

VinciFly

Da Vinci's Flying Machine Reimagined as Extreme Sport
Catapult launch. Autorotation glide. Pure adrenaline.
Launch with elastic energy. Soar with physics. Land with mastery.

The Problem

Extreme sports today lack true historical soul and pure physics thrill:

- Most aerial sports (wingsuit, paragliding) require mountains, planes or complex gear
- No accessible “human-powered launch” experience that feels like flying a historical invention
- Modern adventure seekers want both adrenaline and intellectual connection
- Safety and repeatability are major barriers in traditional gliding sports
- We need a sport that combines Da Vinci’s genius with 21st-century technology.

The Solution

VinciFly – The world's first elastic-catapult launched, autorotating personal flying machine.

- Elastic energy storage system compresses the wing structure
- Sudden release launches the rider 40–70 meters vertically
- At apex, wings auto-rotate and transition into stable gliding descent
- Fully modern materials + safety electronics
- Accessible launch from flat ground or purpose-built towers
- History's most famous flying dream, turned into a repeatable extreme sport.

Historical Inspiration

- Leonardo da Vinci's 1490s "Flying Machine" (Codex on the Flight of Birds) envisioned human-powered flapping wings and gliding.
- VinciFly modernizes this vision:
- No flapping required
- Elastic potential energy replaces muscle power
- Autorotation replaces complex mechanics
- We honor the original genius while making it safe, repeatable, and exhilarating.

How It Works – The Full Flight Sequence

- Compression Phase – Rider sits in carbon-fiber pod. Elastic bands (high-tensile polymer) are tensioned.
- Launch Phase – Quick-release trigger fires the pod upward.
- Ascent Phase – Reaches 40–70 m in under 3 seconds.
- Transition Phase – Wings deploy and begin autorotation.
- Glide Phase – Controlled spiraling descent (30–60 seconds).
- Landing – Soft, feet-first touchdown with shock-absorbing pod.
- One seamless, physics-driven flight.

Physics of the Launch – Energy Transformation

Elastic Potential Energy → Kinetic Energy → Gravitational Potential Energy

$$E_{\text{elastic}} = \frac{1}{2}kx^2$$

where k = spring constant of composite elastic bands, x = compression distance (2–3 m).

Launch velocity:

$$v = \sqrt{\frac{2E_{\text{elastic}}}{m}}$$

Maximum height (neglecting drag):

$$h_{\text{max}} = \frac{v^2}{2g}$$

Physics of the Glide – Autorotation

At apex, wings enter **autorotation** (like a helicopter blade in autorotative descent):

Lift and drag create torque:

$$\tau = I\alpha = \frac{1}{2}\rho v^2 AC_L r$$

Steady-state descent velocity:

$$v_{\text{descent}} = \sqrt{\frac{2mg}{\rho AC_D}}$$

Spiral glide path is stable and controllable via weight shift + small control surfaces.

Riders experience 45–60 seconds of true soaring flight.

Modern Technological Interpretation

- Frame: Ultra-light carbon-fiber + titanium composite (Da Vinci's wood → 21st-century materials)
- Elastic System: Aerospace-grade polymer bands (replace Da Vinci's ropes)
- Electronics: IMU + altimeter + Bluetooth app for real-time flight data
- Safety: Automatic wing deployment parachute + quick-release harness
- App: Pre-flight checklist, flight logger, and community leaderboards
- Da Vinci would be amazed.

Bill of Materials – First 10-Unit Production Batch

Component	Specification	Unit Cost (USD)	Qty 10	Total (USD)
Carbon-Fiber Wing/Pod Frame	High-modulus prepreg	4,800	10	48,000
Elastic Energy Bands	Aerospace polymer (18–25 kJ capacity)	950	10	9,500
Quick-Release Launch Mechanism	Hydraulic + electronic trigger	1,250	10	12,500
IMU / Altimeter / Telemetry Unit	9-axis + GPS + Bluetooth	420	10	4,200
Control Surfaces & Actuators	Servo-driven ailerons	680	10	6,800
Safety Parachute System	Automatic deployment	1,100	10	11,000
Custom Harness & Padding	Impact-absorbing	380	10	3,800
TOTAL		9,630	10	96,300

Cost per unit (first batch): ≈ \$9,630

Sustainability & Eco-Design

- Wings and pod: 85% recyclable carbon fiber
- Elastic bands: Bio-based polymer alternatives available
- Zero single-use plastics in packaging
- Launch sites use modular, relocatable towers (no permanent construction)
- Carbon offset program per flight
- One of the greenest extreme sports ever created.

Safety & Regulatory Compliance

- Redundant deployment systems
- Real-time height and velocity monitoring
- Certified harness and impact padding
- Designed to meet FAA / EASA ultralight glider standards
- Mandatory training + licensed launch sites
- Engineered for controlled thrill, not reckless risk.

The VinciFly Experience

- 60–90 seconds of pure flight per launch
- Vertical rocket launch + graceful spiraling glide
- Spectacular views and G-force sensations
- Repeatable from dedicated launch towers or flat ground
- Community events, competitions, and “longest glide” challenges
- It’s not just a ride — it’s a conversation with history and physics.

Target Audience & Market Opportunity

- Extreme sports enthusiasts (18–45)
- STEM education groups and corporate team-building
- Adventure tourism destinations
- Global extreme sports market: \$8B+ and growing 12% annually
- First-mover advantage in “historical tech” extreme sports category.

Business & Monetization Model

- Experience packages (\$149–\$299 per flight)
- Launch tower franchises
- Equipment sales + licensing
- Corporate events and school STEM programs
- Media & sponsorship (YouTube, Red Bull, National Geographic)
- High margin, highly repeatable revenue.

Roadmap

- Phase 1 (Months 1-4): Prototype build & physics validation
- Phase 2 (Months 5-8): Safety certification & first test flights
- Phase 3 (Month 9+): First commercial launch site + public events
- Ready for first paying customers within 12 months.

The Ask

- We are seeking:
- Investment for prototype refinement and certification
- Partners for launch site development
- Collaboration with extreme sports brands and STEM organizations
- Help us turn Da Vinci's dream into the next great aerial sport.

Thank You

VinciFly

- Elastic energy. Da Vinci genius. Modern flight.
- Launch like never before. Glide like history.
- Contact: mehmet@mehmetustaportfolio.com
- The sky is calling.