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Product range: Grain coolers

Statement on the proposal for the restriction of PFAS by the European Chemicals Agency (ECHA)

Dear Sir or Madam,

In the following, you will find arguments on the proposal for the planned restriction of PFAS by the European Chemicals Agency (ECHA), as well as information on an appropriate course of action.

Company

FrigorTec GmbH is a medium-sized company operating worldwide and specializing in the development and production of refrigeration technology equipment. FrigorTec is the global market leader in the development, production and distribution of grain cooling equipment for quality assurance of grain and oilseeds directly after harvest in large grain stores and mills. FrigorTec currently uses the non-flammable refrigerant R513A with a GWP of 631 in this application for safety reasons.

On April 5, 2022, the European Commission presented a proposal for an amendment to the "Regulation of the European Parliament and of the Council on Fluorinated Greenhouse Gases" (F-Gas Regulation), which, among other things, provides for a tightening of the prohibitions on use in conjunction with a greatly accelerated phase-down of the market availability of F-gases and especially of HFC refrigerants. Among other things, a GWP of less than 150 is required for stationary operation. Thus, at FrigorTec, a changeover from R513A to R1234yf for the above-described grain coolers will take place from mid-2024. Due to the GWP value of 4 for R1234yf, this would ensure long-term planning security. The first prototypes with the refrigerant R1234yf are already being tested in the technical center at FrigorTec. The measurement results are consistently positive.

Process description

Due to its own respiration, which generates heat and moisture, grain can only be stored for a short time and tends to spoil if left untreated. In order to store grain for a long time without loss of quality, it must be cooled to below 15°C. This reduces inherent respiration to a minimum. This reduces the grain's own respiration to a minimum, the grain pests go into hibernation and spoilage by mold (mycotoxins) is prevented. After a cooling cycle, which lasts about 1-3 days, the grain is stable due to its self-insulation and the cooling unit can be moved to cool the next silo. For this purpose, the cooling units are equipped with chassis or rollers so that they can be moved from silo to silo.

Cooling preservation was developed in 1963 with the University of Düsseldorf, and the University of Stuttgart-Hohenheim subsequently deepened many details (Prof. Werner Mühlbauer). Since 1963, cooling preservation has been used successfully in 84 countries on all continents.

Problem

To ensure the supply of the population, cooling preservation is a proven, natural process, without chemicals and gases. Since the supply of the population with grain can otherwise not be ensured, grain cooling is systemically relevant.

Should a restriction on PFAS by the European Chemicals Agency (ECHA) come into force, this would mean that the refrigerant R1234yf of safety class A2L would have to be replaced by a refrigerant of safety class A3.

Grain coolers are mobile devices for stationary operation at grain silos. For this purpose, it is imperative that the refrigeration units, including all components installed in the refrigeration circuit, are designed to be permanently technically tight when using flammable refrigerants of safety class A3 in accordance with TRGS 722 (Technical Rules for Hazardous Substances). Otherwise, ATEX zoning (explosion protection) including access restrictions, fencing, gas warning systems and forced ventilation is required. This makes mobile use of the cooling units impossible.

When using R1234yf, a safety concept for the grain cooling units was developed together with the TÜV, which allows the use of components that are not permanently technically sealed in accordance with TRGS 722.

Safety for persons and property cannot otherwise be guaranteed due to the flammability of the refrigerant as long as no permanently technically tight components are available in the corresponding capacity sizes. The necessary risk assessment by the operator would result in unreasonable safety precautions.

The manufacturers of the required refrigeration components have begun to develop and certify suitable components for the design of permanently technically tight systems, but at present these are not yet available in many cases. In order to meet market expectations, FrigorTec would have to start immediately with project planning, risk assessment and certification of the systems and procurement of the components. However, an immediate changeover is out of the question for the reasons mentioned above.

To secure the supply of hygienically safe grain within Europe and worldwide, it is still urgently necessary to safeguard the stock of existing grain cooling equipment. It is therefore absolutely essential to enable the availability of the refrigerants currently in use for a period until at least January 2028 in order to ensure plannability and to be able to gradually replace existing grain cooling equipment.

Outlook

In the next few years, we expect to see further development of the refrigeration components approved for the construction of permanently technically tight systems in accordance with TRGS 722. This will enable the construction of safe grain refrigeration systems using refrigerants of safety class A3, without risks for grain store operators and consumers.

Once approved by component manufacturers, systems can then be developed that combine environmental performance expectations with the necessary safety while not limiting usability.

Approval would also allow our customers to continue operating their refrigeration systems for a limited period of time until a viable and affordable alternative is available.

Yours sincerely,
FrigorTec GmbH



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Head of Development