



Innovation grows through collaboration, not silos.

At Czero, we know that solving hardtech's most intractable problems requires more than just a vendor—it requires a partner who sits on your side of the table. Whether we're tackling a multi-physics modeling challenge to guide critical design decisions, or integrating mechanical, controls, and test into a single prototype, our approach remains the same: deep collaboration, technical rigor, and total transparency.

In this edition, we're celebrating 19 years of "engineering tomorrow" by showcasing the breadth of our work—from high-stakes military integration to cutting-edge energy research—and how our flexible engagement model helps you hit your next milestone.

P.S. We're Hiring! If you're passionate about engineering innovation, check out our open positions below.



Celebrating 19 Years

From Automotive Roots to Global Partnerships

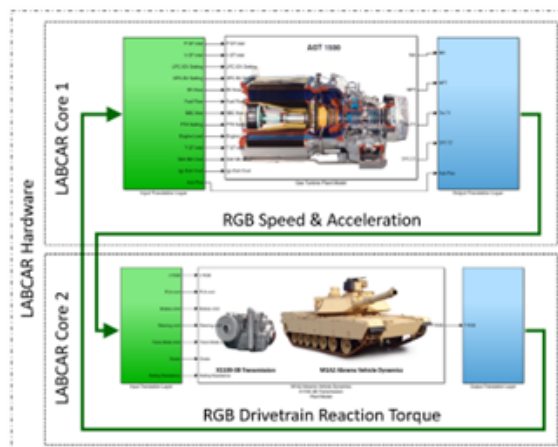
It is hard to believe it has been 19 years since Czero first opened its doors. What started with deep roots in automotive engineering has evolved into a global partnership in hardtech innovation, spanning energy, cleantech, automotive, and beyond.

While our logo has changed and technology has advanced, our core DNA remains the same: we believe real progress happens when innovators and engineering experts work together.

To our collaborators and clients: Thank you.

Your partnership and trust enable us to support projects of all scopes—from early-stage concepts to full system integration. With over 450 projects completed, our experience drives every solution we deliver. As we look ahead, our dedication remains strong: we act as an extension of your team, adapting to evolving project needs, delivering technically robust solutions, and empower you to achieve critical milestones with confidence.

[Schedule a Meeting With Us to Discuss](#)



How Automated HIL Testing Validated an M1 Abrams Controller—Before Touching the Engine

The Challenge:

The U.S. Army needed to validate a new controller for the M1 Abrams tank's gas turbine and powertrain. Testing directly on hardware was expensive and risky; failures could damage critical equipment, and iteration cycles were too slow.

Our Engineering Approach:

We developed a hardware-in-the-loop (HIL) system that accurately simulates the Abrams' multi-spool gas turbine and vehicle dynamics in real-time. By building a high-fidelity physics-based model in MATLAB/Simulink, we captured:

- Compressible flow dynamics with real gas properties.
- Multi-spool turbine rotational dynamics.
- Tracked vehicle dynamics across 56 total contact patches.
- Transmission behavior including gear shifting.

The Result:

The team used HIL plant models to support ECU development and validation **prior to in-vehicle testing**. This provided a predictive, physics-based environment that de-risked the entire process.

Why This Matters: HIL allows you to test and debug virtually before connecting with real hardware. We apply this approach across energy, automotive, and aerospace sectors to de-risk expensive hardware.

[Discover Our HIL/SIL Capabilities](#)



Johns Hopkins & Czero Selected for ARPA-E JOULES- 1K

We are proud to announce our role as a subawardee on a groundbreaking project led by Johns Hopkins University, recently selected for the ARPA-E **JOULES-1K** program.

The program targets the development of energy storage systems with energy densities exceeding 1,000 Wh/kg—a 4x increase over traditional batteries. Johns Hopkins is developing a Direct Liquid Fuel Cell (DLFC) using Liquid Organic Hydrogen Carriers (LOHCs), offering rapid refueling and high-density power for mobile and national security applications.

Czero's Role:

While the university focuses on the fundamental chemistry and cell design, Czero will provide the critical engineering muscle to turn this concept into a functional reality. We are leading the **integration, test, and build** of the system, ensuring that the theoretical breakthroughs translate into a validated, working prototype.

[Read More](#)



Proudly Announcing: Quixik is ISO 9001:2015 Certified

Quality and precision are non-negotiable in hardtech. We are thrilled to share that our in-house manufacturing center, Quixik, has officially received their ISO 9001:2015 certification.

This certification ensures that Quixik meets the highest international standards for quality management. For our clients, this means even greater confidence in the reliability of the parts and prototypes we deliver. We continue to turn ambitious concepts into high-quality hardware—quickly and efficiently.

[Learn More About Quixik's Capabilities](#)

Is Your Next Project a Fit for Czero?

From Targeted Analysis to Turnkey Prototypes

We're often asked, "Is this in your wheelhouse?" We specialize in helping teams who need engineering rigor but cannot afford to miss a deadline.

We are the right partner if:

- **Concept to Prototype:** You have a promising idea but need system design, integration support, and a clear path to a reliable demo.
- **Subsystem Integration:** We make multiple vendors and technologies work together, designing the hardware and controls that tie everything into a coherent system.
- **Design Acceleration:** Our senior engineers help stabilize scope, execute testing, and land the plane under tight timelines.
- **Targeted Workscopes:** Need to answer a specific question to unblock a decision? We handle focused studies like FEA, CFD, and Techno-Economic Analyses (TEA).

Unsure? Reply to this email. We will tell you honestly if we are a fit or point you toward someone who is.

Upcoming Events: Let's Connect

We're thrilled to share our progress and connect with the community at several upcoming events. If you'll be attending any of these or in the area, we would love to connect!

[Boston - Halliburton Labs Pitch Day - February 23 - 26](#)

[Denver - Colorado Climate Week - March 30 - April 2](#)

[Denver - NLR IGF - March 31 - April 2](#)

[San Diego - ARPA-E - April 7 - 9](#)

[San Francisco - SF Climate Week - April 18 -26](#)

Join Our Team

Our team is growing! If you thrive on clarity, ownership, and seeing complex systems work—not just in slides, but in hardware—we should talk.

Dynamic Systems
Modeling Engineer

Controls
Engineer

Follow us on LinkedIn!



Czero

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