

Case study



Heathrow Airport airside
electric vehicle charging trials

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Who

This project was commissioned by Mitie and design approved by Heathrow Airport.

What

We were assigned the task of introducing Electric Vehicle Charging (EVC) units, airside at Heathrow. Taking the project from inception to completion we were responsible for: feasibility studies; assessment of existing infrastructure; specifying the scope of the project; electrical design; market research; procurement; ground preparations; installation; integration; testing, inspection and commissioning. We were also charged with carrying out trials and evaluations of the units and their performance.

Why

This work marks the beginning of a shift toward more electric vehicles at Heathrow. That initiative plays a central role in the airport's commitment to reducing emissions in and around the airport and the provision of high quality, reliable charging resources is critical to the success of that initiative.

Where and when

These works were carried out in various airside locations among Heathrow's runways and terminal buildings during normal airport operations. Worked across three months this project sat comfortably beside all airport operations and works and caused no disruption or interruption to others. Our Work Safe Home Safe approach ensured that our workforce and numerous airport, carrier and other personnel on site, were safe at all times.



Survey, assessment & research



Learning & development



Health & safety



Electrical design



Project planning & management



Electrical installation



Electrical testing



Airport operational environment



Quality & technical assurance



Quality management



All home safe On time In budget Regulations met Satisfied client

The story

In Heathrow's ten point, "Blueprint for Reducing Emissions", electric vehicles come into five of the ten points, highlighting the importance of electric vehicles in emissions reduction. Specifically, Heathrow aim to have all small vehicles and ground support equipment propelled by electricity by 2020.

Heathrow Airport tasked Freemantle EV with providing a future-proof solution, with broader development potential, to explore and demonstrate the viability of Electric Vehicle Charging (EVC) in bringing their plans to fruition. The project scope was to design and develop an electric vehicle charging strategy, identifying market trends, industry standards and expectations, to develop the EV benchmarks for Heathrow.

Having carried out research and feasibility studies we created an implementation plan for the installation of five EVC units, which we subsequently supplied and installed. As well as powering numerous vehicles already in use this would provide live testing opportunities to inform the future development and role out of more EVC facilities. We introduced AC commercial mode 3 and DC rapid mode 4 charging, with back office supervision and maintenance support integrated via Open Charge Point Protocol (OCPP) software. This provides continual management and monitoring facilities.



Outcome

This work has made a significant first step in Heathrow's plans to use electric vehicles as part of their emission reduction process. Potentially, for the vehicles involved, CO₂ emissions will be reduced by around 50% and fuel costs, compared to petrol, will be around 87% lower. We are delighted that our work here has played a part in Heathrow's emission reduction plans. We are also proud to have earned the position as a preferred installer of EVC facilities at Heathrow. That accolade is a fitting testament to the high quality work and client focussed ethos of our staff, who always give their best and go the extra mile, as the norm.

As a consequence of our understanding of EVC we have also been invited to deliver talks on the subject at the Mechanical Building Services Engineers' Regional Seminar and the Clean Vehicle Partnership Conference held at Heathrow Academy.



Project data

Design and planning

- Development with Heathrow Airport Limited (HAL) to introduce EV charging standard (cars)

Procurement

- Researched the EV market to establish leading products, future proofing expansion of assets with power management considerations
- Identified key requirements for safe charging assisting with HAL standards development for EV charging
- Designed and fabricated cable management solutions for prevention of service duct excavations, maintaining cable bend radius

Implementation

- Satisfied and accommodated the developing changes due to user requirements
- Staged works throughout the availability of materials to increase programme and reduce restriction to ramp space
- Minimal impact to airfield operation with night works and construction sites limited to duration of works only (temporary construction sites)

Outcome benefits

- Developed a strategy for LHR EV charging
- Developed a strategy in line with industry and British Standards for commercial/public charging
- Established foundation for HAL EVC standards
- Future proofing assets with power management solutions, for realistic and achievable development
- Introduced rapid and commercial charging - not seen at LHR (mode 2 charging in car parks)
- Accommodated global connection standards
- Remote back office supervision and maintenance support
- Operator identification and user reporting
- Advanced development potential for utility billing, individual of user (time over consumption billing)
- Integrated with OCPP back office support system between ABB & Schneider chargers, providing 'open protocol' for Heathrow development (no monopoly held)
- Built an EVC basis for airport wide development

Your next project

We hope that this brief case study has shown you some of our skills, experience and client/results focussed approach. As you approach your next project requiring electrical, mechanical and related skills and resources we hope you will consider Freemantle as a key contractor.

When you involve us you effectively increase the size of your own workforce as we become a part of your team. Your objectives become our objectives and we'll work with you to make your project a success.

To discuss how that might work and the benefits and advantages we can bring please contact me, Richard Freemantle, to arrange a free, no obligation, informal chat where you can scope out what you need and I can tell you how we can help. You can reach me on 020 8564 8217 or e-mail me at richard@freemantle.co.uk

I look forward to hearing from you.

Regards

Richard Freemantle

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