



Case Study: Tremec – FIA-Compliant Battery Power for High-Performance Electric Racing

Cutting-edge energy, uncompromising safety, and relentless performance—engineered for the world’s most demanding motorsport environments.

Challenge

Tremec, a leading innovator in high-performance automotive technology, set out to electrify its latest test car for ultimate testing of their new electric drivetrain components.

The project demanded not just raw power, but absolute reliability, advanced thermal management, and strict compliance with the evolving technical and safety standards set by the Fédération Internationale de l'Automobile (FIA).

Key requirements included:

1. **Consistent High Power Output**

The battery system must deliver sustained, reliable power throughout intense testing sessions, supporting rapid acceleration and high-speed performance without degradation.

2. **Advanced Thermal Management**

The battery must feature state-of-the-art cooling solutions to maintain optimal operating temperatures under the extreme conditions of high end motorsport, protecting both performance and lifespan.

3. **Full FIA Compliance**

The solution must meet or exceed all current FIA Electric Sport Vehicle (ESV) regulations for safety, technical specification, ensuring eligibility for official competition.

4. **Lightweight and Compact Design**

The battery pack must be engineered for minimal weight and compact dimensions, supporting optimal weight distribution and integration within a high-performance racing chassis.

5. **Rapid Charging Capability**

The battery system must support fast charging between races or during pit stops, minimizing downtime and ensuring the vehicle is ready for repeated high-performance use throughout race events.



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Resulting in the below shown performance sheet:

	Li-ion extreme 12P P42A	Li-ion extreme 12P P50B
Series	204	204
Parallel	2	2
Pack voltage [V]	734.4	734.4
Capacity [kWh]	74.0	88.1
Continuous discharge power [kW]	616.9	705.0
Continuous discharge current [A]	840.0	960.0
Peak discharge power [kW] (10 sec.)	793.2	1057.5
Peak discharge current [A] (10 sec.)	1080.0	1440.0
Continuous charge power [kW]	105.8	132.2
Continuous charge current [A]	144.0	180.0
Peak charge power [kW] (10 sec.)	141.0	440.6
Peak charge current [A] (10 sec.)	192.0	600.0
Volume [L] (batteries only)	220.3	220.3
Mass [kg] (batteries only)	402.7	402.7



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Solution: PowerBattery High-Performance Racing Pack

PowerBattery partnered with Tremec to deliver a bespoke battery solution engineered specifically for elite highest demands electric drivetrains.

Our approach provided:

- **Reliable, High-Output Performance:** Custom cell selection and pack design for sustained peak power, test cycle after test cycle
- **Advanced Thermal Management:** Integrated, motorsport-grade cooling system to maintain optimal temperatures and maximize both performance and battery lifespan
- **FIA Compliance:** Every aspect of the battery—from cell safety features to enclosure design—engineered to meet or exceed the latest FIA ESV technical and safety regulations
- **Lightweight, Compact Form Factor:** Designed for seamless integration within Tremec’s high-performance chassis and drivetrain, maintaining optimal weight distribution and vehicle dynamics

Result

- **Tremec’s electric race car, powered by PowerBattery, now delivers uncompromising performance on the track—meeting the highest standards of safety and reliability.**
 - **Knowledge transfer from diverse industries:** The expertise developed for heavy equipment and demanding industrial applications directly enhances the quality, reliability, and performance of our motorsport solutions.
 - **PowerBattery continues to set the benchmark for battery innovation—not only off-road and in industry, but now on circuits around the globe.**
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Visuals

Image 1:

The Tremec electric racing car, featuring the seamlessly integrated, FIA-compliant PowerBattery pack.

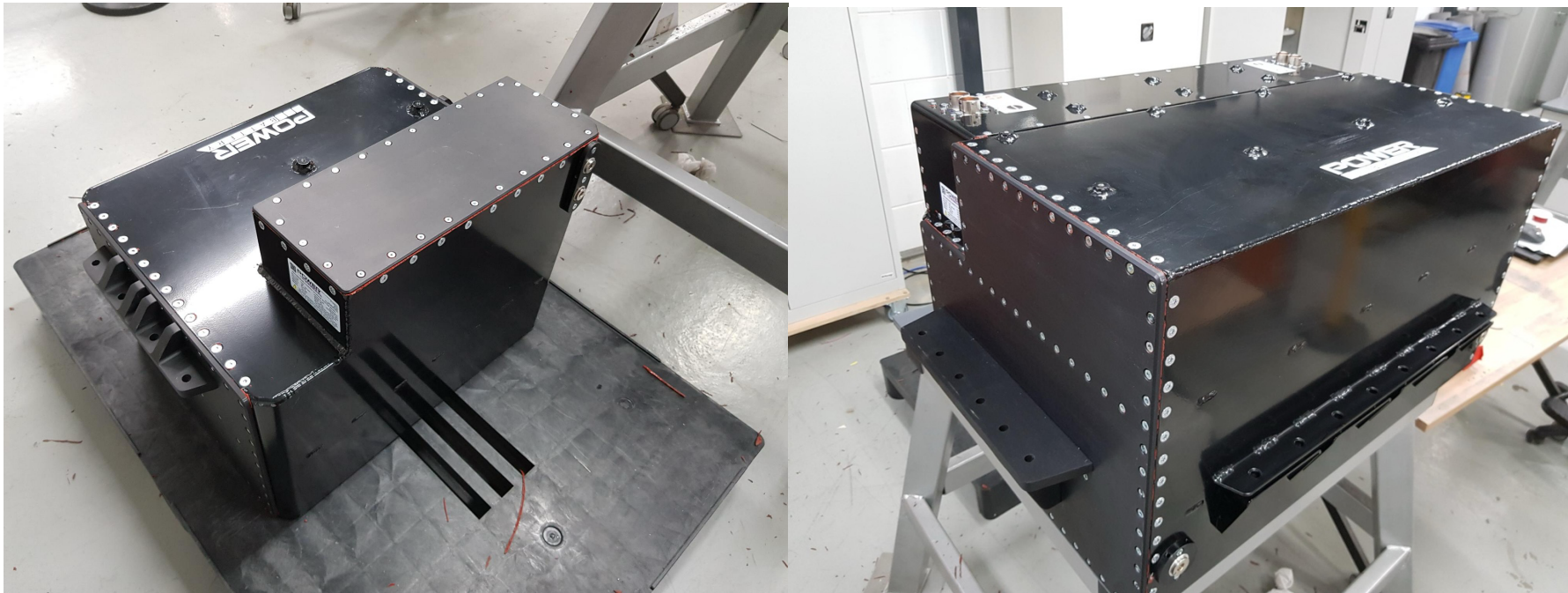




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Image 2:

The battery pack split over 2 casings for optimal weight distribution.





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Why PowerBattery?

PowerBattery delivers more than just battery packs—we deliver the power, safety, and compliance that define the future of electric motorsport.

Our cross-industry expertise ensures every solution is robust, innovative, and ready for the world's most demanding applications.

Ready to power your racing ambitions?

Contact us at info@powerbattery.nl to explore how we can electrify your next project.