# Formula E unveils ultra-fast pit boost technology set to revolutionise EV charging in cities



Formula E has unveiled a groundbreaking "ultra-fast" pit boost technology that could potentially transform electric vehicle (EV) charging for everyday users within the next five years. This system allows Formula E cars to receive a rapid energy recharge of 10% of their battery capacity — equivalent to 3.85 kWh — in just 30 seconds, delivering a power output of 600 kW during mandatory pit stops. Julia Palle, vice-president for sustainability at Formula E, highlighted to BBC Sport that this innovation may soon transition from the racetrack to public charging infrastructure, with major metropolitan areas like London expected to see the earliest adoption.

The technology, introduced in the 2024/25 Formula E season, made its competitive debut at the Jeddah E-Prix in February 2025. It is designed to inject strategic complexity into races by forcing teams to balance the advantage of a quick power boost against the potential loss of track position, enhancing the unpredictability and excitement of the competition. The feature is mandatory during one race of a double-header weekend, with strict usage protocols ensuring only one car per team can use the pit boost at a time. Teams receive race-specific “pit boost window” details 21 days ahead, and the boost operates independently from the existing ATTACK MODE in the series.

The pit boost technology was developed by British company Fortescue Zero, whose CEO Ellie Coates has emphasised the system’s benefits not only in motorsport but also in wider applications. This includes supporting the broader transition to electric vehicles by overcoming significant charging infrastructure challenges. The pit boost system’s 600kW output far exceeds current public fast chargers in Europe, which typically max out at around 480kW. Fortescue Zero achieves this ultra-fast charging capability via an advanced portable unit that does not rely on grid connection thanks to onboard energy storage, paired with proprietary battery intelligence software called Elysia. This software optimises charging speed while preserving battery health, allowing the car’s battery to operate at a rapid charge C-rate of about 15C.

Formula E co-founder and chief championship officer Alberto Longo described the pit boost as a “game-changing technology” following extensive testing and simulation. The innovation reflects Formula E and the FIA’s positioning as a “race-to-road” platform, where pioneering race technologies are designed to address pressing real-world EV challenges, including charging speed and efficiency. The introduction of this technology is part of the series’ ongoing effort to push the boundaries of electric mobility and accelerate public acceptance and infrastructure development.

While Formula E showcases this ultra-fast charging at elite motorsport levels, its broader introduction onto public streets would mark a significant step forward in resolving one of the key barriers holding back electric vehicle adoption: inadequate charging infrastructure. Palle expressed optimism that concerns about infrastructure could soon become “a worry from the past,” as this speedy charging technology becomes progressively integrated into urban environments across many countries.

In summary, the pit boost represents both a spectacle-enhancing innovation for Formula E and a hopeful indicator for the future of electric vehicle charging worldwide, promising to reduce long charging times drastically and make EV ownership more convenient and accessible.

### 📌 Reference Map:

* Paragraph 1 – [[1]](https://www.bbc.com/sport/motorsport/articles/c1mx4j321deo?at_medium=RSS&at_campaign=rss), [[4]](https://www.fortescue.com/articles/fortescue-zero-announced-as-official-pit-boost-provider-of-the-abb-fia-formula-e-world-championship), [[5]](https://e-formula.news/news/formula-e-news/formula-e-news-detail/fortescue-zero-ceo-coates-pit-boost-technology-not-only-takes-motorsport-to-a-new-level-78774)
* Paragraph 2 – [[2]](https://www.fia.com/news/fia-and-formula-e-introduce-all-new-pit-boost-feature-season-11), [[6]](https://evpowered.co.uk/electric-powered-motorsport/formula-e/formula-e-powers-up-600kw-charging-pit-boost-charging-stops/), [[7]](https://arstechnica.com/cars/2025/01/600-kw-fast-charging-pitstops-are-coming-to-formula-e/)
* Paragraph 3 – [[5]](https://e-formula.news/news/formula-e-news/formula-e-news-detail/fortescue-zero-ceo-coates-pit-boost-technology-not-only-takes-motorsport-to-a-new-level-78774), [[6]](https://evpowered.co.uk/electric-powered-motorsport/formula-e/formula-e-powers-up-600kw-charging-pit-boost-charging-stops/)
* Paragraph 4 – [[6]](https://evpowered.co.uk/electric-powered-motorsport/formula-e/formula-e-powers-up-600kw-charging-pit-boost-charging-stops/), [[7]](https://arstechnica.com/cars/2025/01/600-kw-fast-charging-pitstops-are-coming-to-formula-e/), [[2]](https://www.fia.com/news/fia-and-formula-e-introduce-all-new-pit-boost-feature-season-11)
* Paragraph 5 – [[1]](https://www.bbc.com/sport/motorsport/articles/c1mx4j321deo?at_medium=RSS&at_campaign=rss)

