POWERFLEET®

CASE STUDY

CUSTOMER CASE STUDY

bws Caerdydd Cardiff bus

Powering the Safe Transition to Electric Vehicles at Cardiff Bus

- **Customer**
  Cardiff Bus
- **Regions**
  UK
- **Business & industry**
  Bus and coach
- **Total fleet size**
  177 vehicles
- **Vehicle types**
  175 buses and 2 vans
- **Customer since & subscription**
  Client since approximately 2015 | Current solutions: MiX4000 system with ROVi Mini cameras and ticket machine integration for driver identification, Driver Coaching Module, custom electric vehicle (EV) monitoring scripts, comparative reporting system
- **Aims**
  Improve safety, optimize EV performance, enhance driver adaptation
- **Results**
  93% reduction in harsh acceleration events, 25% reduction in harsh braking events, fleet-wide safety rating improvement to 4.6 (green threshold), extended EV battery range
- **Customer website**
  www.cardiffbus.com

About Powerfleet

Powerfleet is a global leader in the artificial intelligence of things (AIoT) software-as-a-service (SaaS) mobile asset industry. With more than 30 years of experience, Powerfleet unifies business operations through the ingestion, harmonization, and integration of data, irrespective of source, and delivers actionable insights to help companies save lives, time, and money. Powerfleet's ethos transcends our data ecosystem and commitment to innovation; our people-centric approach empowers our customers to realize impactful and sustained business improvement. The company is headquartered in New Jersey, United States, with offices around the globe.

Background

Established in 1902, Cardiff Bus is one of the few municipal bus companies still directly owned by a local authority. Wholly owned by Cardiff Council, it serves Cardiff and its surrounding areas with 177 vehicles, including diesel and electric buses. Transporting in excess of 17 million people per annum, Cardiff Bus operates 64 routes and employs around 650 people, including 461 professional drivers.

Cardiff Bus is the leading bus operator in Cardiff, Wales, and its surrounding areas. Each day, its buses transport 100,000 passengers on 3,000 journeys covering 27,000 miles.

For Cardiff Bus, fuel economy and safe, efficient driving are crucial to their business. As Gareth Stevens, Commercial and Operations Director at Cardiff Bus, explained in their engagement with Powerfleet: “We strive to ensure that we always offer our customers a safe and comfortable journey with us. The ability to deploy the systems to help ensure we have our drivers aiming for this is critical. We need to ensure that buses fulfil their potential of being the key enabler in everyday life as opposed to unnecessary car journeys that contribute to congested roads that have broader impacts on our communities”.

The challenge

As part of its commitment to sustainability and modernization, Cardiff Bus has also begun transitioning to electric vehicles by adding EV buses to its predominantly diesel fleet. However, this transition presented the opportunity to ensure that driving styles in all of their vehicles were maintained.

The solution

Cardiff Bus's relationship with MiX Telematics (now operating as Powerfleet) began when they evaluated five different companies offering fuel efficiency solutions. After careful consideration, they determined that MiX Telematics' package was the most comprehensive.

Initially, Cardiff Bus implemented the MiX FM Web system, which included Fleet Management and FM Communicator. The team at Cardiff Bus began with the fundamentals of fuel-efficient driving, focusing on acceleration, speed, and braking control.

"The one thing that attracted us to MiX was their ability to measure many elements of operational driving," said Gareth.

As their needs evolved, particularly with the introduction of electric vehicles, Cardiff Bus implemented a comprehensive EV Driver Engagement Program. The solution combines advanced telematics technology with structured driver training, specifically designed to facilitate a seamless transition to EVs.

The current implementation includes:

- **MiX4000 system with ROVi Mini cameras** – This in-vehicle monitoring system was installed across the fleet to collect vital vehicle and driver data essential for making fleet-related decisions. The system precisely monitors driving behavior by setting specific thresholds for harsh acceleration and braking events, measuring vehicle performance in mph/s.
- **Ticket machine integration for driver identification** – This seamless integration ensures accurate driver performance tracking across both diesel and electric vehicles.
- **Custom-developed scripts for EV monitoring –** Specially designed to monitor Yutong E12 data, these scripts link safety measures directly to environmental benefits.
- **Comparative EV-versus-diesel reporting system** – This innovative approach establishes precise thresholds for harsh driving events, determined through extensive vehicle testing.
- **Driver Coaching Module** – Transforms Cardiff Bus's established telematics infrastructure by merging AI-powered video monitoring with structured driver development.

