



Science for a  
moving society

FINAL REPORT

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## Zero-Impact-Endrohremission-Antriebsstränge

Identifizierung technischer Lösungen zur Erzielung von Antriebssträngen mit Zero-Impact Tailpipe-Emissionen unter Berücksichtigung eines gesetzlichen Fahrzeug- und Luftschadstoffszenarios 2030+

## *Zero Impact Tailpipe Emission Powertrains*

*Identify technical solutions to achieve powertrains with Zero Impact Tailpipe Emissions under consideration of a 2030+ legislative vehicle and air pollutant scenario*

# Zero-Impact Tailpipe Emission Powertrains

Project no. 1412

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## Identify technical solutions to achieve powertrains with Zero-Impact Tailpipe Emissions under consideration of a 2030+ legislative vehicle and air pollutant scenario

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### Final report

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#### Abstract:

The aim of this research project is to identify possible Zero-Impact Tailpipe Emission powertrains for a small gasoline passenger car and a diesel light duty vehicle in real world driving conditions. Initially, a legislation scenario for vehicle and air quality boundaries in 2030+ is evaluated. Using the legislative emission scenario and the virtual TME vehicle concept layout approach, representative powertrains for the diesel and gasoline powertrain are developed as a reference for 2030+. Future technologies are considered by implementing test bench measurements of prototypes and virtually integrating them into the vehicle simulations. After the generic term "Zero-Impact Emission" is defined for the worst-case air quality measurement station, Stuttgart am Neckartor, the method is transferred to six additional scenarios. Next, the Zero-Impact Tailpipe Emission powertrains are designed by using the same virtual vehicle concept layout approach as for the reference vehicles in 2030+. The study focuses on tailpipe emissions, since these occur clearly from the combustion engine. Selected results are tested based on an existing hardware demonstrator platform as a proof of concept. By evaluating the differences between the reference and Zero-Impact Tailpipe Emission vehicle layouts, the individual emission and efficiency impact of the technology components is identified.

The objective of the research project was achieved.

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Project coordination / user committee:	Dr.-Ing. Frank Bunar (IAV GmbH Ingenieurgesellschaft Auto und Verkehr)
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Related reports:	R604 (2023)

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