

The logo for fka, consisting of the lowercase letters 'fka' in a bold, white, sans-serif font.

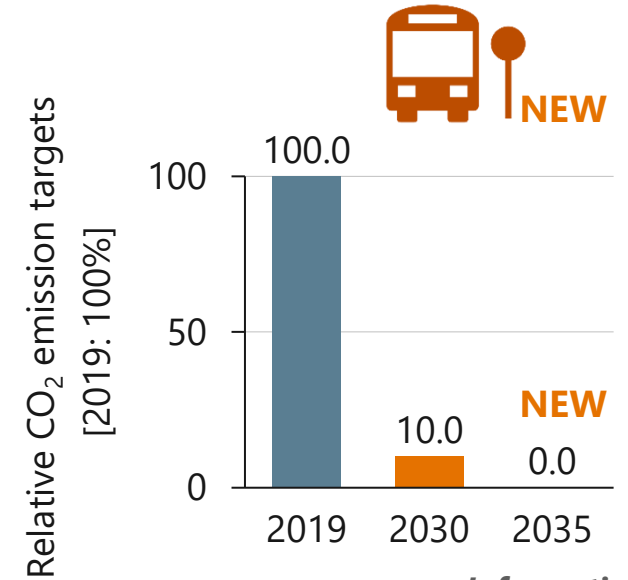
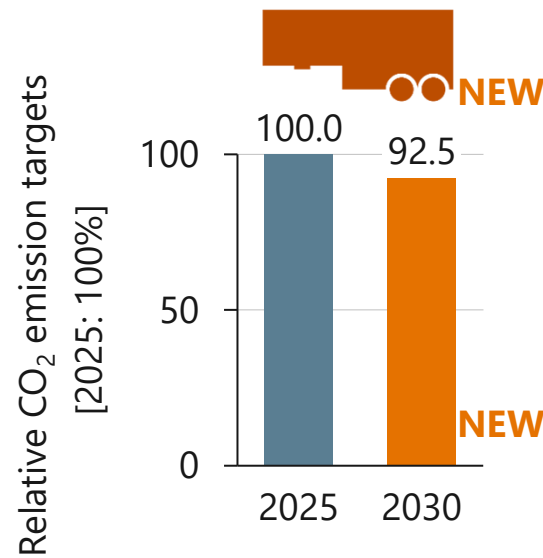
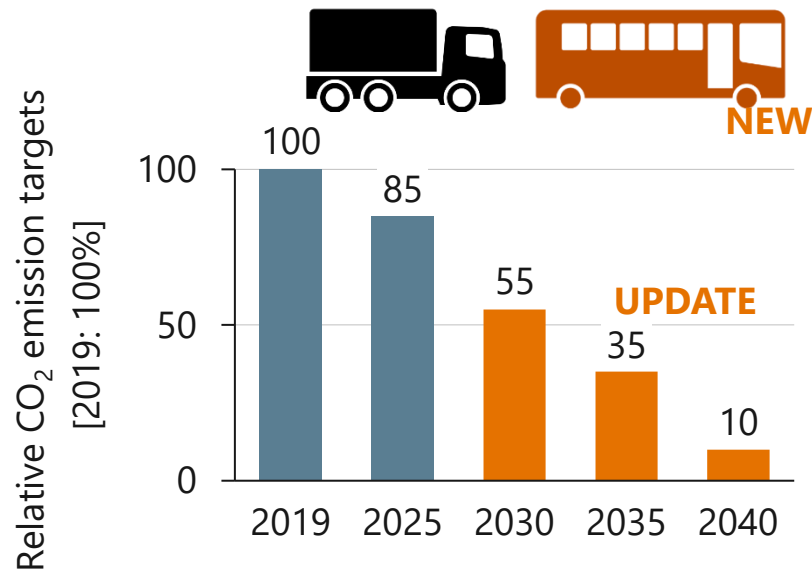
CREATING IDEAS &  
DRIVING INNOVATIONS



