

Ryvid Revs Up: Disrupting Design, Defying Constraints, and Reimagining Urban Mobility



In a saturated market where motorcycles are often framed as recreational luxuries, **Ryvid Inc.**, has carved a bold path by positioning electric motorbikes as practical, sustainable urban transportation.

The electric motorcycle startup has become known for redefining urban mobility through lightweight, modular design and lean digital engineering. With its rapid prototyping, sustainable manufacturing, and a chassis built from folded sheet metal, Ryvid delivers stylish, cost-effective alternatives to gas-powered vehicles.

Ryvid serves urban riders who fall between the e-bike and full-size motorcycle segments. Their customers seek stylish, low-maintenance transportation and include city commuters as well as celebrities such as Lana Del Rey and Chris Hemsworth. Ryvid's strong online community and direct-to-consumer model are key to the company's deeper customer engagement and feedback, enhancing its loyalty and visibility.

Led by CEO and Co-founder Dong Tran, Ryvid's journey exemplifies what it means to build a business from the ground up by embracing agility, innovation, and digital transformation. In just eight months, they moved from concept to production, reshaping how personal transportation can be manufactured, maintained, and marketed.

Challenge: Mobility Through Friction

Ryvid's vision to make electric motorbikes accessible and appealing to urban riders faced formidable challenges. As a startup, limited resources and continuous fundraising put pressure on every decision. The company also faced engineering hurdles—from pioneering its signature folded sheet metal chassis to navigating California's high-cost production landscape. Most critically, Ryvid needed to convince a traditionally recreation-focused U.S. motorcycle market to embrace electric bikes for everyday transport.

As a resource-constrained startup with ambitious engineering goals, Ryvid faced several high-stakes challenges: designing a structurally sound yet cost-effective electric motorcycle chassis, reducing time-to-market with time consuming traditional prototyping, and maintaining product quality without time-consuming traditional prototyping methods.

"We knew we needed to shift toward simulation-driven design," said Ryvid Co-founder and CEO Dong Tran. "Relying on manual workflow methods or basic CAD tools without integrated simulation wasn't an option for us. We wanted to bypass traditional modeling techniques, such as clay prototypes, and streamline everything from surfacing to stress analysis within a single platform."

The team needed a way to iterate quickly, validate designs digitally, and streamline development across mechanical and surfacing teams. For a startup, prioritizing speed and precision was a strategic imperative.

Design agility was key to making Ryvid's innovation possible. The company's folded sheet metal chassis was an industry first at the time of its debut in 2022. Unlike traditional motorcycle frames that rely on welded tubes, Ryvid pioneered a chassis made from folded stainless-steel plates, an approach inspired by aerospace design principles. This innovation allowed for a lightweight, modular frame that could be assembled with mechanical fasteners instead of welding, dramatically simplifying production and reducing labor costs. This core innovation allowed Ryvid to meet high design standards without sacrificing affordability.



Relying on manual workflow methods or basic CAD tools without integrated simulation wasn't an option for us. We wanted to bypass traditional modeling techniques, such as clay prototypes, and streamline everything from surfacing to stress analysis within a single platform.

Dong Tran, Co-founder and CEO, Ryvid Inc.



Solution: Digital-First Workflow with Creo

Ryvid's innovative design wasn't just novel—it was transformative. It enabled the company to manufacture a full frame in under 90 minutes, something unheard of in conventional motorcycle design at the time.

Ryvid implemented a simulation-driven design process from the outset, selecting PTC Creo for CAD and simulation. Because they could bypass traditional techniques, they went directly from sketch to prototype, achieving production readiness within six months and full production in just eight months.

Ryvid's decision to invest in a digital-first workflow was critical. Creo's flexibility, deep integration with Alias, and robust simulation capabilities support fast-paced iteration. AR/VR tools replace physical prototypes for visualization and validation, saving both time and cost. CAD tools also enable real-time stress and flow analyses, reducing flaws and improving reliability.

"We selected Creo for its powerful blend of flexibility, robust surfacing, and strong integration with Alias," said Tran. "It also supports fast iteration and simulation, which is critical for our lean development model. Creo isn't just a design tool for us. It's a strategic enabler that accelerates our development, improves design quality, and supports our lean, innovation-driven product lifecycle. This simulation-driven approach is a game-changer."



