

How Geotab is helping Wuppertaler Stadtwerke introduce hydrogen-powered buses

Wuppertaler Stadtwerke (WSW mobil GmbH) is a local transport company operating in the city of Wuppertal and is a member of the Rhein-Ruhr Public Transport Association. WSW transports approximately 86 million passengers annually on its extensive bus network.

The challenge: Providing data support for a fleet with different drive systems

Sustainability is one of Wuppertaler Stadtwerke's key concerns. As a local public transport company, it is aware not only of the extent of its impact but also of its responsibility to provide customers with an environmentally friendly service. This internal focus on sustainability is reinforced by legislative pressure at both the local and national levels, with an increasing number of environmental laws and policies requiring companies, including those in the public transport sector, to take action.

In order to future-proof its operations and ensure compliance with stricter environmental regulations, the company has set itself the target of operating 150 buses that are either battery powered (BEV) or hydrogen powered (H2) by 2030.

The city is able to produce its own hydrogen from the waste of Wuppertal's citizens. This and the city's topography make hydrogen-powered buses a very profitable and sustainable investment to reduce the fleet's greenhouse gas emissions.

Wuppertaler Stadtwerke therefore needed a fleet management platform that supports not only different vehicle makes and models but also different drive systems such as diesel, hydrogen and electric engines. It was important to be able to normalise the data to enable the vehicles' performance data to be accurately compared and measured in a single platform. Geotab was exactly the right solution.





Fleet profile

Company:

Wuppertaler Stadtwerke
(WSW mobil GmbH)

Industry:

People Transportation

Based in:

Wuppertal, Germany

Types of vehicles:

Hydrogen buses, Diesel buses

Fleet size:

366

Solutions:

My Geotab, Fairfleet-Hardware-
Gateway, Fairfleet Eco-App





The solution: Understanding the data from hydrogen-powered buses

Wuppertaler Stadtwerke opted for Geotab because the hardware-agnostic platform supports different drive systems as well as different vehicle makes and models. The solution has been in operation since February 2023, with 30 vehicles—20 of which are hydrogen-powered buses—being equipped with the Geotab GO9 devices to start with. The hydrogen-powered buses cover up to 280 kilometres a day depending on the route and, with a range of 400 kilometres, have sufficient “reserves” to cover longer distances.

Unlike vehicles with combustion engines, hydrogen vehicles do not comply with the prescribed telematics data standards. This meant that the first challenge lay in accessing the data points coming from the hydrogen buses. Geotab’s partner FairFleet developed a third-party hardware gateway that translates the hydrogen-powered buses’ data points into the J1939 protocol so that the MyGeotab fleet management platform can “understand” and interpret them.

With the help of this gateway, all vehicle data from the entire fleet is now available to the operations team via a single management platform. This makes measurement, visibility and monitoring easier compared with navigating multiple platforms. The MyGeotab platform enables direct comparisons to be made between different drive systems, allowing for direct comparison of the performance data of WSW’s diesel and hydrogen buses.



The results: Measurable and environmentally friendly local public transport

Visibility and monitoring almost in real time

The operations team has found it particularly valuable to be able to track the fuel levels of their diesel and hydrogen buses in real time. In the future, the charging processes, battery voltage and power consumption of the electric buses that are added to the fleet will likewise be monitored in real time.

Improved fleet operating time

The maintenance team can now benefit from the fact that the data comes directly from the vehicles, meaning there's no need to wait for drivers to notify the workshop like they had to before. This real-time diagnostic information enables the workshop team to prioritise based on engine fault codes and resolve minor issues early on rather than wait until a vehicle develops a more serious, more expensive problem. This not only reduces maintenance costs but also increases the availability of fleet vehicles (operating time) as maintenance can be planned in advance.





Measurably lower carbon emissions

From a sustainability perspective, the WSW team can see the quantity of emissions saved thanks to using hydrogen-powered buses instead of traditional diesel buses. By the end of 2023, the company had avoided over 525,000 tonnes of CO₂ equivalent (CO₂e) in total.

At the same time, MyGeotab provides an overview of fossil fuel consumption. This data and targeted driver training can be used to evaluate the success of measures to reduce fuel consumption in the remaining diesel buses. This makes it possible to analyse whether and when it makes sense to switch to alternative drive systems.



Next steps

The plan is to extend the solution to the entire fleet by the end of 2024. Once this has been done, the next challenge for the operations team will be to ensure that the hydrogen-powered buses are operated as efficiently as possible. MyGeotab helps the team to compare fuel consumption with other fleets. Driving style monitoring and in-cab coaching through FairFleet's Eco app will be used to improve the operational efficiency of the

hydrogen-powered buses and reduce carbon emissions of the remaining diesel fleet.

The operations team has also recognised that using real-time vehicle diagnostics data has significant value in optimising the fleet, reducing downtimes, and calculating the workload and times for the workshop.



Fleet management's opinion

"Sustainability is very important for Wuppertaler Stadtwerke's public transport services, which is why we've decided to invest in hydrogen-powered buses to reduce our fleet's emissions. Geotab's vehicle-agnostic fleet management solution, in combination with the FairFleet solution, has been crucial in comparing the performance of these new buses with that of our existing diesel buses. Moreover, we can be confident that it will continue to support us in the future as we introduce electric buses and more hydrogen-powered buses. This comprehensive overview is crucial to optimising the productivity, efficiency and sustainability of our transport operations."

– *Andreas Meyer, Head of Bus Technology, WSW mobil GmbH*

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