



Electric Motorcycles at Berkeley

Sponsorship Packet

Spring 2026



About Us:

SURGE Electric Motorcycles is a student-led team at UC Berkeley focused on hands-on electric vehicle engineering.

Founded in late 2024, the team began with proof-of-concept work on battery and subframe systems and is now completing its first full electric motorcycle conversion.

We believe the best way to develop engineers is by building real hardware, taking ownership of complex systems, and learning through iteration. Our goal is to create meaningful technical experiences for students while laying the groundwork for future competitive and performance-focused electric motorcycle projects.

CBR600RR Conversion (In Progress)

This motorcycle is the founding project of Surge Electric Motorcycles at Berkeley and serves as the team's first full electric conversion. The build is based on a 2006 Honda CBR600RR purchased with a failed engine and stripped to the bare frame. From this platform, the team is redesigning the drivetrain, energy system, and supporting structures around a fully electric architecture.

The project emphasizes safety, modularity, and reliability, with all major systems designed, fabricated, and integrated in-house. After an initial development phase, the team reset its approach for the 2025–26 academic year with higher performance targets, clearer system ownership, and a more disciplined engineering and manufacturing process. The bike is currently in final fabrication and integration, with first operation targeted for early 2026.

Powertrain: The bike uses a mid-drive electric powertrain driving the rear wheel through a chain reduction. It is built around a QS180 motor, delivering approximately 8 kW continuous and 24 kW peak power. Gearing is selected to balance strong acceleration with a highway-capable top speed. Custom motor mounting plates and drivetrain alignment features were designed and manufactured to ensure accurate chain alignment, repeatable assembly, and long-term reliability.

Surge:
Electric Motorcycles at Berkeley:



Estimated Stats:
Top Speed: 110 mph
0 - 60: 5.0 s
Range: 30 Miles

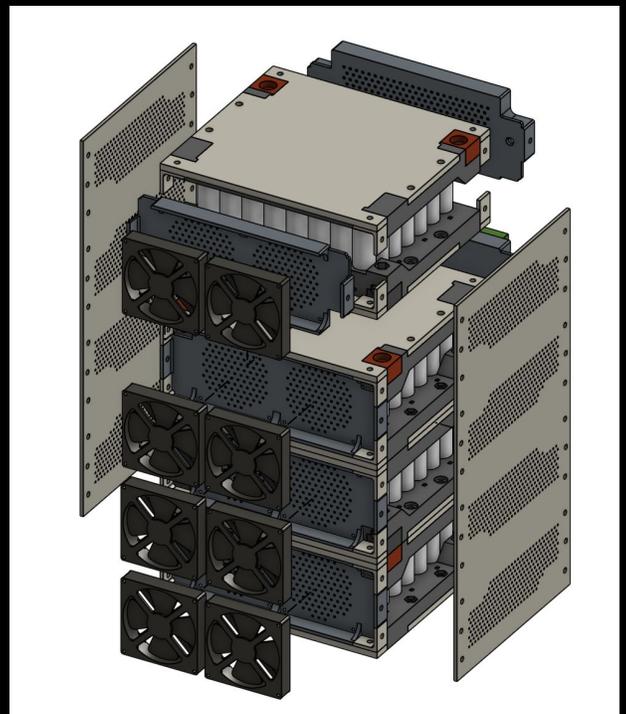
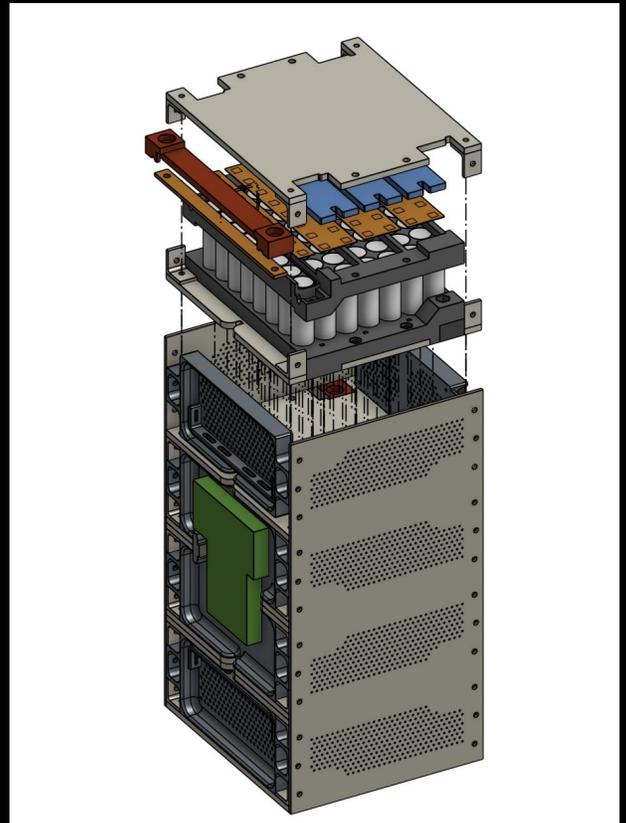
CBR600RR Conversion (In Progress)

