



aggreko

MANUFACTURING

Managing the F-gas phase-out

Chemicals and Pharmaceuticals

aggreko

What are F-gases?

Over the past 20 years fluorinated gases – known as F-gases – have been widely used in cooling systems across the world, appearing in everything from household fridge-freezers to vast industrial refrigeration systems. The Chemical and Pharmaceutical industries are among the biggest users.

These gases have become so widespread for several reasons, with the biggest being their high efficiency, their relative safety thanks to low toxicity and flammability, and the fact that they lack the ozone-depleting properties of CFCs.

However, EU regulations are slowly phasing out use of F-gases all across Europe, requiring industrial users to re-think their cooling strategy.

F-gases account for just 2% of the EU's overall greenhouse gas emissions. However, these have risen by 60% since 1990, in contrast to all other greenhouse gases which have been reduced.¹

¹https://ec.europa.eu/clima/policies/f-gas_en

The F-gas phase-out

While F-gases lack the ozone-damaging properties of the CFCs they largely replaced, they still have a relatively high global warming potential (GWP), often having an impact tens of thousands of times more significant than an equivalent amount of CO₂, and, if released to the atmosphere, they can linger for thousands of years.

Current regulations are calling for a gradual phase-out of gases based on their GWP, and are designed to encourage equipment manufacturers and operators of refrigerant-based systems to replace them with lower-GWP alternatives.

The phase-out is taking several forms, including²:

- A limit on F-gas sales. By 2030, the amount of F-gases sold in the EU will be cut by almost 80%.
- A ban on using F-gases in new equipment or technology where less harmful alternatives exist.
- Strong rules on leaks and emissions. Companies risk fines if they leak coolant gases, with rule on detectors and inspections being introduced.

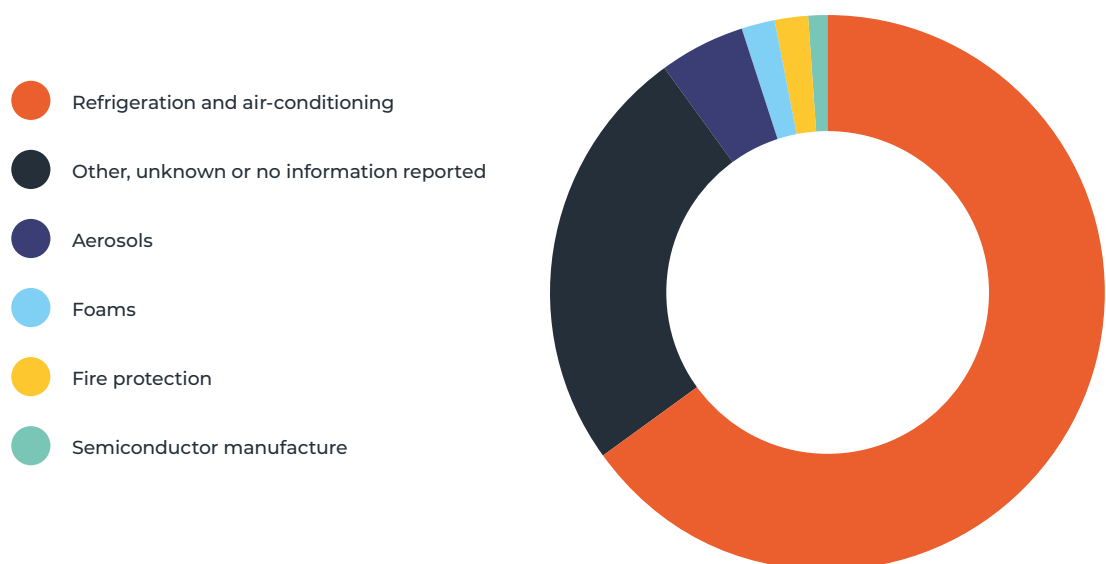
²https://ec.europa.eu/clima/policies/f-gas/legislation_en



How does this **impact** the Chemical and Pharmaceutical Sectors?

While the F-gas phase-out impacts many sectors, chemical and pharmaceutical companies are likely to be among those most affected. Many require low temperatures in order to keep storage and processing systems at optimum conditions and have invested heavily in refrigeration systems.

As our chart shows, along with air conditioning, refrigeration takes the lion's share of F-gas usage.

