Amendment of the F-Gas Regulation – a threat to the economy and climate protection

A brandletter from the associations BIV (Bundesinnungsverband des Deutschen Kälteanlagenbauerhandwerks), VDKF (Verband Deutscher Kälte-Klima-Fachbetriebe) and ZVKKW (Zentralverband Kälte Klima Wärmepumpen)

Is the safe and trouble-free operation of data centres, blood banks, operating theatres, bakeries, production plants in the automotive or chemical industry important to you? Do you support the further expansion of hydrogen filling stations and the widespread use of heat pumps as alternatives to the use of fossil fuels? An answer other than "yes" is not to be expected. In this case, you should – just like the leading associations of the refrigeration, air conditioning and heat pump industry – consider the upcoming amendment of the so-called F-Gas Regulation as a major threat.

If the amendment were to be implemented in the version currently on the table,

- the operation of countless refrigeration, air conditioning and heat pump systems in systemically important sectors of the economy would be jeopardised,
- many operators would be saddled with an unplanned high investment in difficult economic times,
- the implementation of national and European climate policy goals would be jeopardised.

Background information on the F-Gases Regulation

Since its entry into force in 2015, the EU Regulation No. 517/2014 regulates the available quantity of fluorinated greenhouse gases (F-gases). F-gases were and are used in a large part of refrigeration, air conditioning and heat pump systems mostly in the form of so-called HFC refrigerants. They are usually non-flammable, non-toxic, easy to handle and optimally suited to the respective areas of application. However, they have a greenhouse effect that becomes effective when refrigerants escape unintentionally into the atmosphere in the event of leaks or accidents. For this reason, the EU has decided to continuously reduce the use of F-gases according to a clearly defined phase-down and to ban them completely in certain areas of application. These measures in the F-Gas Regulation are supported by the entire refrigeration, air-conditioning and heat pump sector – operators, specialist companies, planners, trade and industry. Wherever possible, systems using natural, climate-neutral refrigerants such as propane, carbon dioxide or ammonia or newly developed synthetic (fluorinated) refrigerants with a low greenhouse effect are used. Many refrigeration/air conditioning contractors have already trained their staff in the handling of flammable or toxic refrigerants and the operators have adapted their investment decisions to the requirements of the F-Gas Regulation.

Effects of the amendment of the F-Gas Regulation

The implementation of the amendment to the F-Gas Regulation in its current version or even a tightening would have drastic effects on the available quantity of HFC refrigerants. The amendment envisages that the phase-down will be significantly accelerated and that a ban on the use of HFCs will be introduced for further applications. In a few years we would have a refrigeration and air-conditioning world in which practically only natural refrigerants could be used because HFC refrigerants would hardly be available. In the argumentation of the proponents of the exclusive use of natural refrigerants, it is

usually stated that there are technical solutions for all applications without the use of F-gases. This is indeed the case for many new systems: operators of supermarket refrigeration systems mainly use carbon dioxide as a refrigerant, some heat pump manufacturers rely on propane as a refrigerant in addition to HFCs, and industrial systems mainly use the refrigerants ammonia and carbon dioxide.

Unplanned investments burden the economy

No one would think of converting an existing car with an internal combustion engine into an electric car. The situation is similar for refrigeration and air conditioning systems. The majority of the hundreds of thousands of existing systems use HFC refrigerants, and in most cases these cannot be technically converted to natural refrigerants. Other components – compressors, valves, piping, etc. – are required, leaving only the complete replacement of the refrigeration system as an option. This would be associated with high costs for the operators, whose investment plans with regard to the replacement of their refrigeration technology have been adjusted to the long-term availability of F-gases according to the requirements of the F-Gases Regulation. Systems with natural refrigerants also have higher investment costs due to a more sophisticated construction method and higher operating costs due to an increasing service effort. It is also contrary to any notion of sustainability if relatively new refrigeration systems have to be replaced simply because of the lack of HFC refrigerants. The CO_2-emissions generated during production clearly exceed those that could result from refrigerant leaks in the old system.

Threat of failure of system-relevant plants

There is, however, a much more pressing problem: In the event of a repair or a refrigerant leakage – rare, but conceivable – there would be no refrigerant available in the future to put the systems back into operation promptly. What this would mean for the mandatory operation of refrigeration, air conditioning and heat pump systems in the applications mentioned at the beginning – which can be expanded at will – is obvious: standstill with fatal consequences. The waste heat in data centres could no longer be dissipated, in food production and trade there would be production stoppages and damage to goods, surgeries in hospitals would have to be postponed, air-conditioning systems in hotels, doctors' surgeries, old people's and nursing homes would have to stop operating during a heat wave, just as heat pumps in winter, etc.

