HITACHI
Inspire the Next

Transitioning to an electric bus fleet

Hitachi ZeroCarbon offers an end-to-end, financed, risk-sharing partnership approach to bus fleet electrification

THE CHALLENGE FOR BUS FLEET MANAGERS

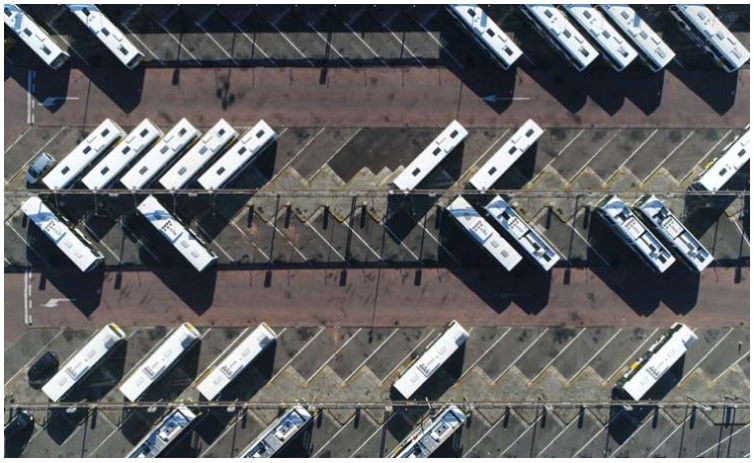
Electrification is the No.1 challenge for bus fleet managers today. Soon it will no longer be possible to buy new ICE buses and low emission zone charges will make it increasingly costly to run them. The pressure is on to transition to electric buses soon and yet there are real challenges to overcome. Fleet managers are unsure of the best approach to take on the journey to net zero, with real concerns about investment costs, vehicle choice, charging infrastructure, battery technology and operational impact.

For fleets with over a thousand buses, the charging infrastructure and related costs alone will likely be £millions

New technology and new models of buses, batteries and charging devices are constantly emerging, creating a bewildering choice. In many cases, depots will need to be reconfigured to free up space to charge multiple vehicles overnight and the local grid network may need to be reinforced to provide sufficient electricity supply. For fleets with over a thousand buses, the charging infrastructure and related costs alone will likely be £millions, with the return on that investment many years down the line. Given the high levels of up-front capital expenditure, the wrong choice of investment is likely to be a costly one for the business.

When migration to electric vehicles does get underway, the fleet manager has the difficult task of managing a hybrid fleet – a mix of older ICE buses and new electric ones. Having already optimised the ICE fleet, the fleet manager will now have the task of minimising the cost of the new. This requires the analysis of an entirely new set of data aligned to the new vehicles; a substantially richer set of data than is available for ICE models. How best to utilise that date and integrate it with existing company system to gain a holistic view of the business is another issue to overcome.

Bus fleet operators would naturally prefer to focus on their core business priorities of getting people out of their cars, increasing passenger numbers, optimising routes, and improving utilisation. However, the pressure to decarbonise the fleet is increasing, so finding an organisation with the required blend of experience, skills, and capability to support the planning and executing of the migration is paramount.



TAKING A HOLISTIC APPROACH TO BUS FLEET DECARBONISATION

When Hitachi looked at the issues that fleet managers were grappling with, they realised that they were perfectly positioned to support fleet owners through the journey to net zero emissions. Hitachi has over a 100 years' knowledge of the automotive industry, 25 years of fleet management experience, over 50 years in IT solution development and systems integration, and is an industry leader in grid to plug infrastructure, V2G and smart charging technologies. Hitachi decided to combine this knowledge and experience to create an offer called Hitachi ZeroCarbon.

