

F-Gas Regulation: New version tightens rules for the use of F-gas-based refrigerants

- **Stricter F-gas regulation applies with immediate effect**
- **Shortage of F-gases will increase the operating costs of conventional transport refrigeration systems**
- **ECOOLTEC offers an F-gas-free, purely electrically powered and future-proof transport refrigeration system**

The new version of the F-Gas Regulation applies in the EU with immediate effect. This will further restrict the use of common F-gas refrigerants and completely ban them by 2050 at the latest. Although transport refrigeration systems are not yet affected by an early ban on synthetic refrigerants like many stationary systems, fleet operators are already facing the threat of rising operating costs and limited availability of conventional refrigerants. However, it is already possible to switch to transport refrigeration systems that generate refrigeration using natural refrigerants exclusively and avoid uncertainties in operation. ECOOLTEC Grosskopf GmbH demonstrates this with its all-electric TM182 transport refrigeration system.

According to the European Parliament, so-called F-gases, artificially produced fluorinated hydrofluorocarbons (HFCs), contribute significantly to greenhouse gas emissions in the European Union. In contrast to other greenhouse gas emissions, which have decreased, their emissions doubled between 1990 and 2014. So, to reduce the impact of F-gases on the climate, the EU adopted a significantly more ambitious regulation of F-gases at the beginning of the year. This is intended to

ensure the realisation of the plan to make Europe into a climate-neutral continent by 2050 as part of the European Green Deal.

The new version of the F-Gas Regulation (EU) 2024/573 already applies in the EU. According to this regulation, the consumption of hydrofluorocarbons (HFCs) will be completely phased out by 2050 due to the high GWP values of HFCs, which are often thousands of times more potent than carbon dioxide (CO₂). The new version also provides for a significant acceleration in the reduction of residual quantities (phase-down) up to a general ban on use. According to the regulation, the amount of synthetic refrigerant currently in use is to be reduced by 95 per cent by 2030 compared to the base year 2015. This applies to all areas of application.

Quotas and fees for new production of F-gas-based refrigerants

At the same time, the F-Gas Regulation will gradually reduce the production of HFCs to a quantity of 15 per cent compared to the base year 2015 as part of production quotas allocated by the EU Commission from 2036. The regulation includes a decreasing quota allocation over this period, so that HFCs will only be produced or imported into the EU to an even lesser extent, and no longer at all from 2050. In addition, industrial companies who wish to produce F-gases up to the phase-out must pay fees per production quota they are permitted to produce.

The complete ban applies to industrial segments in which a switch to F-gas alternatives is technically and economically feasible. For areas of application where there is not a technically and economically viable alternative option to F-gases available by July 2027, the law provides for exemptions until 2050. However, the phase-out will then automatically come into force.

Phasing out F-gases also results in a serious disadvantage for refrigerated transport fleets

"The new version of the F-gas regulation means a significant acceleration on the journey towards F-gas-free refrigeration," says Dr Jürgen Süß, CTO of ECOOLTEC. Road freight transport is also affected by the tightening of the regulation, as almost all transport refrigeration systems are still operated with F-gases. Common refrigerants such as R410A or R452A have a high global warming potential (GWP) of more than 2,000. If such refrigerants escape, they increase the greenhouse effect enormously. Due to the typical design and operating conditions of current transport refrigeration systems, they are particularly susceptible to leaks. According to operators of large, refrigerated vehicle fleets, up to 30 per cent of the refrigerant charge of a transport refrigeration system escape every year, of which e. g. common bulkhead units for trailers contain up to 14 kilograms, depending on the specification. This means that up to nine tonnes of CO₂ equivalent can be released into the atmosphere per vehicle and year.

"Due to the exemption in the regulation, the ban will not have a direct impact on road transport, at least until it is revised in 2027. "However, the regulation is already a major disadvantage for operators of refrigerated transport." says Dr Jürgen Süß. This is particularly true in light of the fact that refrigerated vehicles usually remain in a fleet for up to twelve years and often spend their second life in EU countries or outside of them. The agreed shortage of commercially available F-gases and the fees for production quotas will make the operation and maintenance of conventional transport refrigeration systems unpredictably more expensive during this period. The previous, less restrictive F-gas regulation has already led to a tenfold increase in prices at peak times. In addition, the F-Gas Regulation stipulates mandatory, recurring leak tests for all refrigeration systems. At the same time, bans on F-gases jeopardise the operational safety of refrigeration systems if refrigerants are no longer available for servicing. In addition, there are laws in

some EU countries that go beyond the F-Gas Regulation, and HFCs are also made more expensive there through various levy models.

CO₂ footprint of transport refrigeration is becoming increasingly important

As the CO₂ footprint of trucks will be significantly reduced in the coming years due to zero-emission drives and low CO₂ fuels, the CO₂ emissions of transport refrigeration systems will become more visible in sustainability reporting than before. For large fleets in particular, this may lead to disadvantages in the context of the so-called ESG rating (environmental, social and corporate governance), on the basis of which financial institutions are to allocate funds in future.

In addition to the global warming potential of F-gases, the regulatory authorities are also focusing on their adverse effects on human health. F-gases belong to the harmful substance groups of perfluorinated and polyfluorinated alkyl substances (PFAS). The REACH Regulation (EC) 1907/2006 regulates the use of such chemicals and could therefore also be applied to F-gases in the future. It is therefore possible that the REACH Regulation will ban the use of F-gases as refrigerants even before the F-Gas Regulation.

An F-gas-free supply chain is already possible today

However, all operators of heavy refrigerated vehicles now have an opportunity to contribute to a completely F-gas-free supply chain and thus help to solve problems for the environment and health. ECOOLTEC Grosskopf GmbH offers a transport refrigeration unit that uses only natural refrigerants with a negligible environmental impact. "Natural refrigerants, i.e. substances that occur in nature such as carbon dioxide (CO₂, R744) and hydrocarbons (propene, R1270), were already being used successfully at the beginning of refrigeration. However, with the invention of F-gases, it was thought that a non-flammable and non-toxic alternative had been found, replacing the natural refrigerants. It was only later that the dangers of synthetic refrigerants for the environment and health were recognised. The F-Gas

Regulation is now driving the return of natural refrigerants," explains Dr Jürgen Süß.

The ECOOLTEC TM182 transport refrigeration unit offers operators of refrigerated vehicles reliability, durability, cost-effectiveness, operational safety and safeguarding of the future. With units now in daily operation ECOOLTEC has proven that systems with natural refrigerants are practical and future-proof solutions for refrigerated road freight transport.



caption:

As the ECOOLTEC TM182 transport refrigeration system uses natural refrigerants, these will continue to be available and cost effective for years to come.

company's profile

ECOOLTEC Grosskopf GmbH is a European manufacturer of future-oriented, environmentally friendly transport refrigeration systems. The mission of the company is to offer the refrigerated transport industry transport refrigeration units which are particularly sustainable, efficient and powerful. Key features of ECOOLTEC technology are the use of natural refrigerants with lowest greenhouse warming potentials and the all-electric alternator or battery drive. The company's headquarter and production site of ECOOLTEC Grosskopf GmbH is in Mülheim a. d. Ruhr (North Rhine-Westphalia). The management board consists of Henning Altebäumer, CEO, and Dr Jürgen Süß, CTO. ECOOLTEC also owns ECOOLTEC UK Ltd. which is located in Buckingham (Buckinghamshire), Managing Director is John Winter.

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