CAL POLY POMONA FORMULA SAE ELECTRIC

Written Sponsorship Proposal – Suspension Subsystem (2026)

Proposal Target: Öhlins Racing / Öhlins USA — Motorsport and Engineering Partnerships

12/22/2025

Team: Cal Poly Pomona Formula SAE Electric – Car #24

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Why Öhlins:

Top teams at the Formula SAE Electric competition are separated by extremely small margins, making repeatable damping and validated setup crucial to our success.

Our request:

Cal Poly Pomona Formula SAE Electric provides tiered support programs, with the most preferred program being a 12-month **technical partnership pilot** centered on validation support, spares, and service for our existing Öhlins TTX25 MkII program.

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Executive Summary and Formal Partnership Request

Cal Poly Pomona Formula SAE Electric (CPP FSAEE) is requesting an **Öhlins** partnership that places an emphasis on being *engineering-first* and low-risk. We are providing a structured and measurable program that creates value for Öhlins throughout both the engineering and competition processes at a low cost.

Our 2026 vehicle is targeting a **Top 10 overall finish** with a design that focuses on steady state performance. We develop our targets using analysis of steady state averages and yaw moment diagram sweeps to develop said targets for listed inputs evaluated by grip, balance, control, and stability.

In the high-performance realm of FSAE Electric, the most valuable suspension sponsor is not one that simply supplies parts, but one that assists in tuning repeatable, validated, and actionable damper behavior. CPP FSAEE sees no partnership more valuable for this purpose than the damper manufacturers themselves.

The suspension subsystem is complex. Data validation and tuning assistance from Öhlins will not only help CPP FSAEE ensure maximum damper performance but help integrate said dampers within the greater subsystem to our maximum capabilities.

As such, we formally request that **Öhlins Racing / Öhlins USA become our Official Damper and Suspension Technology Partner through a 12-month Technical Partnership Pilot program.** Our request is tiered so Öhlins may choose a support level that best fits their risk assessment and internal priorities.

Option A (most preferred) [Estimated partnership value: $3,000 - $6,000 USD]**:**

- **Engineering Support** (3-4 structured technical check-ins to offer integration support) [Estimated value: $1,000 - $2,000]
- **Validation pathway support** (guidance and/or access to a damper dyno partner network) [Estimated value: $500 - $1,000]
- Service Support for our existing Öhlins TTX25 MkII set (inspection/rebuild support as needed throughout the season) [Estimated value $1,200 - $2,400]
- Spares/consumables kit(s) (seals, fluids, replacement components to ensure reliability throughout the season) [Estimated value: $300 - $800]

This option is the most preferred ask as it creates immediate engineering value for both parties without large product or monetary donation.

Option B [Estimated partnership value: $3,000]**:**

- Purely Monetary Sponsorship used strictly to support suspension subsystem completion and validation (integration, mounts, harnessing, consumables, etc.)

Why this Sponsorship is Beneficial

CPP FSAEE recognizes Öhlins' selective nature with partnerships. As such, our proposal is designed to be worth Öhlins' time due to its low risk and high reward nature.

Primary Benefit: Engineering Return

With support from Öhlins, CPP FSAEE can provide valuable data from our structured engineering loop that includes:

- Tire model assumptions made with assistance from our Calspan TTC partnership
- Simulation Targets (OptimumLap + steady-state/yaw moment analysis)
- On-car sensing (detailed on Page 5: Testing and Validation Plan)

CPP FSAEE is offering valuable post-test data and an end-of-season tuning summary, including conclusions supported by measured data and driver feedback. CPP FSAEE is a compelling partner because of our explicit focus on creating **consistent system output** which will provide not only valuable, but reliable data to Öhlins on damper performance within our suspension subsystem.

Secondary Benefit: Recruiting Return

In addition to engineering return, CPP FSAEE offers a direct hiring pipeline of engineers who are experienced and passionate about suspension work. We are trained in real subsystem work: kinematics targets, integration constraints, instrumentation, and iterative testing all under deadlines.

