



Overview: Solid-State Hydrogen Hydride Storage for High-Performance Mobility

Dawson Technologies Ltd

Overview: Solid-State Hydrogen Hydride Storage for High-Performance Mobility

Dawson Technologies Ltd is actively developing a purpose-built hydrogen vehicle designed to serve as a **systems integrator**, combining multiple advanced technologies into a single, credible hydrogen fuel cell mobility platform.

At the heart of this innovation is our use of **solid-state hydrogen hydride storage** — a lightweight, high-density alternative to conventional high-pressure systems. While hydrides are not a complete standalone solution, they offer significant advantages in terms of **packaging efficiency, safety, and weight reduction**, making them ideal for motorsport and high-performance applications.

We have deliberately moved away from internal combustion engine (ICE) hydrogen solutions due to concerns around **NOx emissions**, cost, and the unproven long-term reliability of hydrogen combustion technology.

Our **proof-of-concept vehicles are in advanced R&D**, incorporating learnings from our collaboration with **Aich2** in the mobility sector. One key outcome has been the development of **lightweight hydride containment systems**, now in production, to further optimize integration within the chassis.

The **250 kW hydrogen fuel cell stack** we employ is significantly lighter than a traditional 600 bhp internal combustion engine, delivering a step-change in **thermal efficiency** and overall system performance.

Simulation data indicates that our hydrogen vehicle can run at the pace of a **GT3 or LMP3 race car**, while extending operational range by **up to 75%** — from 60 minutes to 100 minutes — compared to an equivalent 80-litre gasoline tank.

Crucially, our powertrain includes a **battery-electric energy buffer**, enabling rapid power delivery and regenerative energy capture. This integrated fuel cell–battery–motor system delivers superior performance, efficiency, and durability over both ICE and hybrid alternatives.

While initial costs are higher, we anticipate **dramatic reductions over time**, supported by improved component reliability and extended service intervals — key factors in making hydrogen-powered mobility driven from high performance motorsport a practical and scalable reality.