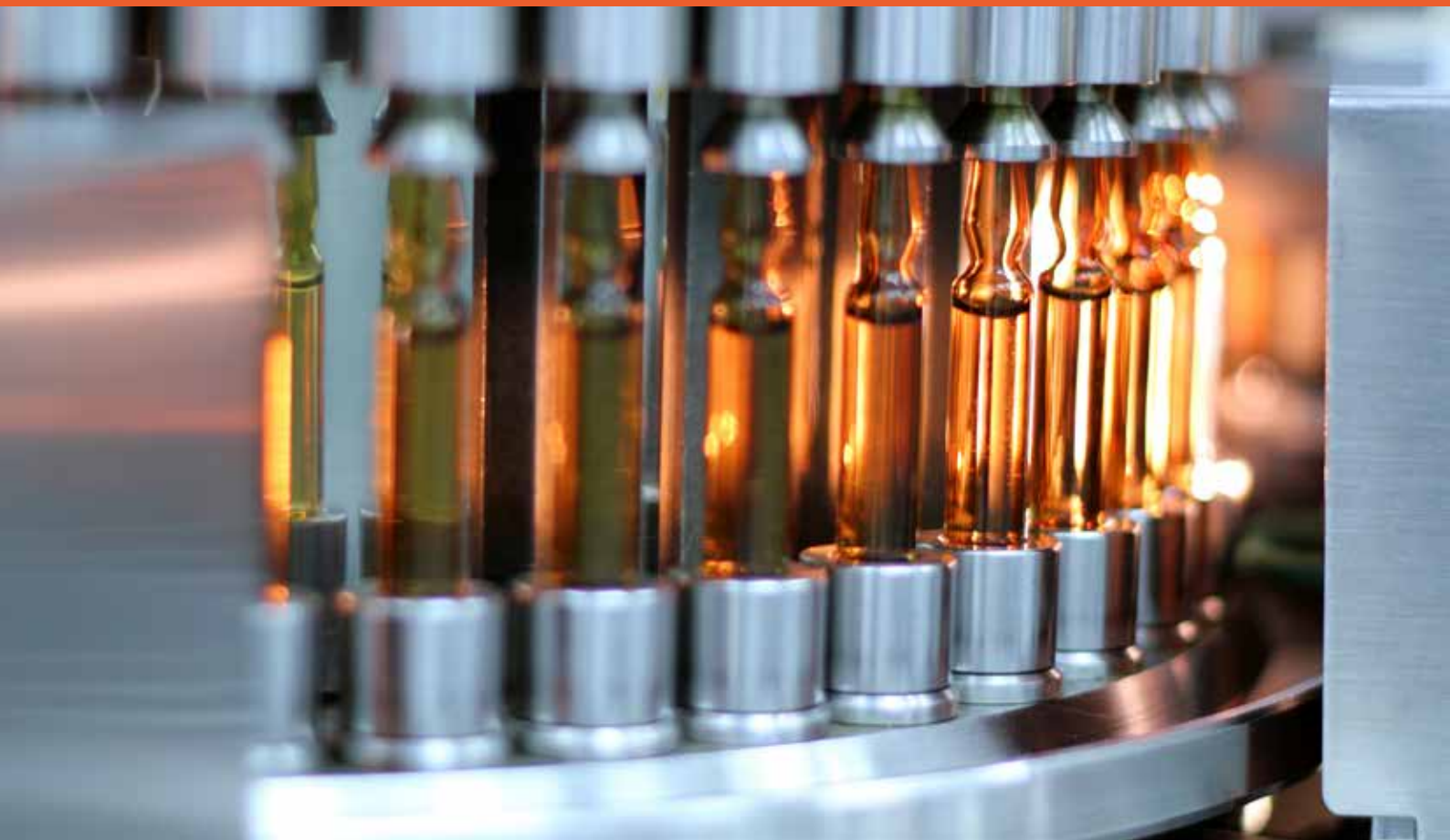


“**More than 60% of the F-gases used in the EU are in cooling systems³**”

³<https://www.eea.europa.eu/data-and-maps/indicators/emissions-and-consumption-of-fluorinated/assessment-2>