Tertiary Benefit: Brand Activation

Our Instagram is at ~450 followers at the time of writing. Despite this small number, our new aggressive marketing campaign has led to a following increase of 29% since the beginning of the fall semester (August), showing immense and continuing growth.

Additionally, FSAE teams are a strong **peer buyer market**. Supporting our performance exposes the Öhlins brand to other FSAE teams at competition and through social media, increasing brand visibility to the primary consumer.

Additionally, our LinkedIn outreach recently supported $11,900 in sponsorship value raised. Our brand activation matches the 'quality over volume' positioning that Öhlins represents.

We plan for 4-6 sponsor-approved posts, LinkedIn-first.

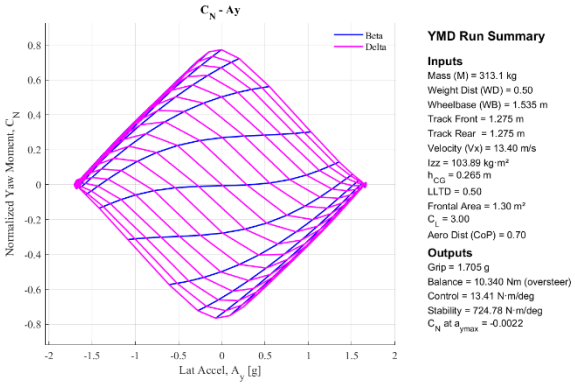
Our proposed deliverables to Öhlins are detailed further on Page 6: Cal Poly Pomona Formula SAE Electric Deliverables.

Brief Suspension Subsystem Overview (2026 Vehicle)

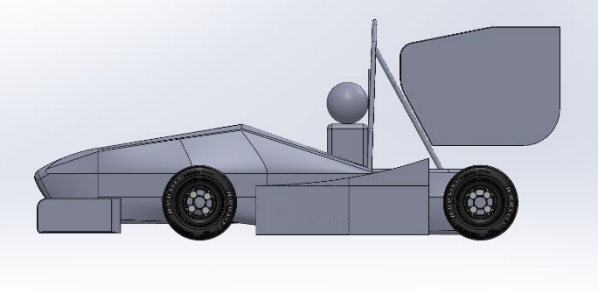
1. Vehicle Goals and Performance Context

- Goal: Top 10 overall finish, emphasis on steady state performance
- *Top 10 teams are separated by a steady-state average of 0.0225 lat-g on skidpad. Yaw moment diagram sweeps develop targets for listed inputs, evaluated by grip, balance, control, and stability.*

Yaw Velocity (deg/s)	Velocity (mph)	Ay (g)	Sorted	Delta (g)
73.21537523	26.08425981	1.518879029	1.587207	
72.34726688	25.77498101	1.483074129	1.569537	0.0176700
74.42629729	26.515672	1.569536529	1.518879	0.0506575
70.36747459	25.06964532	1.4030157	1.517027	0.0018517
71.42857143	25.44767966	1.4456479	1.490854	0.0261735
73.17073171	26.06835477	1.517027302	1.483074	0.0077797
72.53677211	25.84249556	1.490853784	1.466406	0.0166679
74.84407484	26.66451257	1.58720656	1.445648	0.0207583
67.75832863	24.14009138	1.300900171	1.403016	0.0426322
69.90291262	24.90413699	1.384551595	1.384552	0.0184641
			avg	0.0225172



2. Relevant vehicle packaging constraints

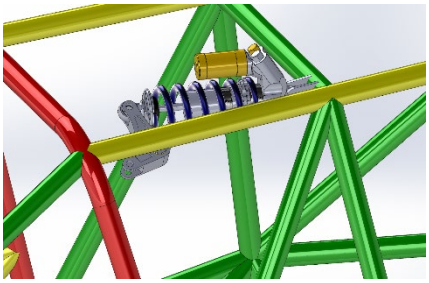


- Wheelbase: 1535 mm
- Track Width: 1300mm front, 1275 rear
- Target weight: ≤ 500 lbs