Flammable refrigerants as an exclusion criterion

In addition to the problem with existing systems, there are also refrigeration and air-conditioning applications in which the use of flammable or toxic refrigerants is excluded, even in new installations. These include, for example, tank systems for hydrogen – an important building block in the context of the energy transition – for which cooling is absolutely necessary, but where flammable refrigerants may not be used for safety reasons. The same applies to the many explosion-proof areas in industry, for laboratory areas, for applications underground, for EDP rooms, for medical applications and for all areas where untrained people can come into contact with the refrigerant. In other areas of application, such as deep-freezing, the natural refrigerants can hardly be used due to their thermodynamic properties. For these and similar areas, the long-term availability of F-gases is urgently needed.

If the F-Gas Regulation were to be tightened up, there would be further problems:

- **heat pump targets unattainable:** The German government's plan to install 500,000 new heat pumps per year in Germany would not be feasible if the F-Gas Regulation were tightened. Most of the heat pump models currently available use HFC refrigerants. The Federal Environment Agency's study "Domestic heat pumps with natural refrigerants" from 2022 assumes that by 2030 the share of propane heat pumps in the market could at best only be increased to 30 % (currently it is less than 5 %). Without F-gases, therefore, the heat pump market cannot be developed on the desired scale and the servicing of existing systems is not possible. Propane can also only be used as a refrigerant in so-called compact heat pumps. Split heat pumps, which have a high market share and are often the only choice due to constructional possibilities and specifications (distance rules for installation, noise protection specifications), can only be operated with F-gases.
- **illegal refrigerant trade:** In the EU there is a flourishing black market for refrigerants, the availability of which is restricted by the F-Gas Regulation. The legislator has already reacted to this by amending the Chemicals Act and tightening the documentation requirements for these refrigerants. An additional shortage of HFC refrigerants would most likely lead to a further growth of the illegal refrigerant trade.
- **required inspections hardly feasible:** If flammable refrigerants were to be used across the board, the number of refrigeration systems for which acceptance and periodic inspections by an Approved Inspection Body are required would increase dramatically. Already today, there are long delays in these inspections due to a lack of personnel at these organisations. In the future, this problem would increase: Plants would have to be shut down without inspection or would not be able to go into operation at all.
- **unacceptable liability situation for plant construction**: Although many components for refrigeration, air-conditioning and heat pump systems are now also available for flammable refrigerants – even though there are sometimes extremely long delivery times – liability for their use is rejected by the manufacturers and must be borne by the plant constructor by signing so-called declarations of non-liability – an incalculable economic risk for craft businesses should an accident occur.
- **shortage of skilled workers:** From the point of view of occupational health and safety, the use of flammable refrigerants requires continuous checks and leakage tests, for which the operators are ultimately responsible. With a significant increase in systems requiring testing, this would hardly be possible for the service companies suffering from a shortage of skilled workers. Due to the shortage of skilled workers in the refrigeration system construction trade, the necessary new installations of existing systems, if they had to be replaced due to the non-availability of refrigerants, would also be almost impossible to carry out.
- **arbitrary decisions by fire protection experts:** Whether a refrigeration, air-conditioning or heat pump system with flammable refrigerant may be put into operation can be decided in the last instance by local fire protection experts. Before an amended F-Gas Regulation comes into force, a secure legal framework would first be necessary so that specialist companies and operators can plan reliably and are not dependent on arbitrary decisions by individual experts.

BIV, VDKF an ZVKKW therefore call for the F-Gas Regulation to be retained in its existing form. The representatives of the undersigned associations are available for further discussions and information.

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For a more in-depth discussion of the topic, we recommend the already published statements of the various industry associations concerned on the amendment of the F-Gas Regulation, in which further aspects of the amendment text are taken up and critically commented on (see links).
For example, DKV proves in its statement that the influence of F-gas emissions on the global temperature increase is many times smaller than often claimed. The negligible effect removes the scientific basis for a tightening of the F-gas regulation. The assumed high leakage rates of HFC refrigerants are also unfounded. The VDKF has documented the refrigerant leakages of more than 200,000 refrigeration and air conditioning systems via its monitoring software VDKF-LEC. According to this, the average leakage rate is only 1.35 % - across all areas of application and averaged over the past five years.

To the statement: https://bit.ly/3DWT3KA

The joint statement of BIV, VDKF and the regional RAC-guild of Hesse-Thuringia/Baden-Wurttemberg addresses, among other things, the limits of the economic capacity of system operators, technical restrictions on existing systems and difficult framework conditions associated with the use of flammable refrigerants. In addition, numerous unclear and interpretable formulations in the amendment text are elaborated.

To the statement: https://bit.ly/3UUlMpN

In the joint statement of the associations FGK (Fachverband Gebäude-Klima e.V.), BTGA (Bundesindustrieverband Technische Gebäudeausrüstung e.V.) and Herstellerverband Raumlufttechnische Geräte e.V., the amendment to the F-Gas Ordinance is described as a threat to the accelerated expansion of heat pumps and the achievement of climate protection targets.

To the statement: www.fgk.de/fgk-positionen/

EPEE, the European umbrella organisation of the refrigeration, air conditioning and heat pump industry, takes a similar position in its statement.

To the statement: https://bit.ly/3LJZEde