THE ALLIANCE FOR CO_2 SOLUTIONS

turning the problem into the solution

Choosing the next Refrigerant for Car Air Conditioning

Aide Mémoire

BACKGROUND

This summer, automotive manufacturers will choose the next refrigerant worldwide for car air conditioning. This is an opportunity to slash global emissions of greenhouse gases by 1%. The chemical (HFC 134a) used today will be phased out from 2011 to 2017, due to its high Global Warming Potential (GWP). Manufacturers can either opt for a natural alternative, recycling carbon dioxide (CO_2), with the potential to save over 10% of each and every car's total emissions of greenhouse gases to the atmosphere, or for new chemical blends which are less efficient and have yet to be fully tested.

This decision is the tipping point for the introduction of a more advanced and environmentally friendly technology into other sectors, namely supermarkets, vending machines and heat pumps for domestic water and floor heating. A huge amount of emissions can be saved across all these sectors, equal to 3% of the world's total emissions.

CO_2 - THE BEST OPTION

The natural refrigerant CO_2 (R744 in the official industry nomenclature), is the most environmentally friendly and technically advanced solution for car air conditioning. Experts worldwide have extensively analysed and tested it in a variety of vehicle models and weather conditions over the last 10 years.

Compared to new chemical blends, experts conclude that CO_2 car air conditioning is:

1. **More environmentally friendly**: CO_2 reduces the direct emissions to zero for a car's cooling system. Since the carbon dioxide used is an industrial by-product, cleaned and recycled, it is actually neutral, storing CO_2 during the life cycle just as a tree does. On top of this, a CO_2-based system will save the driver money as it consumes less fuel to function in the vast majority of climates (i.e. in over 90% of driving conditions). The result: using CO_2 systems can save up to 10% of total emissions from a car.

2. **More technically ready**: Models have been developed and tested in all climates. They are ready for mass production, unlike the new chemical blends, yet to be fully tested, and with unknown long-term consequences. Besides the superior performance in terms of emissions reductions and lower fuel consumption, CO_2 systems are also faster to heat and cool a car, and have a smaller size, which can bring about additional emissions reductions. Overall, it is a safe, reliable technology, with better performance than the new chemical alternatives.

3. **More cost-efficient**: As a refrigerant itself, CO_2 is cheap and widely available. The servicing will also be much cheaper for the consumer, as the systems do not require complicated infrastructure to avoid leakage, as is the case with chemical alternatives. For the industry, the costs of developing the necessary components will be the same for current systems once they enter into mass production. An initial investment from carmakers in the order of 20€ per unit is required. For the consumer, however, the total cost of ownership is lowest with CO_2.

WHY IS THERE RESISTANCE TO THIS NEW TECHNOLOGY THEN?

The automotive sector's main concern regarding CO_2 Technology is the additional cost it would represent in the short term to switch to a new system. Since the systems need new components, due to its different properties compared to current ones, the automotive sector needs to make an initial investment that will be recovered over time. The focus on short-term shareholder value is the major hurdle to the implementation of a more advanced technology that represents clear benefits for the industry, the consumers and the planet.

CALL FOR ACTION

We urge the automotive industry to opt for the only sustainable option in "The Cool War" by;

- **Supporting** the adoption of CO_2 as a global solution for car air conditioning
- **Rejecting** the introduction of untested chemical blends and any further delay in the choice of refrigerant

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