



SHD's Innovative Solutions Drive Lightweight, Low-CO₂ Performance in the Shell Triple 10 Challenge Vehicle

Press release

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SHD Composites, a Cambium company, is proud to announce its partnership with Shell plc. ('Shell') for the Triple 10 Challenge concept car, a ground-breaking proof-of-concept vehicle designed to inspire a new design philosophy for the next generation of battery electric vehicles (EVs).

This compact, mass-market EV demonstrates next-generation electric vehicle capability, and offers the industry an alternative to the current reliance on ever-larger batteries by re-imagining the fundamentals of lightweight material selection alongside Shell's novel thermal management systems.

SHD's novel composite prepreg materials are used across the vehicle structure including the bulkhead, front and back seat rows, loading deck, A pillar outer and inner panels, roof panel and windscreen supports, providing lightweight components for the vehicle to meet its target battery range.

The vehicle meets three ambitious goals that Shell believes can help drive the future of mass-market electric mobility:

- Charge Faster - a sub 10-minute charge time
- Go Further - 10-km/kWh economy,
- Drive Cleaner - a life cycle 10-tonne CO₂e footprint

Shell chose to partner with SHD for their expertise in developing novel solutions at a fast pace. SHD's technology experts worked closely with Shell's structural design team to develop bespoke materials to meet the Triple 10's performance targets with the lowest possible embodied CO₂. All within the tight timeframes required of such a demonstration platform in an era of rapidly advancing technology.

The seven unique material formats developed all incorporate a level of bio-based, renewable, recycled or repurposed raw materials to support lightweight, lower-carbon manufacturing. In addition, the pioneering resin chemistries adopted eliminate the typical need for refrigerated storage, helping to further reduce environmental impact across the supply chain.

Nigel Blatherwick, Commercial Director for SHD, said: "We are delighted SHD were chosen as Shell's advanced material partner. Our responsiveness, short lead times, agility and expertise were key to delivering several innovative lightweight solutions to meet the projects sustainability goals. These solutions are available through SHD's global manufacturing sites and scalable to support customers in the future."

SHD is pleased to support Shell in proving that EVs can be lighter, more economical, faster-charging, and more sustainable to help drive the future of mass-market e-mobility.



About SHD Composites

SHD Composite Materials, a Cambium company, is a global advanced composite materials company with operations across Europe, the UK and the USA. Our proprietary materials platform combines AI-driven molecular design with state-of-the-art chemistry, materials science, and manufacturing capabilities. We develop new advanced materials and provide ISO qualified prepreps, films, adhesives and bespoke solutions to the highest performing applications and teams across the world. Our 200+ team proudly serves hundreds of customers across the aerospace, defence, energy, motorsport, marine and other high-performance industries, providing unique materials development and manufacturing capability to accelerate their development cycles and achieve higher performance.

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Images



The trailblazing Shell Triple 10 Challenge concept car

Shell's thermal management fluid enables faster charging, greater efficiency and lower life cycle emissions.

Charge faster

Sub-10-minute charging

From 10–80% charge in **9 minutes 54 seconds** using Shell's advanced thermal fluid to enable safe, faster charging

Almost 90% more range added per minute with 24 km/min versus 13 km/min for typical electric vehicles (EV) today, using 175-kW charger

Immersion-cooled battery cells can manage heat more effectively with **2.5x more watts per cell** than conventional base plate cooling⁵

Using a simplified, single-circuit cooling system across the entire powertrain **reduces complexity** and removes the need for additional pumps and heat exchangers.



Shell's thermal fluid has nearly **100% contact** with battery cells, compared with around 15% for traditional water-glycol cooling plates.

Go further

10 km/kWh economy

Over **30% better energy efficiency**¹

Up to **30% lighter**² with a 35-kWh battery weighing 210 kg

Drive cleaner

10 tCO₂e footprint³

Around **50% lower life cycle emissions**⁴



¹ Compared with many current generation EVs.

² 1.55kg overall weight compared with an average 1.65kg for weight of 8-segment EVs.

³ The concept car demonstrates what is technically achievable under optimum conditions, including charging over a 200,000km vehicle lifetime on the Shell Recharge network in the UK, using certified 100% renewable electricity. Results are derived from a Shell internal life cycle assessment (LCA) tool with 100% 60/40 and 40/60 standard driving cycle emissions factor data from component suppliers and manufacturers, integrated LCA databases and published literature. Actual results may vary under real-world conditions.

⁴ Compared to typical EVs, based on a comparison with a published LCA study conducted by Ecodesign at (2022) and assuming a 200,000km vehicle lifetime. Differences in underlying methodological assumptions and vehicle specifications (including vehicle size and battery capacity), and real-world conditions mean that the emissions reduction should be regarded as indicative only. Actual outcomes may vary in real-world applications.

⁵ Compared to today's fastest charging EVs.