

How Root3 Labs Applied Decision-Grade Engineering for a Leading U.S. Rocket Manufacturer

Designing, verifying, and delivering custom ground support equipment in 10 weeks.

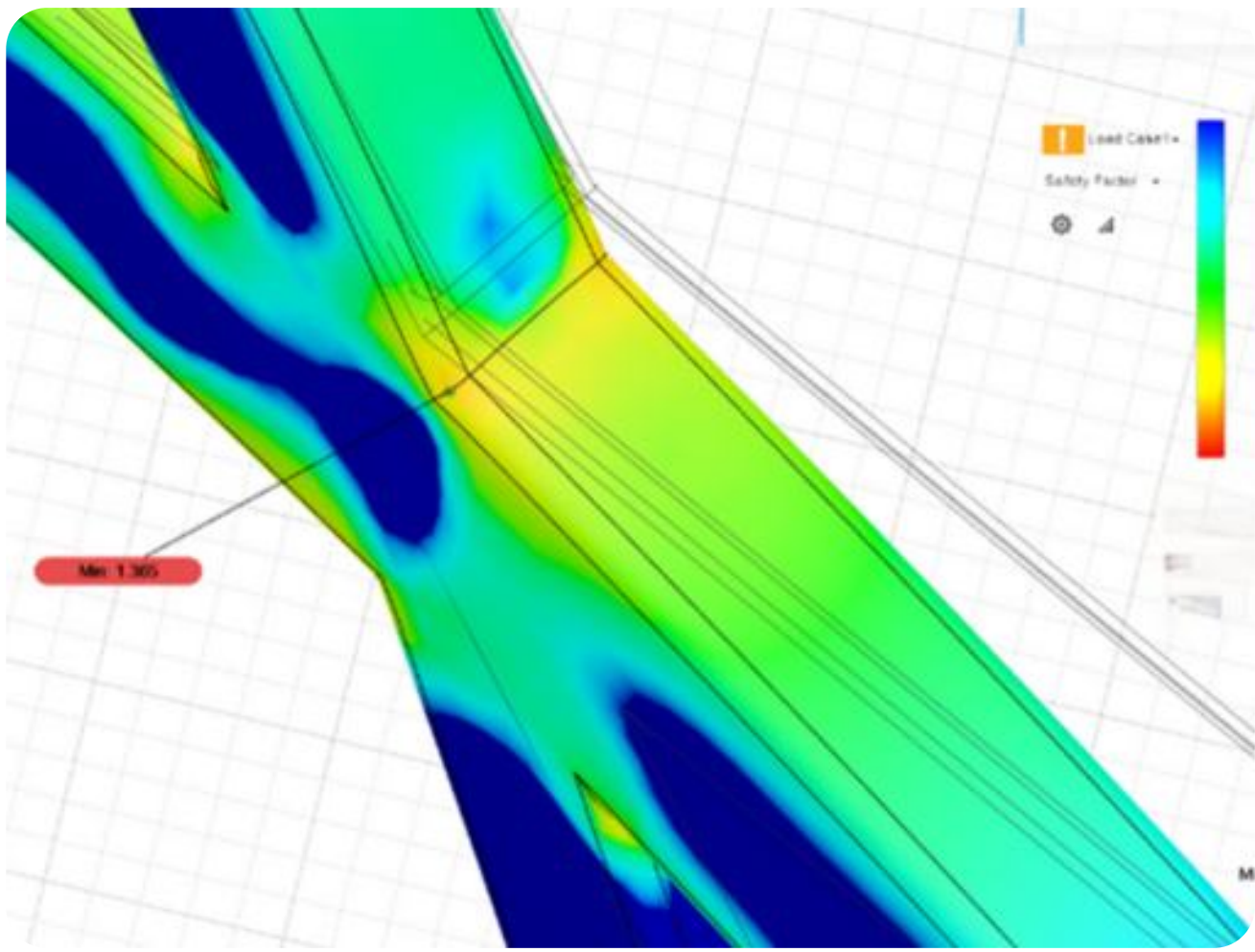
A leading rocket manufacturer needed a safe way to move, manipulate, and bake uncured carbon-fiber components measuring **7 meters in diameter**, along with tooling weighing approximately **4,000 kilograms**. With critical hardware already on the way, Root3 Labs had to develop the concept, prove the design, complete the build, meet every performance requirement, and deliver on schedule.

The Engineering Challenge

Designing systems that could safely support oversized components within a space-constrained facility required early confidence in the design. Root3 completed the Critical Design Review by **week three**, grounding every next decision in proof and setting the project up for delivery within the 10-week timeline.

Root3 designed, analyzed, fabricated, integrated, and tested two custom ground support systems. Finite element analysis and hand calculations were used to simulate critical loads, connections, and safety factors before fabrication.

This gave the client decision-grade proof while changes were still practical and less expensive to make.



The Outcome

10 Weeks Full delivery, start to finish	2 Systems Designed, fabricated, and delivered	Week 3 Critical Design Review completed	FEA-Validated Engineered and tested for safety factor
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“The adapters and the lift carts have been indispensable for an ever shrinking factory floor.”
MANUFACTURING ENGINEER, TOP U.S. ROCKET MANUFACTURER

Engineering Built Around the Decision Ahead

Root3 Labs structures each engagement around the evidence the program needs most:

What works?	What could fail?	What still needs to be proven?	What should happen next?
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That same evidence-led approach supports hardware teams working through design risk, manufacturing constraints, and the critical decisions for the next major project milestone.

“Root3 has been an invaluable partner in helping IVO rapidly prototype and scale our technology. Their engineering expertise and manufacturing support have accelerated our ability to bring innovation to market.”
DAN TELEHEY, COO, IVO LTD.

Know What Needs Proof Before the Next Milestone

Bring us the project, the milestone, or the unanswered technical question. We'll help clarify what is ready, what still needs proof, and what engineering step makes sense next.

DISCUSS YOUR NEXT MILESTONE