3. Tire + wheel platform

- Tire selection: 16x7.5x10 Hoosier R20
  - Tire models and analysis performed across different compounds; temp models planned during testing
- Tire-wheel assembly: 12.75 lbs, **52% lighter than 2025 vehicle**
- Wheel: 10” Keizer forged aluminum, **Down from 13” in 2025 vehicle**

4. Actuation Architecture



- Pushrod with inboard actuation following wheel path
- Min 50mm travel
- Rising-rate design

5. Springs and damping baseline

- Spring rate: 43.78 N/mm
- Motion ratio at ride height: 1.39 front, 1.47 rear
- Pushrod effective rates at ride height: 84 N/mm front, 90 N/mm rear
- LLTD: 43% front

<u>Selected geometry targets and further details are documented in our CDR and can be shared in a technical appendix if Öhlins desires.</u>

Testing and Validation Plan

CPP FSAEE plans for at least 10 structured days over our available ~2.5-month testing window. We use repeatable mock tracks to mimic competition layouts, and each test day is designed to produce useful measurable outputs.

1. Data acquisition

Sensors and logged channels include:

- Linear potentiometer for spring/damper travel
- Rotary potentiometer for steering angle sensing
- Inertial Monitoring Unit for sensing accelerations
- Hall-effect rotary angle sensor for throttle
- Sealed gauge pressure transducer for brake-pressure
- Hall-effect gear-tooth speed sensor for wheel speed
- Per-wheel strain gauge for determining pushrod force

We will collect tire temperature data using motorsport-specific infrared sensors during testing for correlation only. Tire temperature data is **test-only** and the sensor will not be retained on the competition vehicle.

2. Correlation Workflow

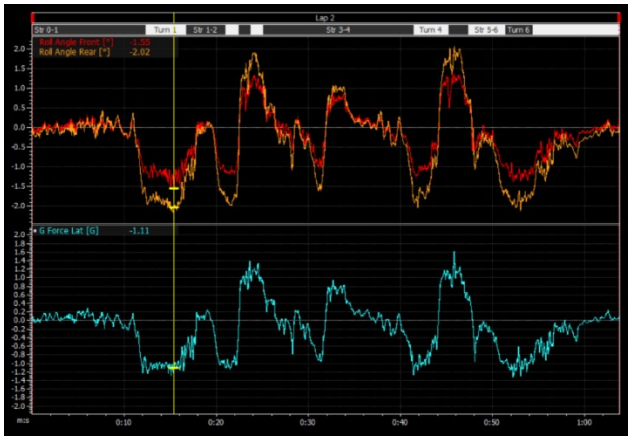
1. Define target behavior from simulation data and yaw moment diagram targets
2. Execute controlled runs on repeatable mock course
3. Analyze testing data to update simulation and setup hypothesis
4. Document results and recommend next iterations

Our plan explicitly includes: tire model, forces, temperature, degradation, roll model, driver feedback, steering torque, aero validations, spring/damper travel, yaw acceleration, balance tuning, and lap time simulation.

3. What Öhlins receives after each test day

Within 72 hours of each test day, CPP FSAEE will provide:

- 1-page test day summary (conditions, objectives, observations, changes made)
- Data packet
- Setup change log
- Next-step recommendation



CPP FSAEE Deliverables to Öhlins

A) Engineering Deliverables (Primary)

1. At least 10 post-test engineering packets (one per test day)
2. Setup change log maintained across the season
3. Vehicle performance under variable damper setup memos (2-4 pages each)
    a. Damping ratio and motion ratio setups, target behaviors, changes evaluated, next steps made
4. Season-end Öhlins-tailored tuning summary
    a. Baseline setup window, changes made throughout season, what correlated and what didn't, next-season recommendations

B) Recruiting Deliverables (Primary)

1. Öhlins Resume + Portfolio Packet for graduating seniors
2. Öhlins Partner Day, should Öhlins be interested (On-Campus)
    a. 30-50 SAE attendees expected, expandable to CPP's strong engineering and science colleges and automotive enthusiast organizations
    b. Garage tour + technical talk + recruiting conversations
    c. Optional virtual "office hours" session with Öhlins engineers

C) Brand Deliverables (Secondary)

1. "Official Damper and Suspension Technology Partner" designation
2. Priority logo placement on competition vehicle
3. Sponsor-approved technical social media features across the season (LinkedIn, Instagram)

KPIs & ROI Measurement Plan

This page will define how Öhlins can evaluate the success of the partnership using measurable targets tied to the season plan and outputs listed on Page 6.

