

Operational Development of bp pulse EV Hubs

Introduction

Electric Vehicle (EV) charging differs from traditional petrol stations primarily as a function of the timeframe needed to charge a vehicle. Traditionally motorists are used to being able to refuel within 3-5 minutes. To date the majority of EV charging occurs at home/work where slower trickle chargers, varying from 7kW to 50kW, are used and require several hours to provide a full charge.

Ultra-Fast Charging (UFC) reduces this to ~20-40 minutes. Notwithstanding the drastic reduction in dwell time, it still exceeds that of the petrol filling station. As such, a larger number of charge points (vs petrol pumps) is required to accommodate this.

The rollout and provision of Ultra-Rapid charging hubs on the Strategic Road Network (SRN) is being driven in a large part by central government to address the Climate Emergency. Range anxiety experienced by motorists is one of the main issues affecting greater take up of EV purchases and substantial improvements to the widespread provision of this infrastructure is necessary to facilitate the change to a cleaner form of transport.

BP Pulse are deploying 300/400kW UFCs – where one vehicle is plugged into a UFC then the maximum charging speed can be dispensed, subject to vehicle constraints. The maximum charging speed is split if two vehicles are plugged in simultaneously. It should be noted that 300kW exceeds the capability of the vast majority of EVs in today's market.

Typically, the Ultra-Rapid chargers provided by **bp pulse** can provide an 80% charge within 20 minutes. Efficiency metrics for each EV car will vary as charging times are dependent on age of vehicle, efficiency of battery and number of charges. When using Ultra-Rapid charging it is recommended to stop the process at 80% Charge State, as the vehicle charges more slowly beyond that point.

Operational Management

EVs typically have an in-dash monitoring and navigation system which alerts drivers to a low state of charge and include dynamic route planning to direct drivers to the nearest available charger en route. Such systems typically dynamically recommend UFCs in line with their live usage – i.e. if a particular UFC location is fully occupied the vehicle will recommend an alternative location. Such systems are fed from industry-wide systems, such as Zap Map. In addition, bp pulse offers its own mobile app which shows the live status of UFCs within its network, enabling customers to make an informed choice around where to charge, depending on usage.



Rapid (50kW+) and Ultra-Rapid (100kW+) Plugs

BP Pulse operate a dedicated mobile app, which provides a live status for each charger within its network. This application also offers a subscription scheme, which for a monthly fee offers motorists a discounted rate for charging per kW. There are two types of plugs used for Rapid or Ultra-Rapid charging. The CHAdeMO system is suitable for vehicle charging up to 100kW (Rapid) and the CCS system covers chargers up to 350kW (Ultra-Rapid). The bp app offers filters to select the most suitable charger and charging speed,, ensuring customers are routed to an appropriate site.

Every **bp pulse** EV Hub offers information on the type, availability, and length of time the chargers have been occupied, so motorists are able to plan their journeys more efficiently.

The provision of 24 charging bays, with an average charge time of 20 mins can provide Ultra-Fast charging for 72 vehicles per hour. The Society of Motor Manufacturers and Traders (SMMT) shows EV and hybrid car sales accounted for approximately 24.7% of vehicle sales in April 2024. For this to continue its upward trajectory, to address the UK's climate reduction targets it is imperative the necessary charging infrastructure is provided on the SRN.

Zap Map covers EV charging points from all providers (BP, Shell, Texaco, Esso, Gridserve etc) and also includes car parks and other municipal locations. Zap Map allows for price comparison across the network, allowing motorists to plan their journeys more accurately and efficiently. BP provides information on its network for inclusion in the Zap Map system.

The use of these apps allows for much greater control and planning for motorists. If a facility is already full other options and directions to them are readily available.