

Media release

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## Secrets of the Speedtail: the race-bred electric drive and ground-breaking battery technology in McLaren's hybrid Hyper-GT

- McLaren Speedtail has the highest specific battery power of any production road car
- Hybrid Hyper-GT uses motorsport technology to supplement twin-turbocharged V8
- Innovative battery cooling system enables electric drive to work harder for longer

Following the announcement that the Speedtail – the fastest McLaren ever – had completed high-speed validation tests in the United States and reached its maximum speed of 403km/h (250mph) more than 30 times, McLaren engineers have been asked one question more than any other: ‘How does Speedtail go that fast?’

The answer is that a combination of attributes, including aerodynamic excellence and low vehicle weight, delivers the hybrid Hyper-GT's astonishing performance. Fundamental to this is a race-bred electric drive system that incorporates pioneering battery technology to set a new benchmark for hybridised efficiency. This unlocks the Speedtail's intense acceleration from standstill to 300km/h (186mph) in a breath-taking 13 seconds and maximum speed of 403km/h (250mph).

The M840TQ powertrain comprises a 4.0-litre internal combustion engine and an electric drive unit, which together develop up to 1,070PS and maximum torque of 1,150Nm. The V8 engine features technology that has evolved from McLaren's first hybrid hypercar, the legendary McLaren P1™. A new lightweight air-intake system, improved cylinder head cooling and a revised piston design contribute 757PS and 800Nm of ‘traditional’ petrol-powered output to the Speedtail.

The electric motor, which uses Formula E-derived technology, generates more than 230kW. It gives the Speedtail the highest performance installation – including cooling and integration – of any electric motor currently in use on a production road car. Power delivery is 8.3kW/kg, which is twice the efficiency of an average sports car.

Engineers from McLaren Applied – the McLaren Group division that focuses on virtual product development, telemetry, electrification and control – worked with the Speedtail Electric Drive Technology team to integrate its ground-breaking motorsport-developed inverter and DC/DC converter technology into the electric drive system, ensuring the levels of control and power management required for the hybrid Hyper-GT to realise its extraordinary performance.

The high voltage energy storage system is where the Speedtail truly innovates. A high power cylindrical cell arranged in a unique array, the 1.647kWh unit is at the cutting edge of battery technology, being extremely compact and delivering the best power-to-weight ratio of any high voltage battery available today. As an indication of how McLaren technology has advanced, the power density of this battery is four times that of the unit in the McLaren P1™, providing 5.2kW/kg and an output of 270kW.

The design and integration of the battery system enables the Speedtail to achieve its maximum speed by intelligent energy deployment, with these headline figures achievable because the cells are thermally controlled by a dielectrical cooling system and permanently immersed in a lightweight, electrically insulative oil which quickly transfers heat away from the cells. This system, the first of its kind in a production road car, is highly efficient and allows the cells to run harder and for longer.

McLaren has deployed wireless technology to manage battery conditioning and charging when a Speedtail is not being driven, ensuring that the electric drive system is immediately ready to assist the internal combustion engine. This fully managed system incorporates a positioning aid to align with the charging pad. State of charge is displayed in the instrument cluster and is also accessible to the owner via an app – another example of the attention to technical detail that makes the Speedtail a car like no other.

Further information about the Speedtail, together with film of the car in action during final high-speed testing, can be found at: <https://cars.mclaren.com/en/latest/post/speedtail-achieving-the-maximum>.

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Notes to editors:

A selection of high resolution images accompanying this release is available to download from the McLaren Automotive media site – [cars.mclaren.press](https://cars.mclaren.press)

**About McLaren Automotive:**

McLaren Automotive is a creator of luxury, high-performance supercars.

Every vehicle is hand-assembled at the McLaren Production Centre (MPC) in Woking, Surrey, England.

Launched in 2010, the company is now the largest part of the McLaren Group.

The company’s product portfolio of GT, Supercar, Motorsport and Ultimate models are retailed through over 85 retailers in more than 32 markets around the world.

McLaren is a pioneer that continuously pushes the boundaries. In 1981, it introduced lightweight and strong carbon fibre chassis into Formula 1 with the McLaren MP4/1. Then in 1993 it designed and built the McLaren F1 road car - the company has not built a car without a carbon fibre chassis since. As part of the Ultimate Series, McLaren was the first to deliver a hybrid hypercar, the McLaren P1™.

Announced at Goodwood Festival of Speed in 2018, the company’s Track25 business plan will see it invest £1.2billion in research and development to deliver 18 new cars or derivatives by the end of 2025.

In 2018, the company launched its new £50m McLaren Composites Technology Centre in the Sheffield region in the North of England that will see it produce the next generation of lightweight carbon fibre ‘tubs’ that are at the heart of all McLaren cars.

2019 saw McLaren launch the 600LT Spider as well as the new GT, the track-only Senna GTR and unveiled the 620R and the McLaren Elva. In 2020, McLaren launched the 765LT.

To support the development, engineering and manufacture of its range of innovative sportscars and supercars, McLaren Automotive partners with world leading companies to provide specialist expertise, technology and solutions. These include AkzoNobel, Ashurst, Dell Technologies, OnePlus, Pirelli, Richard Mille, and Tumi.

**McLaren Group:**

The McLaren Group is a global leader in luxury automotive and technology and comprises three businesses: Automotive, Racing and Applied.

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