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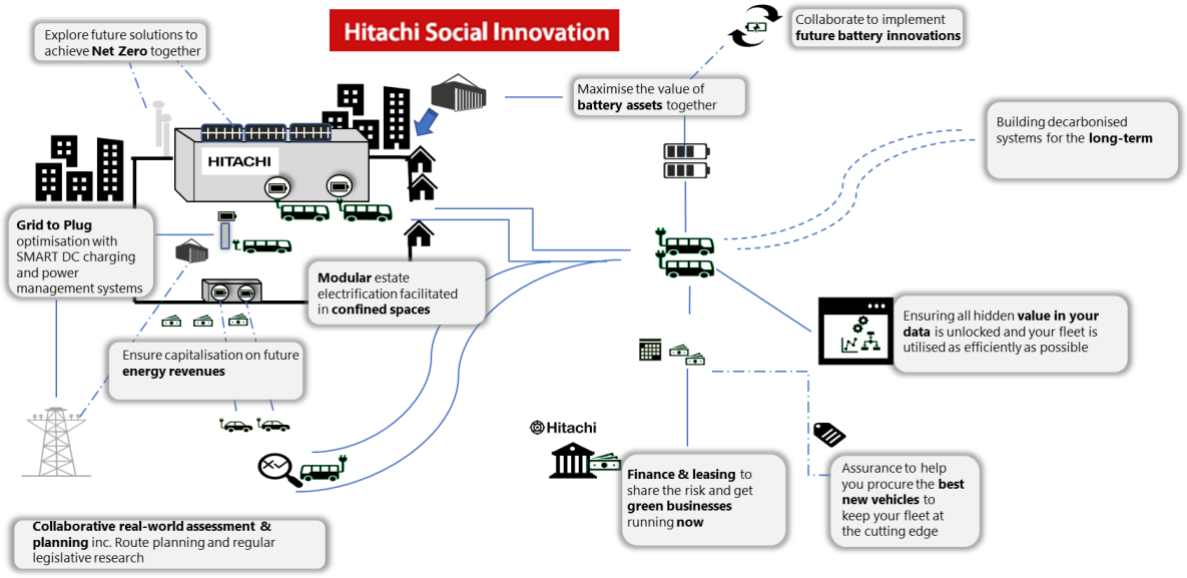
Hitachi ZeroCarbon's service is designed to de-risk the entire fleet electrification process by working with you to create a Total Cost of Ownership (TCO) model for your business and for the entire electrification project. This extensible TCO model drives the transition strategy for your business, building the business case to prioritise what and when to buy, optimising operational costs and calculating when a return on investment can be realised. This TCO approach is a key enabler for gaining senior management buy-in to your electrification plans.

Hitachi will design, deliver and finance the entire bus fleet electrification transition project, including sourcing and procuring vehicles, supplying and installing charging infrastructure, managing and optimising battery charging, delivering the IT management system that will provide a dashboard for your entire fleet of ICE and EVs, constantly horizon scanning to keep abreast of new technologies as they emerge, and financing the entire project to minimise the need for up front capital expenditure.



Hitachi has negotiated partnering agreements with OEM bus manufacturers to provide fleet managers with the most extensive range of efficient EV buses. Through Hitachi Capital we have a market leading financial proposition for bus financing, and we are confident that we can deliver the best priced deals in the market through our long-term partnering model.

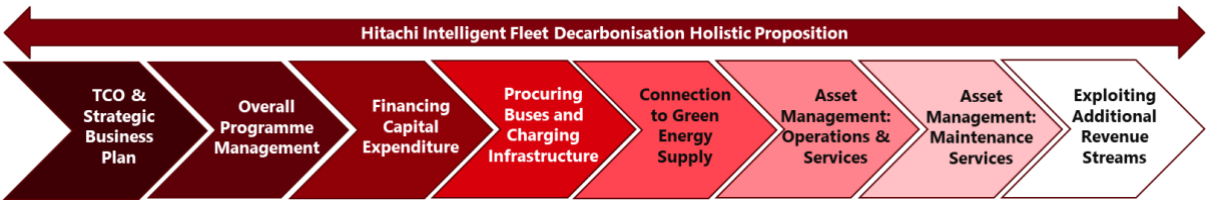
Hitachi will provide an experienced single point of contact Project Manager for delivery of all required depot works including any required construction work, optimal siting of charging infrastructure components, any required grid reinforcements or changes to supply agreements, and utilising our excellent working relationships with power distributors to enable you to benefit in pricing negotiations. Our containerised power solutions dramatically simplify installation and save

valuable space in tight depots, minimising installation time, reducing cabling by 40% and taking up 60% less space.