# HOW CO<sub>2</sub> STANDARDS FOR HEAVY-DUTY VEHICLES AFFECT YOUR BUSINESS POTENTIAL

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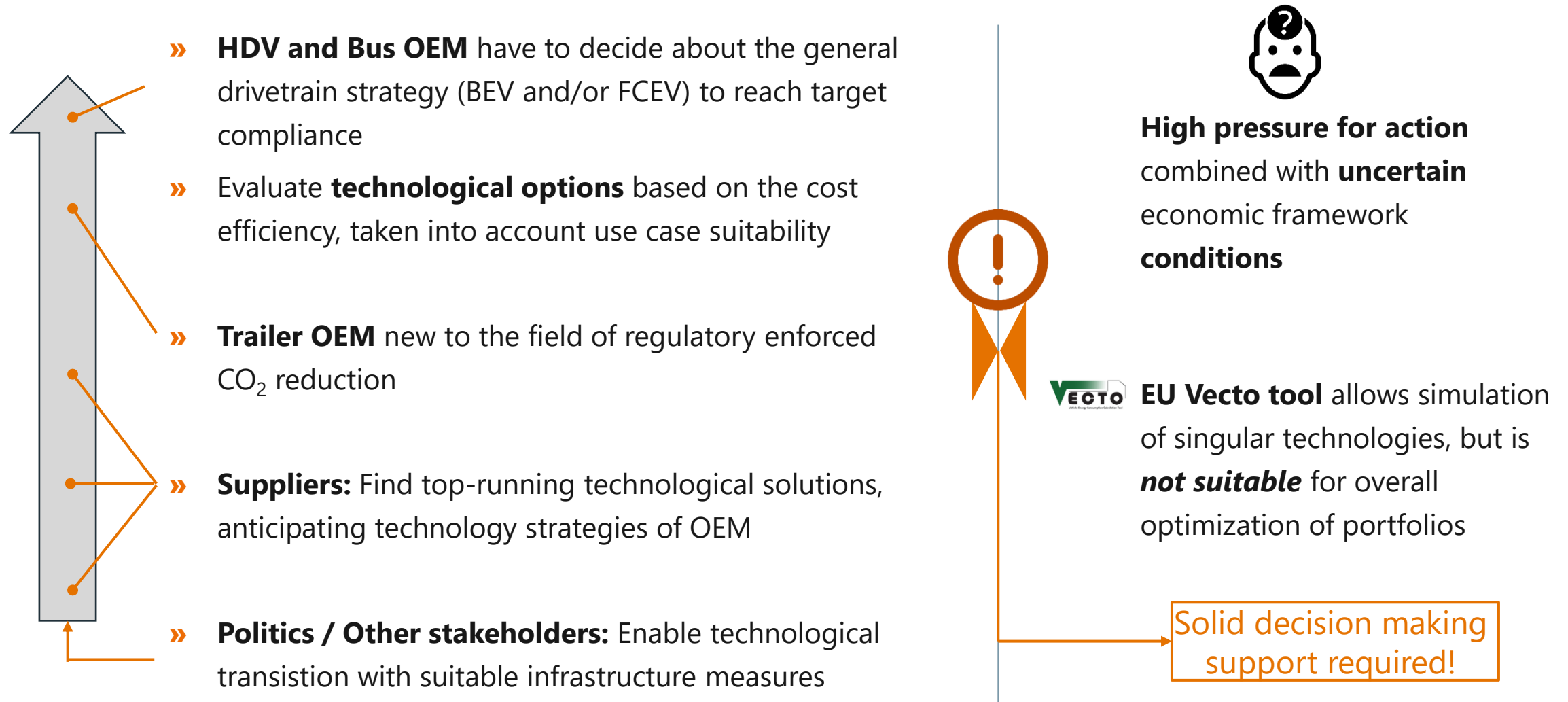
# Latest deal between EU council and parliament would lead to stricter and more comprehensive CO<sub>2</sub> legislation for HDV including busses and trailers