This integrated solution enabled Cardiff Bus to specifically target unsafe acceleration behaviors – the most significant risk factor when transitioning between vehicle types. Cardiff Bus could quickly identify drivers requiring additional support by analyzing comparative RAG (Red/Amber/Green) safety scores between EV and diesel operations. Higher-risk drivers were given further training and confidence drives to improve EV familiarization, ensuring that passenger safety remained paramount.

Beyond safety monitoring, the system captures crucial technical vehicle data, including battery state of charge and range. This comprehensive approach creates a powerful dual incentive: smoother driving simultaneously enhances safety performance while extending vehicle range and reducing charging time requirements.

Results

The implementation of Powerfleet's fleet management solution and EV Driver Engagement Program has delivered remarkable improvements in driver safety performance and operational efficiency:

Fleet-wide safety transformation:

- Cardiff Bus achieved a fleet-wide RAG score of 4.6, marking the first time their safety rating entered the green threshold
- Green-rated drivers (safest category) increased to 67% of the total driver workforce
- Amber-rated drivers decreased to 24%
- Red-rated drivers (highest risk category) reduced to only 8%

Dramatic reduction in unsafe driving events:

- Harsh acceleration events plummeted by 93% (from 9,738 to 619 instances)
- Harsh braking events decreased by 25% (from 3,622 to 2,705 events)
- When extrapolated across the fleet, this represents thousands of potentially dangerous incidents prevented annually

Operational benefits:

- Extended EV battery range through more efficient driving
- Reduced charging station dwell time
- Decreased wear on vehicle components
- Enhanced passenger experience through smoother journeys
- Improved driver confidence and job satisfaction when operating both vehicle types
- Significant fuel savings since the initial implementation of telematics
- Early warning for potential mechanical issues, with the system having "probably saved us around three engines in terms of giving the engineers an early warning that something's not right," according to Gareth Mole

The most significant achievement has been transforming the overall fleet safety culture and operational excellence. The 93% reduction in harsh acceleration events directly correlates with enhanced passenger comfort and a significantly reduced collision risk. Similarly, the 25% reduction in harsh braking events indicates better driving anticipation and smoother vehicle handling.

The lower reduction percentage in braking compared to acceleration demonstrates the initiative's targeted effectiveness in addressing the specific EV transition challenge. The safety improvements translate into tangible operational benefits, including extended battery range, reduced charging times, and decreased vehicle wear.

Cardiff Bus maintains comprehensive driver safety standards through its in-house Training Academy. This dedicated facility ensures that all drivers learn to operate vehicles safely from the outset. Beyond initial training, Cardiff Bus conducts regular 'in-service' driving assessments, fostering a continuous cycle of performance monitoring and improvement. This approach establishes an ongoing safety culture rather than merely periodic compliance checks.

Safety is the foundation of Powerfleet's organizational DNA. The Cardiff Bus partnership exemplifies this strategy, combining proactive coaching with real-time risk detection to create safer roads for everyone.

The road ahead

Cardiff Bus continues collaborating with Powerfleet to enhance its driver training and monitoring systems. With the foundation of a successful EV transition program now established, the organization is well-positioned to expand its electric fleet further while upholding the highest standards of safety and efficiency.

93%
reduction in harsh acceleration

25%
reduction in harsh braking

Green rated drivers:
67%
of the workforce.

Fleet-wide safety score
4.6
(green threshold)

> “We strive to ensure that we always offer our customers a safe and comfortable journey with us. The ability to deploy the systems to help ensure we have our drivers aiming for this is critical.”

Gareth Stevens
Commercial and Operations Director at Cardiff Bus