

STARTUP PITCH DECK

aerovad

Portable metabolic testing for real-world performance.

Wearable respiratory gas measurement for athletes, coaches, performance labs, and sport-science partners.

Respiratory gas measurement

Wearable hardware

Sports performance

Patent application filed

Balazs Ovad · Founder · Mechanical Engineer · Triathlete

PROBLEM

Metabolic testing is powerful — but still too difficult to use regularly.

Current systems are often

- Expensive
- Lab-bound
- Infrequent
- Complex to operate
- Sensitive to environmental assumptions
- Poorly integrated into daily training workflows

The result

Most athletes and coaches rely on indirect metrics such as heart rate, power, pace, lactate, HRV, or perceived exertion.

These are useful — but they do not directly measure what is happening metabolically.

MARKET NEED

Endurance sport is becoming increasingly data-driven.

Athletes and coaches already use power meters, heart-rate monitors, HRV, lactate testing, wearables, GPS and training platforms.

But real-time metabolic data is still missing from everyday training.

VO₂, VCO₂, ventilation, substrate usage, efficiency, and metabolic response should not be limited to occasional lab tests.

SOLUTION

aerovad is a wearable metabolic measurement mask designed for real-world use.

Measurement

- O₂ and CO₂ measurement
- Ambient air comparison
- Ventilation / flow measurement

Connectivity

- Web-based user interface
- Wi-Fi / hotspot operation
- Garmin Connect IQ integration

Platform

- Over-the-air software updates
- Expandable sensor interface
- Rapid iteration architecture

DIFFERENTIATION

Not just another VO_2 mask.

aerovad measures both respiratory gas and ambient air, then compares the two during testing.

- Separate measurement of ambient and exhaled air
- Integrated O_2 and CO_2 sensor architecture
- Real-time comparison instead of relying only on assumed ambient values
- Fixed geometry for repeatable measurement
- Built-in pump for sampling and drying
- Moisture/spit management
- Wireless web interface — no app required
- Garmin Connect IQ integration
- Over-the-air software updates
- Expansion interface for future sensors

Austrian patent application filed for the core respiratory gas measurement architecture.

Patent application

A50760/2026

Filed: 01.09.2026

Title:

Vorrichtung und Verfahren zur Erfassung von Atemgasparameter

Applicant: Balazs Ovad

Key concepts

- Measurement of O₂ and/or CO₂ in respiratory gas
- Measurement of O₂ and/or CO₂ in ambient air
- Comparison of ambient and respiratory values
- Flow / ventilation measurement
- Pump and valve-supported sampling
- Drying mode
- Breath-by-breath and mixed-gas measurement options

PRODUCT ARCHITECTURE

Integrated hardware, software, and connectivity.

Hardware

- Wearable mask
- O₂ sensors and CO₂ sensors
- Flow / ventilation measurement
- Integrated pump
- Moisture drainage channel
- Fixed internal geometry
- Expansion port for additional sensors

Software

- Browser-based user interface
- Wi-Fi and hotspot operation
- Live data access
- OTA updates
- Garmin Connect IQ datafield
- Flexible firmware architecture

USER EXPERIENCE

Designed for practical coaching and real-world testing.

- Start a test without complex lab infrastructure
- View live data remotely over Wi-Fi
- Access the device through a browser
- Use it across operating systems
- Avoid mandatory phone apps
- Review synchronized Garmin data after the session
- Dry the device after testing with the integrated pump
- Reduce downtime between users

EXPANDABILITY

aerovad includes an external expansion interface.

Additional sensors can connect via

- I²C
- UART
- Analog input

Potential future examples

- GPS
- UV sensors
- Additional gas sensors
- Environmental sensors
- Custom research modules

If a coach, lab, or partner suggests measuring another parameter, aerovad can evaluate available sensors and integrate them quickly.

CURRENT STATUS

Advanced prototype stage.

- 3 years of founder-led development
- Multiple hardware iterations
- Working prototype
- Austrian patent application filed
- Public funding received in Austria
- Garmin Connect IQ datafield developed
- Web-based interface implemented
- Wi-Fi / hotspot capability
- Wireless live-data access
- OTA update capability
- Expandable electronics architecture

VALIDATION PLAN

Next milestone: independent validation.

Planned validation

- Compare against established metabolic systems
- Test O₂ / CO₂ measurement accuracy
- Validate ventilation / flow measurement
- Evaluate real-world usability
- Iterate based on expert feedback

Ideal partners

- Sport science labs
- Elite endurance coaches
- Performance centers
- Universities
- Medical / diagnostic experts

MARKET

Initial beachhead: endurance performance testing.

Initial target customers

- Endurance coaches
- Triathlon and cycling coaches
- Running coaches
- Performance labs
- Sport-science departments
- Testing centers
- High-performance athletes and teams

Potential future markets

- Broader fitness testing
- Rehabilitation
- Sports medicine
- Research
- Occupational physiology
- Remote physiological monitoring

BUSINESS MODEL

Multiple potential revenue streams.

- Hardware device sales
- Replacement parts / accessories
- Software analytics platform
- Coach dashboard subscription
- Validation / testing packages
- Research modules
- OEM or licensing partnerships

Initial go-to-market can start with expert validation partners, performance labs, elite coaches, endurance athletes, and small-batch hardware production.

FOUNDER-MARKET FIT

Built by an engineer-athlete with the problem firsthand.

Balazs Ovad

- Mechanical engineer
- 25 years of triathlon experience
- First Ironman finish in 8:52
- World Championship experience in Lahti
- Deep interest in physiological performance data

Development capability

- Hardware
- Electronics
- Firmware
- Software
- Mechanical design
- Sensor integration

Core pain point: Accurate metabolic data is valuable, but existing solutions are too expensive, too limited, or too difficult to use regularly.

WHY NOW

Sports performance is moving toward deeper individualization.

Coaches and athletes expect

- More precise data
- Faster feedback
- Remote monitoring
- Real-world testing
- Personalized training decisions
- Better software integration

Technology is ready

- Smaller and more affordable sensors
- More powerful embedded systems
- Standard wireless workflows
- Data-hungry training platforms
- AI-driven coaching needs better physiological inputs

ASK

aerovad is looking for support to move from advanced prototype to validated product.

- Product and business strategy
- Validation roadmap
- Market positioning
- Funding strategy
- Hardware startup mentoring
- Access to sport-science and performance partners
- Preparation for pilot production

Immediate goal: validate the prototype, sharpen the business model, and prepare for first pilot customers.

CLOSING

aerovad

Making respiratory gas measurement more accurate,
accessible, and usable outside the lab.

Portable

Accurate

Adaptable

Built for real training

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