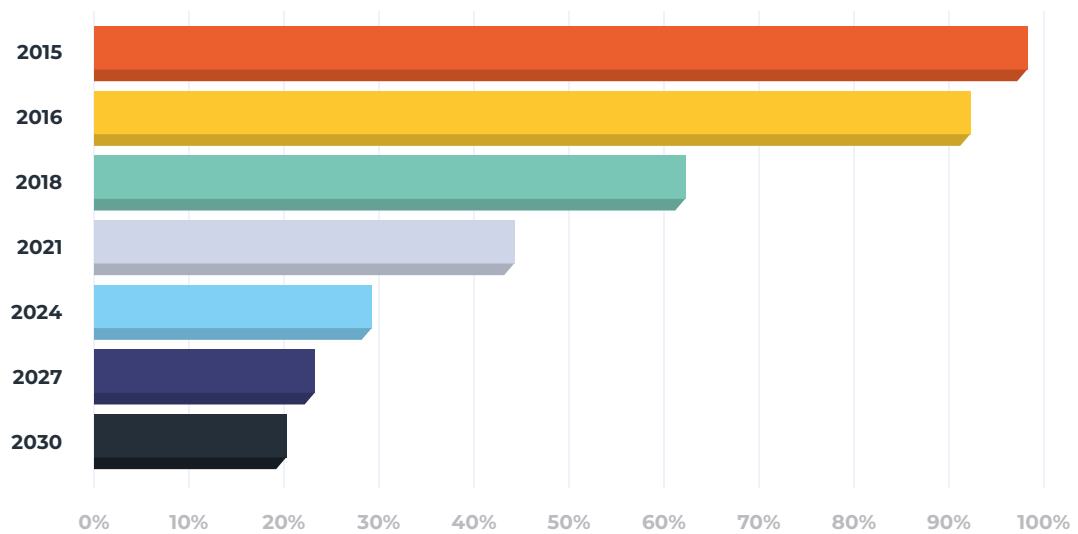
2020 service and maintenance bans

From 2020, operators will not be allowed to use many F-gases to top up or refill existing cooling systems. This means that a single major leak could make a piece of equipment completely unusable, while even a slow leak could render it useless over an extended period.



Phase-out timeline

While the regulations aren't calling for a ban on any particular type of F-gas, they instead limit the total GWP of the F-gases placed on the market. This means that the highest GWP gases will likely be eliminated from the market first, as they will become prohibitively expensive.



The F-gas regulations are expected to reduce the impact on the environment by the equivalent of 1.5 Gigatonnes of CO₂ by 2030. By 2050, the total reduction is expected to be 5 Gigatonnes⁴

⁴https://ec.europa.eu/clima/policies/f-gas_en

Refrigerants most at risk

Most F-Gases are between 1,000 and 20,000 times more impactful than CO₂ in terms of GWP. Those with the highest GWP are most at risk from the regulations, with the **popular R404a refrigerant increasing in price to such an extent that recharging a large volume system may become prohibitively expensive.**

GAS	R134A	R404A	R407A	R407C	R410A	R422D	R427A	R438A	R507	R744 (CO ₂)
GWP	1430	3922	2107	1774	2088	2729	2138	2265	3985	1

Gases with a GWP of 2500+ will also be impacted by the 2020 service and maintenance bans.

If operators are using any of these gases in their cooling equipment, they need to start making plans for phasing them out now.



Planning for the phase-out

There are several factors that you need to bear in mind when making sure your site isn't vulnerable to the F-gas phase-out:

Budgeting for rising prices

If a site uses F-gases, prices for buying in new gas are very likely to keep dramatically rising over the next few years. This is especially true of gases with a high GWP, which may become extremely difficult to obtain.

The service ban

Once the service ban comes into effect in 2020, all equipment using gases with a GWP of more than 2500 will become potential liabilities. A single leak could render a major part of a system inoperable, costing operators valuable time and money where the refrigerant plant is key to their operations.

Environmental reputation

Many industries are under ever-increasing public scrutiny over their environmental policies and actions. A leak of a high-GWP gas could end up costing a company much more than the fine they have to pay, while an early switch to a less damaging gas could demonstrate a commitment to the environment.