Category	KPI (Target)	Evidence/How Measured
Engineering	At least 10 Structured Test Days	Test calendar + run logs
Engineering	20-30 documented damper setup iterations	Setup Change Log (revision controlled)
Engineering	≥90% post-test packets within 72 hours	Timestamped post-test packets
Engineering	0 damper-related failures (target)	Failure log + service notes
Engineering	≥10 tire-model-informed setup decisions	Post-test packets tagged “tire-model-informed”
Recruiting	~10 senior portfolios delivered	Portfolio packet delivery confirmation
Recruiting	1 Öhlins Partner Day (30-50 attendees)	RSVP/attendance + event recap
Brand (secondary)	4-6 sponsor-approved social media features	Content calendar + links + analytics screenshots
FSAE Peer-Market (secondary)	Peer-buyer influence tracked	# inbound tech questions, # requests for summary, engagement from FSAE accounts

ROI Summary (What these KPIs mean for Öhlins)

We evaluate Öhlins’ return across four ROI channels. Each is linked to the table above.

- **Engineering ROI**: documented, repeatable damper development work produces sponsor-usable learnings regardless of final placing
- **Recruiting ROI:** Öhlins gains access to a measurable early-career pipeline of experienced and passionate subsystem engineers.
- **FSAE Peer-Market ROI:** credible influence in a peer-buyer market, measured via technical inquiries from peers, requests for development summaries, and engagement from other FSAE social media accounts
- **Brand ROI:** Engineering-forward exposure associated with Cal Poly Pomona’s strong engineering program through social media content with measurable engagement.

In addition to all other documents, CPP FSAEE plans for monthly KPI tracker updates, as well as a more detailed mid-season virtual review call and final end-of-season KPI scorecard to overview renewal and expansion recommendations.

Subsystem Coverage, Risk Mitigation and Next Steps

CPP FSAEE's strategy is to secure specialist sponsors where appropriate but focus on a technical partnership for dampers to validate integration with the rest of the subsystem as a core component.

Subsystem Coverage Map 2026:

- Dampers/springs: technical Öhlins partnership request
- Control arms/pushrods tubing: Reliable Source Metals (mill cost)
- Rod ends / spherical bushings: Aurora Bearings (manufacturing price)
- Uprights material: Coast Aluminum (material donation)
- Tire data: Calspan TTC partnership
- Remaining items: (rockers, ARB parts, fasteners, etc.) in-house manufacture + purchasing plan / additional sponsors as needed

Risk Mitigation to Öhlins

CPP FSAEE outlines the most significant risks as follows:

Risk	Impact	Mitigation
No current damper dyno access	Limits bench validation	Request Öhlins-recommended validation pathway and/or partner dyno access
Testing days are constrained by manufacturing	Fewer testing iterations	2-3 controlled iterations per possible test day; prioritize highest-impact changes
Performance outcome uncertainty	Sponsor doubts value	Primary sponsor value is delivered via reports, recruiting, and technical content regardless of ranking

Next Steps

We request a 30-minute alignment call with Öhlins Motorsport to confirm:

1. Partnership Tier (Option A preferred)
2. Service/spares and validation pathway feasibility
3. Reporting format and confidentiality preferences
4. Timeline and branding guidelines

We thank you for your consideration. CPP FSAEE would be proud to represent Öhlins as our Official Damper & Suspension Technology Partner for the 2026 season.

Sincerely,

Brendan Birozy

Business and Marketing Lead, CPP Formula SAE Electric

On behalf of CPP FSAE Electric Vehicle Dynamics Team

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