PRESS RELEASE - 11 FEBRUARY 2025

ECOOLTEC TM182 in use: Ferdinand Bierbichler saves several hundred tonnes of CO_2

- **Up to 780 tonnes reduction in CO_2 emissions thanks to the use of natural refrigerants alone**
- **The diesel consumption of the refrigerated vehicles is also significantly reduced thanks to the efficient alternator drive**
- **Long term availability of natural refrigerants which are even cheaper to purchase**

Michael Reiserer, Managing Director of food wholesaler Ferdinand Bierbichler, gives his first assessment of the use of the TM182 transport refrigeration system from ECOOLTEC. According to him, the twelve trucks equipped with the unit will save almost 780 tonnes of CO_2 equivalent over the eight-year service life. In addition, the vehicles' fuel consumption is reduced by up to two litres of diesel per 100 kilometres.

The result is impressive: 'Compared to our vehicles with conventional, electrically driven transport refrigeration systems, the CO_2 emissions of the twelve distribution trucks with the ECOOLTEC TM182 will be up to 780 tonnes lower over the eight-year service life,' explains Michael Reiserer, Managing Director of Ferdinand Bierbichler. The food wholesaler from Stephanskirchen in Upper Bavaria has been operating twelve trucks with multi-temp bodies and the ECOOLTEC TM182 in heavy-duty distribution transport since 2022.

The savings only include the lower greenhouse gas potential of the natural refrigerants CO_2 (R744, GWP 1) and propene (R1270, GWP 3) compared to the F-gas R410A (GWP 2,088), which is used in the systems of the other trucks. The

calculation considers an annual leakage rate of 15 per cent of the filling quantity, which is 14 kilogrammes in total. Per vehicle with the reference system, this results in CO_2 emissions of 35,078 kilogrammes of CO_2e over the holding period of eight years, which adds up to CO_2 emissions of just under 421 tonnes for twelve vehicles, that are avoided by using the ECOOLTEC TM182. For comparison. It is roughly the equivalent to the average annual CO_2 footprint of 278 commuters in North Rhine-Westphalia*. If the initial fill were to leak completely due to damage or not be recycled during servicing, an additional 30 tonnes of CO_2e would be released into the atmosphere per vehicle over eight years. This would result in a total impact of around 780 tonnes of CO_2e per vehicle and over eight years. This compares with an initial filling of the ECOOLTEC TM182 with 1.4 kilogrammes of R1270 and one kilogramme of R744 with a total CO_2e of around four kilogrammes and a negligible amount of CO_2e due to leakage, as the refrigeration circuit is hermetically sealed.

Fuel consumption of trucks with TM182 up to eight per cent lower

However, this comparison does not yet take consider the high energy efficiency of the TM182, which is driven purely electrically via ECOOLTEC's in-house alternator on the truck engine, compared to conventional, also purely electrically driven transport refrigeration units. Thanks to its high level of efficiency, the energy consumption of the ECOOLTEC system is lower than that of systems with synthetic refrigerants, despite its enormous power, due to the efficient refrigeration process using natural refrigerants with a high volumetric cooling capacity and the careful selection and design of the system components. According to fleet manager Fritz Taucher, this is confirmed by Ferdinand Bierbichler's consumption records. According to these records, the trucks with the TM182 require on average up to two litres less diesel per 100 kilometres on the same route and with the same number of door openings than the vehicles with the electrically driven reference system – a consumption advantage of around eight percent. With an annual mileage of about 60,000 kilometres, this results in 304 tonnes less CO_2 emissions over the eight-year service life and twelve trucks. This results in a total saving of up

to 1,075 tonnes CO_2e. The lower fuel consumption also results in a lower operationg cost reduction of almost €1,900 per vehicle during 2024 alone, which will increase further over the coming years due to CO_2 taxation.

The advantage over a diesel-powered transport refrigeration system would be even greater. Thanks to the alternator on the truck engine, the ECOOLTEC system requires 60 to 80 per cent less energy than a system powered by a stand-alone diesel engine for the same refrigeration capacity. The low weight of the system also has a positive effect on tyre wear on the front axle. ‘The wear pattern is much better, especially on the tyre sidewalls. We record up to 20,000 kilometres more mileage,’ explains the fleet manager.

Natural refrigerants: sustainable, economical and permanently available

Managing Director Michael Reiserer is very satisfied with these values and sees his investment decision confirmed. After all, sustainability is an important part of Ferdinand Bierbichler's corporate strategy. The continuous improvement process also includes the acquisition of ever more modern vehicle and transport refrigeration technology. For this reason, the managing director decided two years ago to equip trucks with the transport refrigeration system from ECOOLTEC.

The fact that natural refrigerants – unlike F-gases – do not produce any harmful PFAS in the atmosphere and can be used in the long term is also crucial to the company boss's procurement strategy, while the availability of synthetic refrigerants is becoming increasingly limited due to the F-gas regulation, which was tightened again at the beginning of the year, and their prices are rising. He also praises the low noise emissions, which allow drivers to work comfortably and make deliveries in urban areas more pleasant for residents.

**According to NRW State Office for Information and Technology*

Caption:

With twelve trucks and a service life of eight years, refrigeration using only natural refrigerants saves 720 tonnes of CO_2 equivalent compared to F-gas R410A.

ECOOLTEC Grosskopf GmbH is a European manufacturer of future-oriented, environmentally friendly transport refrigeration systems. The mission of the company is to offer operators of refrigerated vehicles transport refrigeration systems which are particularly sustainable, efficient and reliable. Key features of the ECOOLTEC technology are the exclusive use of natural refrigerants with no greenhouse warming potential and the all-electric alternator or battery drive. The company's headquarter and production site is in Mülheim a. d. Ruhr (North Rhine-Westphalia). CEO Henning Altebäumer is responsible for the management of the company. ECOOLTEC also owns ECOOLTEC UK Ltd. which is located in Buckingham (Buckinghamshire), Managing Director is John Winter.

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