Access to finance

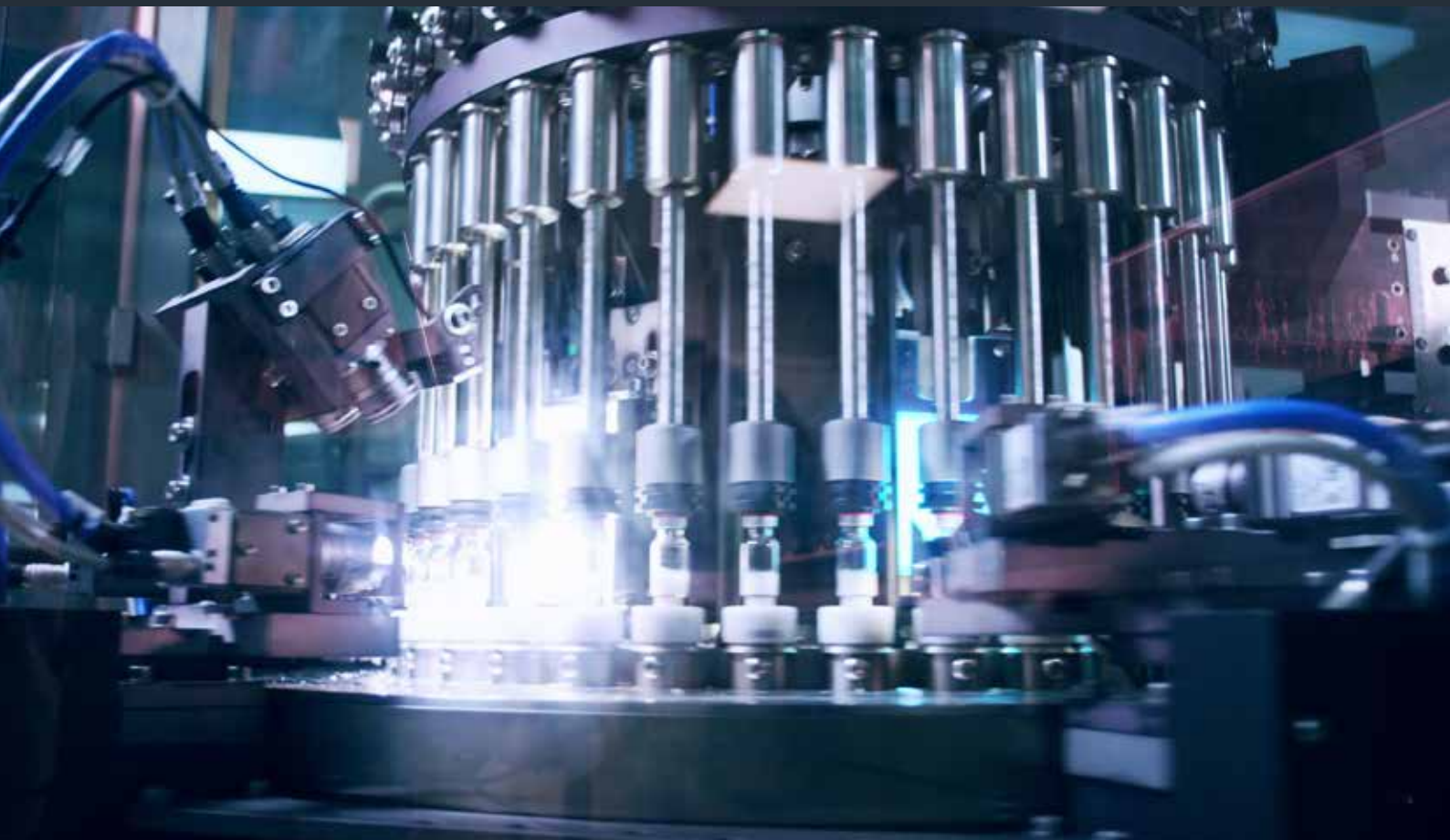
Whether it involves buying new equipment or performing modifications on existing systems, making sure that a site is in line with the F-gas phase-out can require extensive up-front capital.



How Aggreko can help

Aggreko offers a huge range of products that can help to make the F-gas phase-out run smoothly and efficiently.

We can provide water & air cooled chiller systems to meet the cold and chill storage demands of the chemical and pharmaceutical sectors. Combined with our specialist range of heat exchangers dry coolers and cooling towers, Aggreko can design a bespoke energy efficient solution to suit your specific needs.



How Aggreko can **support** transition to low GWP refrigerants

Aggreko have been involved in a large number of projects helping companies across multiple sectors – including chemicals and pharmaceuticals – to transition to alternative refrigerants that will future proof their cooling systems. We combine the talent of our sales engineers and project team with our specialist cooling equipment to create solutions designed around individual sites and projects.

Aggreko works with an emphasis on solving large-scale, complex challenges related to the legislation.

While this can help with major re-fits, upgrades and installation of new plant, Aggreko can also work with operators to put contingency plans into place in the event that equipment fails and – due to the servicing ban – cannot be immediately replaced.

Where lost time can cost millions of pounds, the extra days saved by planning in advance can be invaluable.



Advantages of hiring

Hiring equipment can offer several major advantages when it comes to dealing with the F-gas phase-out.

Maintain production while upgrading

Upgrading existing equipment or buying in a new system is likely to disrupt production while the work is carried out. Hiring equipment to operate during the downtime can ensure that production continues as usual.

Mid-term flexibility

It can take time to work out the best long-term plan for a site, especially when there are doubts over its future thanks to market fluctuations or new technology.

While planning work is being carried out, hired equipment can keep a site running for as long as needed with full service support and maintenance carried out by the Aggreko.

Avoid financing concerns

Operators can channel capex into their core activity and avoid new system upgrade costs simply by running hired equipment for the long-term. This can be especially useful in sites that are nearing the end of their useful lifetimes.



Where to find out more

You can find out more about the F-gas phase-out from:

The European Association of Refrigeration, Air Conditioning and Heat Pump Contractors

<http://www.refcom.org.uk/media/1181/area-guidelines-fgas-master-3-final.pdf>

UK Government F-gas Guidance

<https://www.gov.uk/guidance/f-gas-in-refrigeration-air-conditioning-and-fire-protection-systems>

The European Commission

https://ec.europa.eu/clima/policies/f-gas_en