2026 / CASE STUDY

Accelerating commercial vehicle electrification with reliable DC-DC converters

As commercial vehicle manufacturers and fleet operators across Europe seek practical pathways toward electrification, reliable power conversion has become a key enabler of new vehicle architectures. To support the implementation of a micro-hybrid bus system designed to achieve Spain's ECO classification, Avia Ingeniería y Diseño selected Prodrive Technologies' MP series DC-DC converter. The collaboration resulted in a production-ready micro-hybrid bus platform that combines straightforward integration, reliable power conversion and a scalable foundation for future electrified vehicle programs.

Enabling commercial vehicles for a changing regulatory landscape

As commercial vehicle emission regulations tighten across Europe, vehicle manufacturers are increasingly challenged to reduce vehicle emissions while maintaining performance, cost efficiency and operational flexibility. In Spain, the DGT environmental classification system assigns vehicles a rating based on their emissions profile, influencing where they can operate and their eligibility for public transport tenders, fiscal incentives and other sustainability-driven benefits.

Recognizing this growing market demand, Avia, a Spanish manufacturer of industrial and commercial vehicles, sought a practical solution that would enable buses to obtain ECO status without the cost and complexity of full vehicle electrification.

In partnership with:

Avia

Proven DC-DC conversion for hybrid vehicle architecture

To achieve ECO classification, Avia needed to incorporate a hybrid powertrain architecture into its vehicles. The initial project focused on integrating an electric motor and battery system into a bus platform, with plans to expand the concept to additional on-road applications, including trucks and retrofit solutions for both new and existing vehicles.

Unlike many electrification projects that rely on extensive customization, Avia sought a proven, production-ready solution that was readily available within the market. Key technical requirements included support for a 48V/24V electrical architecture, bi-directional power conversion capability and a power rating exceeding 3 kW. In addition, the solution needed to be European manufactured, supported by comprehensive technical documentation, and backed by the necessary functional safety certifications for vehicle integration.

Following its supplier evaluation, Avia selected Prodrive's MP5624-150 DC-DC converter from the MP Series product family. Designed for demanding electrified commercial vehicle and off-highway applications, the MP Series provides a standardized solution combining bi-directional power conversion, robustness and a scalable power architecture. This enabled Avia to accelerate development while reducing integration risk and avoiding the cost and complexity of a fully customized solution.

LV DC-DC converter - MP series

> "The MP5624-150 addresses a key challenge in commercial vehicle electrification: reliable high-power bidirectional DC-DC conversion. Avia's project demonstrates how a standardized platform can accelerate development while reducing integration complexity."

Koen Saris
Regional Sales Manager

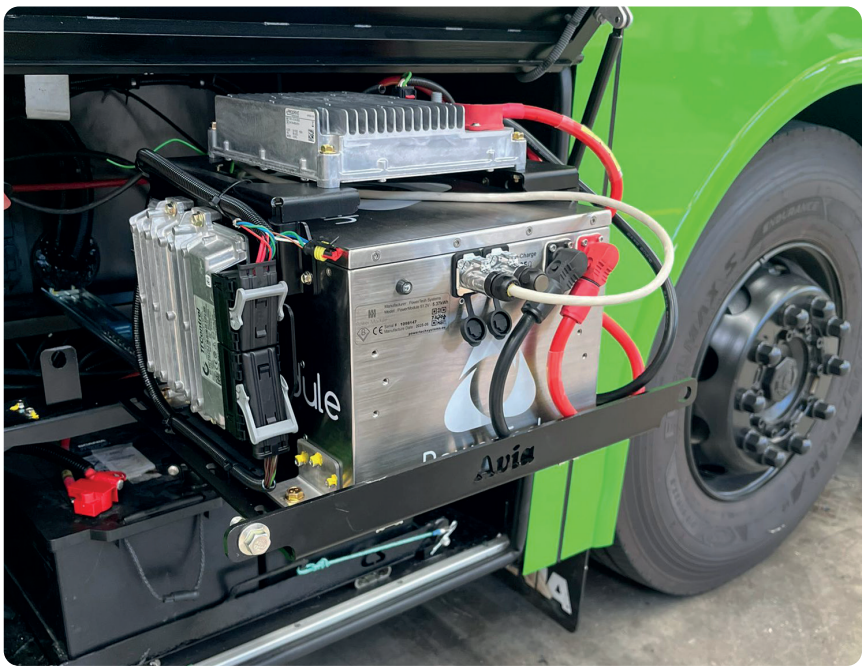
koen.saris@prodrive-technologies.com

Simplified integration

Following product selection, integration activities started with software and communication validation before progressing to mechanical and electrical implementation. The integration process was completed without significant technical obstacles, allowing the project team to focus on overall system validation rather than component-level troubleshooting.

The quality of the technical documentation played an important role throughout the process. Avia engineers were able to quickly understand the product architecture and integration requirements, minimizing the need for clarification during development. Combined with direct access to Prodrive's engineering team during initial commissioning activities, which helped accelerate the implementation process.

The overall timeline from first sample delivery to inspection was approximately eight months, while the actual technical integration required approximately one month.



MP5624-150 successfully integrated into the micro-hybrid bus

> One of the key advantages of working with Prodrive Technologies was the combination of a mature product and responsive engineering support. This allowed us to focus on system validation rather than solving component-level integration issues.

David Sánchez
CEO, Avia Ingeniería y Diseño

avia.ingenieria@aviaing.com

A practical path to ECO-classified commercial vehicles

By integrating the MP Series bidirectional DC-DC converter into its micro-hybrid architecture, Avia successfully developed a solution that supports ECO-classified commercial vehicles.
The platform enables efficient power exchange between 48V and 24V vehicle systems, providing the foundation required for hybrid functionality while preserving compatibility with existing vehicle architectures. The solution delivers a practical pathway for manufacturers and fleet operators to meet ECO classification requirements, gain access to low-emission urban areas, and participate in tenders that increasingly prioritize sustainable vehicle technologies. The project demonstrates how advanced power conversion technology can bridge the gap between traditional diesel platforms and full electrification, allowing operators to benefit from ECO classification today while preparing for the next generation of sustainable transport solutions.

Discover more about Prodrive Technologies' solutions for Onboard Power Systems:
Onboard power systems

Discover more about Avia ingenieria y Diseño's solution for their engineering services:
Engineering services related to on-road and off-road vehicles