

SUSTAINABILITY STRATEGY 2021- 2022



pepper motion GmbH

1. Sustainability Philosophy

Sustainability is at the core of our mission. At pepper motion GmbH, we want to accelerate the world's transition to electric mobility. [Transport](#) represents almost one-fifth of the world's greenhouse gas (GHG) emissions, of which road transport is the biggest contributor at about 75 percent. Moreover, air pollutants – including those from [road transport](#) – are now considered the world's largest environmental health risk and are a major cause of premature death and disease. The world needs rapid action on reducing harmful emissions to limit global warming and to lower the threats posed to health. This, however, cannot be achieved unless we first address the enormous sunk costs in traditional fossil-fuel powered vehicles.

The average lifespan of diesel buses is between [20 – 30 years](#), with huge upfront costs. Moreover, changing the engine, gearbox, or axle (new or refurbished) can entail additional costs. For companies to replace their entire fleet with brand-new electric vehicles (EVs) would not only involve large capital costs, but it would also be environmentally damaging. That is why we designed a product that allows anyone – especially municipalities, public transport operators, and bus/truck manufacturing companies – to change their existing fleet without incurring the financial or environmental costs of complete fleet replacement. We made it economically rational to be environmentally friendly.

pepper motion GmbH's core product is a retrofitting kit that enables the conversion of diesel buses and trucks to electric vehicles. The retrofitting kit consists of two parts – a modular powertrain system and a vehicle integration kit. The modular powertrain system includes an electric drivetrain, a battery management system (BMS), a heating, ventilation and air-conditioning (HVAC) system, a Vehicle Control Unit (VCU) and other auxiliary units such as a compressor, a servo motor pump and a DC/DC converter amongst others. The vehicle integration kit enables the modular powertrain system to fit into a specific bus or truck model. For a new bus or truck model, a partial redevelopment of the kit is typically required. However, occasionally, a full development of the kit might also be necessary.

The chief innovation of our retrofitting kit is the VCU software architecture, which was developed in-house and controls all other components inside the vehicle. The VCU not only connects the newly installed components such as the electric powertrain, the HVAC system, and the auxiliary units with one another, but also communicates with the older components such as the braking system, the air suspension system and the automatic door system. We use the retrofitting kit to modify diesel buses – either a client's fleet or second-hand buses procured by us – into electric vehicles for our customers.