*Information include high-level simplifications!*

- » In March 2024, **EU Parliament and Council agreed** on update of **HDV CO<sub>2</sub> legislation**, including
  - **Stricter CO<sub>2</sub> targets for trucks** until 2035 and **new target 2040, requiring 90 % CO<sub>2</sub> reduction**
  - **Inclusion of Coaches** (CO<sub>2</sub> targets as for trucks) and **trailers** (specific reduction target)
  - **City busses: ZEV only until 2035!**
- » Elements of **life cycle assessment** on the horizon / to **be evaluated by EU comission**

# Due to the very fast transition towards decarbonization of the HDV market, challenges arise for all members of the supply chain.



# High complexity and interactions in terms of necessary measures for the CO<sub>2</sub> reduction of tractors and trailers to calculate the fleet average

As part of the European Green Deal, EU council and parliament reached a deal on CO<sub>2</sub> targets for HDV, requiring 90 % reduction between 2019 and 2040 for most vehicle segments [2023/0042(COD)]



## Lightweight construction

- Payload advantage over a conventional design.
- Up to 850 kg lighter.
- Opportunities for new material mix (Steel, Aluminum).



## Tire wear

- Tire wear accounts for a quarter of the microplastics in the oceans, contributes to particulate pollution.
- Opportunities for new materials and technologies.



## Electrification/Recuperation

- Chances for electrified trailer axles.
- Reduced brake noise (Regulation (EU) No 540/2014).

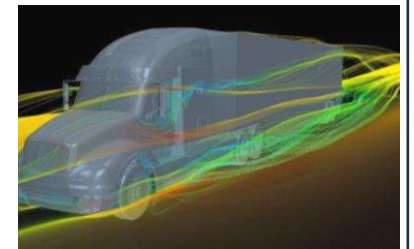
## Utilization and recycling of plastics

- HDPE and PP have a 70% lower CO<sub>2</sub>-content than PET.
- Recycled PP or HDPE is more eco-friendly than recycled PET.



## Aerodynamics

- Rear wing systems to reduce fuel or energy consumption.
- Other measures to optimize drag.



## Data and analysis

- Data must underpin the continuous improvement process.
- Interface to possible and acute repair works.



High Pressure due to strategic long-term vision by EC for a competitive and climate-neutral EU economy by 2050

# To fulfill the legal requirements, our proven expertise and comprehensive tool chain leads to realistic and cost-efficient strategies for your product portfolio



## POTENTIAL PROJECT APPROACH



### Input

- » fka's technological expertise
- » Holistic market modeling
- » Proven scenario methodology



### Support CLIENT

- » Product portfolio and innovations
- » Relevant competencies

### Approach

- » Detailed analysis of regulation for the specific objective like target vehicle classes etc.
- » Quantitative and technical analysis of HDV vehicle market status quo
- » Identification of technological options for achieving target compliance within the specific vehicle classes
- » Modeling CO<sub>2</sub> target compliance strategies in HDV market based on CO<sub>2</sub> ambition levels
- » Constant matching with customer expertise and product portfolio



### Results and Output

- » Holistic optimization of the product portfolio in comparison with market and technology options
- » Derivation of strategic impact on your business case: realistic opportunities and threads





# WHY US?

Combined expertise with a market and technology-oriented strategic approach

## *Consulting expertise since the mid-1990s*

- » Technology scouting / evaluation
- » Consideration of the competitive landscape
- » Holistic market modeling
- » Scenario analysis
- » Derivation of CO<sub>2</sub> efficiency strategies for fleets down to system and component level
- » Individual product portfolio optimization

## *Technology expertise since the early 1980s*

- » System design and development
- » Agile development and validation of new concepts
- » Application-specific know-how
- » Proven expertise in the areas of
  - » Drivetrain
  - » Body
  - » Chassis
  - » Driver assistance & Automated Driving

# Projects will be conducted by an experienced and cross-functional core team that forms a stable basis in each project

## PROJECT GOVERNANCE AND TEAM (EXCERPT OF EXPERTS)

	Ingo Olschewski	Alexander Busse	Christian Harter	Michael Redhead	Laura Fautz	Michael Nievelstein
						