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## Bibliography

1. <https://www.bbc.com/sport/motorsport/articles/c1mx4j321deo?at_medium=RSS&at_campaign=rss> - Please view link - unable to able to access data
2. <https://www.fia.com/news/fia-and-formula-e-introduce-all-new-pit-boost-feature-season-11> - The FIA and Formula E have introduced 'Pit Boost', a new mid-race feature providing a 10% energy increase (3.85kWh) via a 30-second, 600kW ultra-fast energy boost in the pitlane. This feature debuted during the Jeddah E-Prix on 14-15 February 2025. Pit Boost aims to challenge teams to weigh the benefits of an energy boost against the risk of losing track position, introducing new high-stakes strategic elements and enhancing race unpredictability. It also reflects the FIA and Formula E's role as a 'race-to-road' technology platform, addressing key challenges in EV adoption, such as charging speed and efficiency. Mandatory for one of the races of a double header, Pit Boost includes strict protocols, allowing only one car per team to utilise it at a time. 21 days prior to each race, teams will receive the race information including the Pit Boost window, and its deployment will operate independently of existing ATTACK MODE rules.
3. <https://www.motorsport.com/formula-e/news/pit-boost-technology-to-debut-in-2024-25-formula-e-campaign/10678877/> - The Pit Boost concept, which requires Formula E drivers to make a mandatory pitstop, is set to be implemented during races in the upcoming 2024/25 season. The technology means the new Gen3 Evo cars will receive a 10% battery recharge at 600kW that will take approximately 30 seconds. Initially touted for the beginning of the Gen3 era in 2022, reliability and safety concerns meant it has taken until now for the FIA and Formula E organisers to be satisfied and allow it to be used during competition. The concept was tested for the first time during a race at pre-season testing last month in Spain, with the data from that simulation outing analysed by the championship and governing body.
4. <https://www.fortescue.com/articles/fortescue-zero-announced-as-official-pit-boost-provider-of-the-abb-fia-formula-e-world-championship> - Fortescue Zero has been announced as the official Pit Boost provider of the ABB FIA Formula E World Championship for Season 11. Having successfully developed and launched its new Pit Boost technology for the all-electric series, its hardware provides teams competing in the global championship with a +10% boost of total battery capacity, in 30 seconds. Fortescue Zero’s 600kW ultra-fast Pit Boost technology adds a boost of +10% of total battery capacity in under 30 seconds.
5. <https://e-formula.news/news/formula-e-news/formula-e-news-detail/fortescue-zero-ceo-coates-pit-boost-technology-not-only-takes-motorsport-to-a-new-level-78774> - The British company Fortescue Zero is known to have developed the fast chargers that have recently been used for the first time in Formula E for Pit Boost. In a recent Formula E publication, CEO Ellie Coates talks about the advantages of the new technology. The Pit Boost technology was used for the first time a few weeks ago at the Formula E Jeddah E-Prix in Saudi Arabia and will also be used at the other double-header races this season. With Pit Boost, the cars are recharged with 3.85 kWh of energy during a mandatory pit stop in order to obtain ten per cent more energy. The recharging system has been designed to allow two recharges per race with one portable unit. By using onboard energy storage, the 600 kW boost is not tied to a grid connection. The ultra-fast technology used for the Pit Boost is enhanced by Fortescue Zero's Elysia battery intelligence software, which enables speed optimisation while maintaining battery life and integrity. Elysia enables the race car battery to achieve a charge C-rate of around 15C. Fortescue Zero is also using its boost innovations to develop real-world solutions for road transport and heavy industry applications. This includes a 6 MW battery solution designed to be compatible with a wide range of battery electric heavy mining equipment.
6. <https://evpowered.co.uk/electric-powered-motorsport/formula-e/formula-e-powers-up-600kw-charging-pit-boost-charging-stops/> - Formula E has confirmed that its Pit Boost ultra-rapid charging concept will debut at the next round of the 2024/2025 FE season in Saudi Arabia over the weekend of February 14. This latest addition to the all-electric championship means that the current Gen3 Evo cars will receive a 10% battery top up (the equivalent of 3.85kWh) during a 30-second mandatory charging pit stop via a 600kW plug-in charger. At present, the most powerful public EV chargers in Europe operate at up to 480kW. Pit Boost was created to add a further element of excitement and strategy to races, as it will force teams and drivers to consider the benefits of an energy boost against track position. The championship hopes that Pit Boost’s 600kW charging tech will eventually cross over to production cars and charging networks. “After an extensive testing and simulation process, we’re pleased to finally present this game-changing technology to the world,” said Formula E co-founder and chief championship officer, Alberto Longo.
7. <https://arstechnica.com/cars/2025/01/600-kw-fast-charging-pitstops-are-coming-to-formula-e/> - Formula E has introduced 'Pit Boost', a new mid-race feature providing a 10% energy increase (3.85kWh) via a 30-second, 600kW ultra-fast energy boost in the pitlane. This feature debuted during the Jeddah E-Prix on 14-15 February 2025. Pit Boost aims to challenge teams to weigh the benefits of an energy boost against the risk of losing track position, introducing new high-stakes strategic elements and enhancing race unpredictability. It also reflects the FIA and Formula E's role as a 'race-to-road' technology platform, addressing key challenges in EV adoption, such as charging speed and efficiency. Mandatory for one of the races of a double header, Pit Boost includes strict protocols, allowing only one car per team to utilise it at a time. 21 days prior to each race, teams will receive the race information including the Pit Boost window, and its deployment will operate independently of existing ATTACK MODE rules.