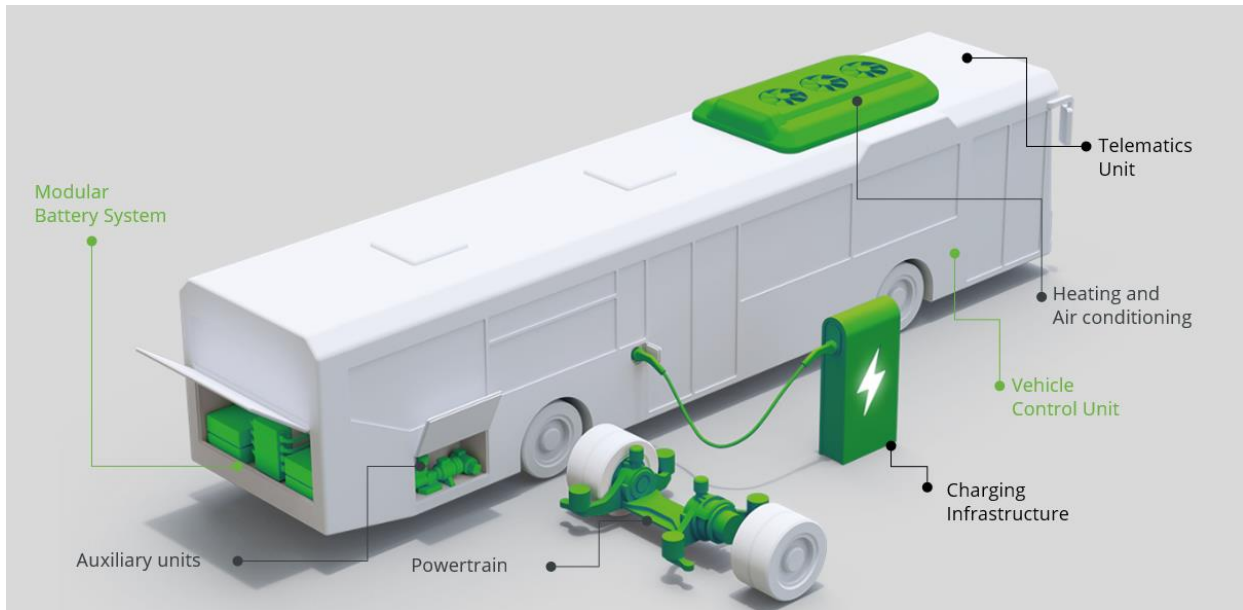


Figure 1: Graphical depiction of the electrification kit (pepper motion GmbH, December 2021)

In addition to our retrofitting service where we sell modified EVs, we offer another service through our Tier 1 kit. With the help of our Tier 1 kit, which includes the modular powertrain system and a Tier 1 integration kit, our customers can manage the retrofitting process themselves.

We are pleased to report that our retrofitting kit for buses successfully passed a process audit and assessment on functional safety according to the [ISO 26262-1:2018](#) standards. This audit was conducted by TÜV Nord – an independent third-party certification agency. This standard specifies processes and methods that need to be followed to achieve functional safety for the serial production of road vehicles, including commercial vehicles. These specifications range through all stages of product development beginning with initial product definition, risk assessment, system development, hardware and software development till final production. Our company also holds a [ISO 9001:2015](#) certification on quality management systems based on an audit conducted by Dekra – another independent third-party certification agency.

Since August 2021, our subsidiary in Austria has been responsible for software development – both for our kit and for the charging infrastructure. Added to that, we are proud to launch a battery development department in Paderborn. By developing batteries in-house, we are not only trying to mitigate supply chain risk but are also endeavouring to design new battery management systems (BMS). Our battery systems are modular in design as well as easily scalable, which is a tremendous advantage for our clients, as we are able to cater to different capacity and performance requirements.

Our product portfolio is aligned with the [EU's Conference of Parties \(COP\) commitment](#), first made in Paris in 2015 and then amended in December 2020, to reduce the bloc's greenhouse gas (GHG) emissions by at least 55 percent by 2030 compared to 1990 levels. In order to meet this commitment, the EU deemed it necessary to accelerate the decarbonization of the transport sector through an array of policy initiatives.

One of these initiatives was the [EU Clean Vehicles Directive](#), passed in June 2019, which required public service sectors such as transport, civil engineering and postal services to take into account the lifetime environmental impact of road transport vehicles before procuring them. Our vehicles fall under the category 'clean zero-emission heavy-duty vehicles', as they utilize an EU-approved alternative fuel – battery-electric. Another measure passed in July 2019 was to reduce the [CO₂-emission limits](#) for new heavy-duty vehicles by 15 percent starting from 2025 onwards and by 30 percent from 2030 onwards. Added to that, the European Commission is in the process of amending the [Eurovignette Directive](#), which applies to the charging of heavy-duty vehicles. Because of this regulatory support, we see huge potential in market growth across the EU for the deployment of our low- and zero-emission vehicles.

In addition to the EU, we are in line with the German government's goal of increasing the use of clean road-transport vehicles. In November 2016, the German government adopted the [Climate Action Plan 2050](#), where GHG emissions targets for different sectors were set. The reduction target for the transport sector was set at 40 to 42 percent by 2030 compared to 1990 levels. To achieve the climate goals set for 2030, in October 2019, the Federal Ministry for Environment, Nature Conservation and Nuclear Safety (BMU) released its [Climate Action Programme 2030](#). One objective under this Programme was to enable Germany's transition to electric mobility, whereby one-third of all heavy-duty vehicles would be powered by electricity or electricity-based fuels such as battery-electric by 2030. Following that, the German government passed the [Federal Climate Change Act of Germany](#) in 2019, which was amended in August 2021, where national annual emission budgets were defined for different sectors. For the [transport sector](#), the emission budget for 2030 was set at 85 million tonnes CO₂ equivalent (mtCO₂e), nearly 48 percent lower compared to 2019.

