems when being decommissioned or where repair work is necessary on the refrigerant circuit and there is no opportunity to pump down into a liquid receiver or into the condenser coil.

It is important to explain the differences between reclaimed and recycled refrigerant gas after recovery – an important distinction that has gathered importance due to the steep price rises of virgin gas in recent months.

Attention should be paid to EN378-Part 4: Operation, maintenance, repair and recovery where important issues regarding the history of the system and condition of the refrigerant prior to removal are considered to enable the engineer to determine the suitability for recycling or reclamation.

Recovery / Recycling / Reclaim / Destruction definitions:

Recovery means the collection and storage of refrigerant gases from products, including containers where you are transferring gas from one container to another or from a container into a previously leak tested system, and to and from equipment during maintenance, service or repair work, or prior to the disposal of products or equipment at the end of their service life.

Recycling means the re-use of recovered refrigerant gases following a basic cleaning process to remove non-condensables, oil, water vapour, and particulate matter by means of driers, filters and filter-driers. If the recycled product has a GWP of more than 2500 then it can only be used by the company that carried out the recovery and recycling process and cannot be sold commercially to another contractor for use by them.

Reclamation means the reprocessing of a recovered refrigerant gas in order to match the equivalent performance of the virgin substance, taking into account its intended use. This process has to be carried out at a proper reclamation facility to ensure the correct constituent levels in a blended refrigerant are maintained and that no foreign substances are left in the gas.

Where a recovered refrigerant does not match the requirements for either recycling or reclamation, for example where a blend has lost part of its charge and the constituent gases no longer match those of the original blend, or if it is a mix of several products, it cannot therefore be re-used as intended and the recovered refrigerant should be considered as hazardous waste and delivered to an authorised centre for destruction.

Destruction means the process of permanently transforming or decomposing all or most of a fluorinated greenhouse gas into one or more stable substances that are not fluorinated greenhouse gases. In practical terms the term “destruction of fluorinated greenhouse gases” normally means the recovered product is incinerated.

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>>>>> **Wherever possible, refrigerant gases should be carefully recovered and recycled.**

Recovering refrigerant for recycling will mean the following steps will be needed:

- Check the bottle being used for the recovery is a receiver cylinder so that it is not contaminated with oil or other gases wherever possible;
- Recover the refrigerant through a filter-drier to remove any moisture, solid contaminants, and/or non-condensables;
- Remove any contaminated oil via an oil separator;
- Check the basic quality of the refrigerant – **particularly if it is a zeotropic blend** – by using a comparator chart/app and taking accurate temperature readings;
- Marking the bottle as recycled refrigerant for re-use.

This can provide a good stock of gas that is short in supply for any remedial repair work in future. **Recycled refrigerants with a GWP over 2,500 such as R404A can still be used for another 10 years after the service ban in 2020.**

“The prohibition referred to (use of fluorinated greenhouse gases with a GWP over 2,500) shall not apply to the following categories of fluorinated greenhouse gases until 1 January 2030:

- (a) Reclaimed f-gases of 2,500 or more used for maintenance or servicing of existing refrigeration equipment, provided that they have been labelled in accordance with article 12(6);*
- (b) Recycled f-gases of 2,500 or more used for maintenance or servicing of existing refrigeration equipment provided they have been recovered from such equipment. Such recycled gases may only be used by the undertaking which carried out their recovery as part of maintenance or servicing or the undertaking for which the recovery was carried out as part of maintenance or servicing.”¹*

This means that by recovering gas properly on major sites you can re-use that recycled gas for your clients for another 10 years after the service ban for virgin refrigerants in 2020. This can take a lot of pressure off the limited quota allowances removing some of the strain being felt because of the steep phase down system.

4 UNUSED GAS IN STOCK

Frequently we hear about contractors sending back bottles to wholesalers with significant amounts of refrigerant left in the bottle to avoid paying rental charges on the bottle itself. There is also a general shortage of virgin gas bottles in general and so the gas suppliers need these bottles back.

Many companies employing field engineers find that the engineer leaving the workshop to attend a service call will pick up a bottle from stock before heading out. However, where the bottle only has 2 or 3 kgs left in it, the engineer frequently leaves that one and picks up a fuller bottle, rarely thinking to use the small amount left in the other bottles first. This not only leaves several kgs of various refrigerant gases in a variety of bottles, but it also leaves bottles in stock beyond their rental date, instigating rental charges, or lost bottle charges. Frequently these small amounts are sent back to avoid the rental charges, and that gas is then lost to the system – increasing the demand on the F-Gas phase down quota system.

Instead of sending back fluorinated gases that will be sent for destruction and then lost to the system, by aggregating small amounts of virgin refrigerant into a clean receiver cylinder you can build up enough virgin refrigerant in that bottle to make it more likely to be used by field engineers when attending service call-outs. This is a sustainable management of refrigerant gases from an environmental point of view anyway, but is an increasingly sensible way of dealing with the gases as the value of that gas increases monthly.

¹ Adapted from EC517/2014, article 13(3)