Battery: The battery is a fully custom 28s8p lithium-ion pack (~3.4 kWh nominal) built using Molicel P42A cells. It is structurally integrated into an aluminum subframe using laser-cut aluminum side plates, allowing the battery to serve as both an energy system and a structural component of the bike. Electrical interconnects use copper-nickel hybrid busbars to combine high conductivity with reliable spot-weld interfaces. The pack incorporates a battery management system for cell monitoring and protection, and the entire battery system was designed, assembled, and validated by the team.

Electrical System: The high-voltage drivetrain is controlled using a VESC-based motor controller, selected for tunability, data access, and flexibility. The low-voltage system is built around an ESP32-based controller responsible for throttle input, system logic, and sensor interfacing, with provisions for future data logging and telemetry. The electrical architecture is modular and serviceable, with clear separation between high-power and low-voltage systems to simplify testing, debugging, and future upgrades.

Project Status: Major mechanical and electrical subsystems have been designed, prototyped, and fabricated, including the aluminum subframe, motor mounts, battery system, and electrical architecture. The team is currently completing final manufacturing and integration, with testing and commissioning planned for early 2026.

Surge:
Electric Motorcycles at Berkeley:



Next Steps

Spring 2026: Build and Validate

Complete Fabrication on CBR Conversion	1
Test And Verify Systems	2
Tune Performance and Measure Stats	3
Validate Safety and Reliability	4



Expansion: Fully Custom Electric Superbike

- Use Learnings To Guide Clean, Fully Custom Electric Superbike Design
- Develop Higher Power Drivetrain and Evolved LV Control System
- Implement More Advanced Cooling and Packaging
- Begin Fabrication of Fully Custom Bike (Targeting Fall 2026)

Sponsorship

Sponsorship Tiers:

- ❑ **Spark:** \$500+
 - ❑ Logo on Team Website For Sponsorship Year
- ❑ **Strike:** \$1,000+
 - ❑ Small Logo on Current Bike
 - ❑ Access To Team Resume Book
- ❑ **Lightning:** \$2,500+
 - ❑ Large Logo on Current Bike
 - ❑ Permanent Logo on Team Website
 - ❑ Logo on Team Merchandise
- ❑ **Thunder:** \$5,000+
 - ❑ Meeting & Design Review Access

SURGE - Electric Motorcycles at Berkeley is a sponsored student organization of the Associated Students of the University of California at Berkeley, a nonprofit unincorporated association, IRS Code 501(c)(3). Your donation to the ASUC on behalf of ASUC/SURGE - Electric Motorcycles at Berkeley may be claimed as charitable to the extent allowable by law. Documentation of the ASUC's tax ID number is available upon request.

Accepted Contributions:

- Funding
- Materials
- Manufacturing Services
- Technical Support

President



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**Thanks for checking out Surge.
We look forward to staying in touch.**

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