<b>Role</b>	<b>Head of</b>	<b>Manager</b>	<b>Senior Consultant</b>	<b>Expert</b>	<b>Consultant</b>	<b>Junior Consultant</b>
<b>Knowledge/Experiences</b>	<ul style="list-style-type: none"> <li>» &gt;20 years of consulting and industry experience</li> <li>» Portfolio strategies</li> <li>» Holistic market modelling</li> <li>» Structuring of value chains</li> <li>» New mobility concepts</li> </ul>	<ul style="list-style-type: none"> <li>» &gt;9 years of consulting and industry experience</li> <li>» Expertise in powertrain systems and components</li> <li>» Numerous projects on technology and market potentials</li> <li>» Portfolio strategies</li> </ul>	<ul style="list-style-type: none"> <li>» &gt;10 years of consulting and industry experience</li> <li>» CO2 strategies for OEM and suppliers</li> <li>» Fleet modeling and Life cycle assessment</li> <li>» Technology Portfolio consulting</li> </ul>	<ul style="list-style-type: none"> <li>» &gt;7 years of consulting and industry experience</li> <li>» Technical requirements for legal purposes</li> <li>» Vehicle connectivity and automation</li> <li>» V2X grid infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>» &gt;4 years of consulting and industry experience</li> <li>» Model based systems engineering</li> <li>» Digitalization of mobility systems</li> <li>» Vehicle connectivity and automation</li> </ul>	<ul style="list-style-type: none"> <li>» Quantitative and qualitative market analysis</li> <li>» Data collection and evaluation</li> </ul>
<b>Role in project</b>	<b>Senior Adviser</b>	<b>Project Lead</b>	<b>Senior Expert</b>	<b>Expert</b>	<b>Expert</b>	<b>Project Support</b>
<b>Tasks</b>	<ul style="list-style-type: none"> <li>» Project quality</li> <li>» SteerCo member</li> </ul>	<ul style="list-style-type: none"> <li>» Project lead</li> <li>» Stakeholder consultation</li> </ul>	<ul style="list-style-type: none"> <li>» Application scouting</li> <li>» Potential analysis</li> <li>» Market Modeling</li> </ul>	<ul style="list-style-type: none"> <li>» Application scouting</li> <li>» Automotive regulations</li> </ul>	<ul style="list-style-type: none"> <li>» Application scouting</li> <li>» Potential analysis</li> <li>» Stakeholder consultation</li> </ul>	<ul style="list-style-type: none"> <li>» Application Scouting</li> <li>» Potential analysis</li> </ul>

1) Depending on the project requirements, fka reserves the right to adapt / supplement the project team

# Our economy of expertise includes not only automotive consulting and engineering topics but also access to process or production expertise from industry and science

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**fka Consultants** on junior, senior and manager level with strong (auto)mobility background

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**fka Silicon Valley** with their great knowledge about news and trends from the Bay Area and surroundings

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Cooperation with **external networks** like ExpertPowerhouse or Inex One to enrich our inhouse expertise

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Relevant staff of **fka's engineering departments** with high technological expertise in all vehicle domains

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Direct access to staff of ika and other institutes of **RWTH Aachen University**

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Integration of relevant **freelancers**, e.g. Univ.-Prof. Dr.-Ing. Lutz Eckstein, to enhance project results

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# Strategy & Consulting Services



## Market Intelligence

Quantitative market forecasts and insights for your business strategies

## Technology Roadmapping

Scouting and evaluation towards an innovative technology portfolio

## Business Potential Analysis

Support regarding portfolio optimization or expansion

## Automotive Regulations

Approach to manage complexity and derive technology strategies

## Strategic Recommendations

Let us derive the big picture and formulate realistic solutions

## Value Chain Evaluation

Structural and organizational fit in transforming value chains

CREATING IDEAS & DRIVING INNOVATIONS

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