Hitachi will deliver a suite of IT tools to manage and optimise fleet operations, utilising the telemetry available across ICE and electric buses, to form a dashboard for on-going bus fleet operations management. This will include tools to inform fleet managers on specific component performance that might lead to unplanned downtime, reporting of maintenance incidents to reduce risk of breakdown, detecting faults to support root cause analysis, optimising planned maintenance based on need, automating spare part supply recommendations and monitoring driver behaviour to optimise battery performance.

Hitachi's goal is to help drive bus fleet decarbonisation and net zero fleet operations by delivering an "As a Service" end-to-end solution covering the physical assets (vehicle, charging infrastructure, battery), operational and maintenance services enabled by digital solutions, to meet environmental goals for clients. We achieve this by adapting the approach taken by Hitachi in rail operations encompassing trains as a service, SPVs and 27-year agreements, to build a similar as-a-service solution for buses with payment per vehicle/month/mile for the vehicles and infrastructure against the following outcomes:

- Availability of vehicles on the road i.e. not off-road, under maintenance or inoperable
- Service ready and optimised fleet with sufficient battery charge for the required bus route
- Well serviced, clean, and operational fleet with performance guarantees
- Charger availability at the depot to ensure that the vehicles receive the required charge
- Single payment approach with clear, consistent, and well-presented utilisation billing
- Simple payment approach to all charging in and out of depot, including access to other chargers.



This approach provides the bus fleet manager with successful electric fleet transition, on-going quality of service, and certainty of invoicing.

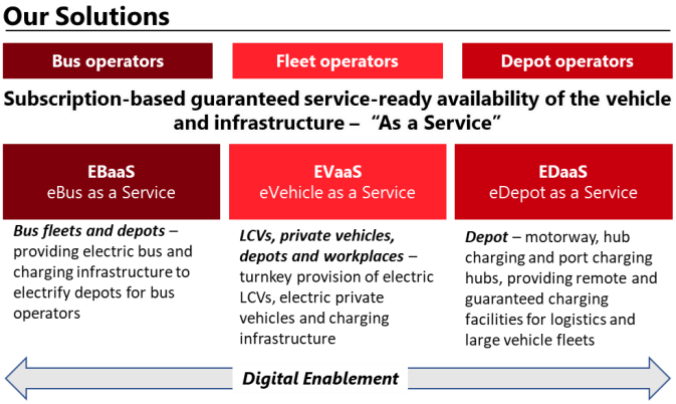
These new opportunities transform the bus depot into a revenue generator rather than just a cost centre.

In addition, Hitachi will pursue a set of revenue generating opportunities for bus fleet operators. The residual value in batteries can be recouped, surplus energy generated can be sold back to the national grid and there is the retail opportunity of charging local businesses for use of the charging infrastructure while buses are out on their routes. These new opportunities transform the bus depot into a revenue generator rather than just a cost centre.

This risk and reward sharing approach means that Hitachi and the bus fleet operator form a true business partnership for the long term where their business fortunes are inextricably aligned.

CONCLUSION

Hitachi ZeroCarbon's partnership approach is central to our wider corporate strategy. Social Innovation is all about delivering economic, environmental, and social value and the environment is a central pillar of our focus as an organisation. Delivering real value to society through our solutions is key – improving societies through better solutions that deliver greater quality of life.



We do this by leveraging Hitachi capabilities across finance, mobility, infrastructure and digital to build new opportunities for cost savings, CAPEX savings and new revenue generation through new services and solutions.

Fleet managers trying to navigate through an ever-evolving EV value chain and the roll-out of decarbonised fleet over the next few years, will need a partner to help navigate the path and de-risk the process. Our approach delivers innovation and flexibility to meet the challenges, anticipate with the evolving market and de-risk the future decision-making process.

Finding a long-term partner with the appropriate broad experience and financial strength is key.

The road to full bus fleet electrification is not straightforward and requires new skills and understanding. Finding a suitable long-term partner with the appropriate broad experience and financial strength, to support bus fleet operators through the transition process from strategic planning to realisable saving is vital. With its unparalleled experience of vehicle fleet management, charging infrastructure, IT business solutions, capital financing and long term, risk sharing partnerships, Hitachi is the partner of choice for fleet managers to plan, manage and share the risk on the path to net zero.

NEXT STEPS

To find out more about how Hitachi ZeroCarbon can help your bus fleet operation make a successful transition to net zero operations, please contact:

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