To enable this ambitious vision, amongst other measures, the German Ministry of Transport and Digital Infrastructure (BMVI) released a concept paper titled ['An Overall Approach to Climate-friendly Commercial Vehicles'](#), which outlined a strategy to decarbonise the road freight transport sector by means of alternative powertrains including battery-electric. Added to that, in April 2021, the BMVI Task Force released [guidelines](#) on the minimum requirements for retrofitting light- and heavy-duty commercial vehicles.




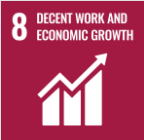
As a leader in retrofitting technology, pepper motion GmbH was actively engaged in regular dialogue with this Task Force. Lastly, in August 2021, the German government launched a [funding program](#) aimed at climate-friendly light- and heavy-duty vehicles and their corresponding charging infrastructure. These guidelines are an important signal to the market on the commitment of the German government in supporting the growth of e-mobility market. As such, we see huge prospects for our technology to advance locally in the German market too.

2. ESG KPIs

As a new player on the market, an innovator, and a contributor to the e-mobility transition at a European and global level, we at pepper motion GmbH are aware of our responsibility to the environment, to society and to strong governance standards. We understand our customers', suppliers', employees', and investors' expectations regarding corporate sustainability and recognize the importance of sustainable business practices.

As such, we are committed to carrying out our commercial operations in a responsible manner. For this purpose, we are thoroughly monitoring and evaluating our internal processes through measurable ESG criteria as part of our annual Sustainability Strategy and annual Sustainability Report.


1.1 Environmental Statistics and KPIs

KPI	Metric for FY 2021	Target for FY 2022
Environment		
Supply Chain Management		
 		
% of key suppliers with an ISO 9001: 2015 certification*	100%	Maintain
% of key suppliers with an ISO 14001: 2015 certification*	69%	Maintain
% of key suppliers compliant with the EU RoHS Directive*	100%	Maintain
% of key suppliers compliant with the EU REACH Regulation*	100%	Maintain
% of key suppliers within the EU*	100%	Maintain
*Key suppliers are those relevant to the production of our electrification kit and the suppliers of our charging stations		

1.2 Social Statistics and KPIs

KPI	Metric for FY 2021	Target for FY 2022
Social		
Employee Welfare		
 		
Injury rate per 100 employees	1%	Improve
Accident rate per 100 employees	1%	Improve
Fatality rate per 100 employees	0%	Maintain
Employee Diversity		
 		
% of full-time female employees	26%	Maintain
% of full-time female employees in managerial positions	12%	Improve
% of female employees in executive management	20%	Improve
% of full-time foreign employees	8%	Improve
% of student assistants and interns	6%	Improve
Product Responsibility		
		
Number of third-party certifications for our core product	1	Maintain
Data Protection		
 		
Number of personal data privacy breaches	0	Maintain

1.3 Governance Statistics and KPIs

KPI	Metric for FY 2021	Target for FY 2022
Governance		
Business Ethics		
		
Employee attrition rate	16%	Improve
% of employees trained on data privacy	97%	Improve
% of employees trained on data security	92%	Improve
% of employees trained on occupational safety	97%	Improve
% of employees trained on quality management	77%	Improve

Employee Statistics (December 2021)	Denkendorf	Garching	Paderborn	Other	Total	
Number of employees	44	45	9	4	102	
Number of permanent employees	40	43	9	4	96	
Number of temporary employees	4	2	0	0	6	
Age structure	<30	11	10	0	0	21
	30-49	26	28	8	2	64
	50-59	6	5	1	2	14
	60+	1	2	0	0	3
Number of female employees	15	11	1	0	27	
Number of domestic nationals	40	36	9	4	89	
Number of foreign nationals	1	7	0	0	8	
Number of employees with disabilities	0	1	0	1	2	
Number of employees on parental leave	1	0	0	0	1	