

New car heating technology gives zero emissions

August 3 2018



Credit: CC0 Public Domain

Zemission has developed a zero-emission catalytic burner for heating in electric and hybrid vehicles. The device will promote the uptake of plug-in electric vehicles (EVs) by increasing their driving range.

The increasing popularity of EVs and plug-in hybrid EVs (PHEVs) is creating a growing need for auxiliary cabin heaters as the waste heat

from [internal combustion engines](#) normally used to warm passengers is either not available or insufficient. This need is particularly acute in [cold climates](#) as studies show that the battery of EVs in normal cold climate temperatures of -7°C suffer a decrease in range of up to 60 percent.

Some 3 million [hybrid vehicles](#) will be built by the year 2020, and around 9 to 10 million by 2025. Rising sales of EVs and PHEVs are therefore creating a need for either fuel-operated or electric-powered auxiliary heaters. However, currently available fuel-operated heaters produce levels of emissions that do not comply with current regulations, whilst electric heaters drain the main battery of power, depleting vehicle range.

The EU-funded Horizon 2020 z-BURN project addressed this challenge by helping commercialise a novel burner developed by the Swedish company Zemission, which uses [catalytic combustion](#) to give clean, flameless combustion. "We have developed and tested a patented device that is simple, silent, can be fuelled with any liquid biofuel and boasts superior efficiency with zero emissions," claims CEO and project coordinator Anders Vestin.

A clean solution

Catalytic combustion involves the oxidation of hydrocarbon fuel, which takes place in the presence of heat and a catalyst. There is no flame involved, and no nitrogen oxides are formed due to the relatively low temperature. "Our technology is fundamentally different from flame-based technology and advantages include long life, robustness and its compact size," Vestin points out.

The burner can be used in autonomous heaters to avoid increased emissions and the rapid battery depletion experienced with off-the-shelf auxiliary heaters. "For passenger vehicles, z-BURN offers a world-

beating solution that minimises the impact of cold climates on passenger comfort and vehicle performance," Vestin explains. "For commercial vehicles z-BURN provides a solution with multiple applications like cabin heating, battery heating, and the heating of exhaust after treatment systems."

Understanding customers and the market

End customers include hybrid vehicle owners around the globe as the burner will make a significant impact on driving range, as well as allowing the battery pack to be reduced in size. According to Vestin: "The project's key result is a better understanding of the total market and the needs of our main customers and contact with new potential customers, it was also extremely valuable in updating our business plan. For example, we found there is also great need for this technology in heavy goods vehicles."

z-BURN provides a better understanding of the market and the requirements of customers like the procurement and technical development departments of large automobile manufacturers, such as the Volkswagen group. "We achieved a deeper appreciation of the main challenges currently facing the industry, including which type of vehicles will be early adaptors of the technology, and where there is the greatest willingness to invest in solutions. The next stage is to industrialise the heater and build the supply chain," Vestin concludes.

Provided by CORDIS

Citation: New car heating technology gives zero emissions (2018, August 3) retrieved 31 January 2023 from <https://techxplore.com/news/2018-08-car-technology-emissions.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private

study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.