PTC technology has been pivotal in accelerating development while navigating the inherent limitations we faced as a lean startup. It means our engineering team can validate stress and flow dynamics early on with better design accuracy and without the overhead of physical prototyping.

Dong Tran, Co-founder and CEO, Ryvid Inc.

Beyond product design, PTC tools also support Ryvid's operational agility and data continuity. As the business scales production in California, they are now exploring PTC Windchill for data management to strengthen collaboration across teams and ensure real-time access to critical design information.

Integration with Alias and AR/VR tools added flexibility and enhanced cross-functional decision-making. In a highly regulated and cost-sensitive environment, PTC's ecosystem helped Ryvid optimize manufacturing workflows, improve traceability, and maintain quality – all while preserving the speed and affordability that define its brand promise.

"Our local production allows for fast iteration," said Tran. "We implemented digital assembly instructions using iPads at each station within our factory. These systems track assembly steps and time, enabling data-driven optimization and traceability. Every bike is tracked with IoT telemetry, and ERP systems support parts monitoring and regulatory compliance."

Results: Ryvid's Bold Ride Pays Off

Ryvid's laser focus on lean engineering and modular design has yielded impressive business outcomes with accelerated time to market, lower Bill of Materials costs, operational efficiency, improved design validation and greater satisfaction thanks to its user-centric design.

"Our internal KPIs measure success across usability, tool integration, cost-efficiency, workflow simplicity, and time-to-market," concluded Tran.

Sustainability isn't just a feature, it's integrated into Ryvid's entire product lifecycle. With energy efficiency nearly 95% (compared to approximately 30% for gas vehicles), their bikes are around 10x more efficient than a Tesla Model 3 and cost less than 1 penny per mile to operate, showing that electric mobility is not only sustainable but also a wise economic decision.

Ryvid supports modular upgrades, right to repair via digital 3D catalogs, and easy disassembly and recycling of parts. Circularity practices also include frame reuse across models and battery repurposing.



By skipping physical modeling and prioritizing digital simulation, Creo has enabled us to have lower defect rates and audit risk while simultaneously speeding up our development cycles, and delivering great sustainable products that customers love.

Dong Tran, Co-founder and CEO, Ryvid Inc.

Looking Ahead: Global Expansion, AI and Humanoid Robotics

Ryvid is now preparing to expand into Asia with joint ventures in India and Vietnam, targeting premium urban markets. Shared platforms will enable scale while maintaining cost and quality. AI is being explored for internal efficiencies, such as customer and parts management through micro-apps. The company is also looking into future integration of humanoid robotics for sub-assembly supported by digital thread systems that provide real-time access to CAD and assembly data.

Digital integration is playing a vital role in breaking down silos between mechanical, electrical, and software teams. Shared platforms and visual design tools foster collaboration, while lean decision-making ensures speed and agility in execution.

"With the right blend of innovation, digital tools, and market awareness we have been able to challenge and disrupt industry norms," said Tran. "By rethinking every step - from chassis design to manufacturing workflows - we are proving that electric mobility can be both elegant and accessible."

In an era of rapid transformation, Ryvid isn't just building bikes; they're building a movement.

Company Overview

| | |
|--------------|--|
| Headquarters | Irvine, California, USA |
| Industry | Automotive |
| PTC Products | Creo |
| Employees | 40+ |
| Website | ryvid.com |

Results

- **Rapid Time-to-Market:** Concept to full production in just eight months.
- **Improved Design Validation:** Reduced physical prototyping through simulation.
- **Customer Satisfaction:** Emotional appeal of aesthetics and user-centric design has boosted engagement and brand value.
- **Lower Defect Rates and Audit Risk:** Cross functional teaming between mechanical, electrical and software teams resulted in better decision making.
- **Operational Efficiency:** Digital tools have increased speed and accuracy across design and assembly teams.



Creo isn't just a design tool for us. It's a strategic enabler that accelerates our development, improves design quality, and supports our lean, innovation-driven product lifecycle. This simulation-driven approach was a game-changer. PTC technology has been pivotal to our ability to accelerate development while navigating the inherent limitations as a lean startup.

Dong Tran, Co-founder and CEO, Ryvid Inc.