



Capabilities

Statement


mistywest

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About MistyWest

We're a product development firm that helps our clients develop market-ready solutions **in half the time** compared to ramping up an equivalent internal team.

Professional
Grade
Handheld
Devices



Off-Grid
Sensor
Systems



Mining

Materials Handling

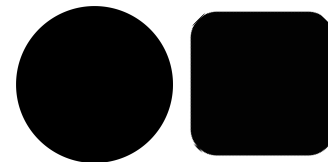
Smart Infrastructure

WHO WE'VE
WORKED WITH



Disciplines

Our tightly integrated multidisciplinary team has the capability to go beyond what's typically possible for boutique product development.



Electrical Engineering

- PCB Design, Circuit Simulation & Embedded Systems
- Analog, Digital, Mixed-Signal & RF Design
- High-Speed, Low-Noise, Flex & SOM Design
- Power Electronics & Signal Integrity

Firmware & Software Engineering

- Wireless Comms: BLE, WiFi, Cellular
- Embedded Systems: OS, Drivers, and App Development (C, C++, Python)
- UI/UX: Frontend Development (Flask, React, Android)
- Signal & ML Processing: Image Processing and Embedded AI

Mechanical Engineering

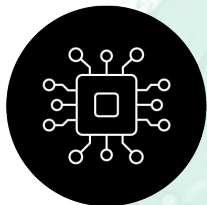
- Electro-Mechanical Integration & Sensor Design
- Enclosure, Mechanism & Assembly Design
- Ruggedization: Ingress Protection, Thermal Management, Shock & Vibration Mitigation
- Design for Manufacturing & Assembly (DFM/DFA)

Industrial Design

- Market Research, Competitor Analysis, Qualitative & Quantitative User Research
- Concept Ideation, Visualization, Prototyping, and Validation
- User-Centered Design: Ergonomics & Usability
- UX/UI Design for Seamless Interaction



Solutions



MistySOM

A power-efficient system-on-module with built-in AI accelerator.



MistyVision

A ruggedized off-grid Edge AI camera system.



MistyConnect

A templated Azure IoT solution with no middleware.



MistyWearable

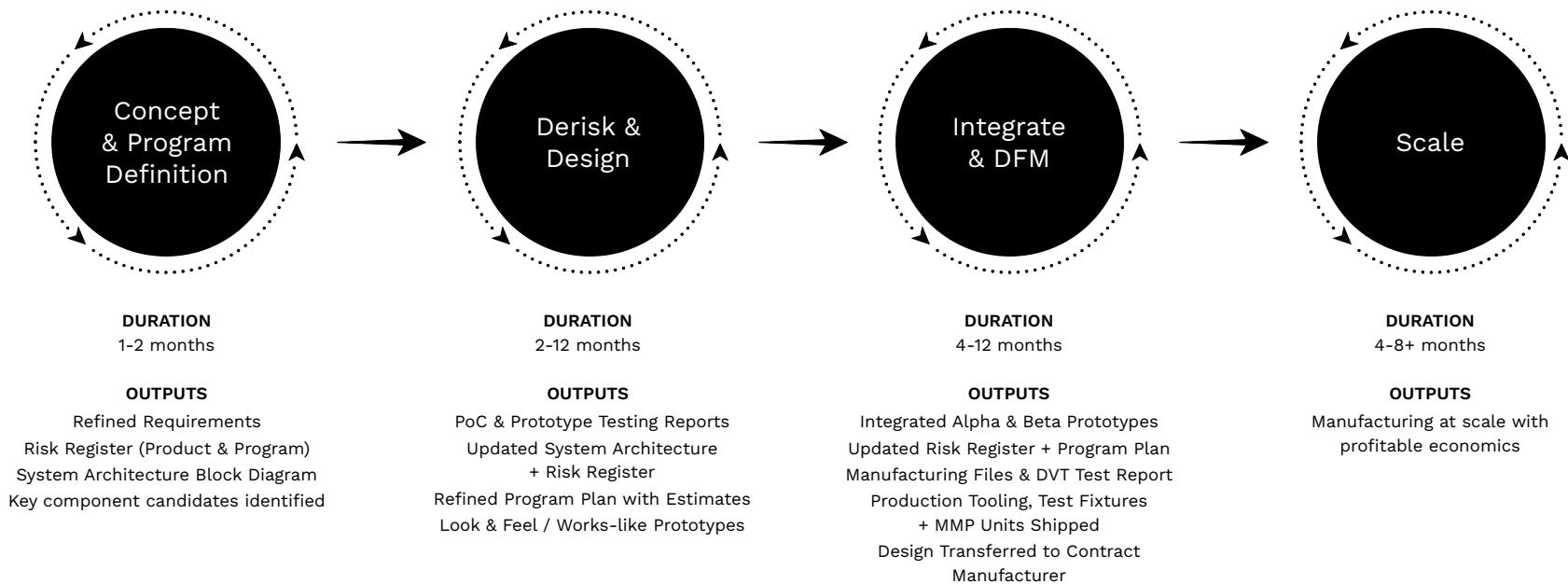
A customizable platform for wearables.

MistyWest already has key building blocks developed for Edge AI, computer vision, IoT back-ends and wearables, enabling you to **cut down time to market and development costs.**

Get in touch to learn more about our custom solutions.

How We Work

We take your ideas from
napkin sketch to **reality**.

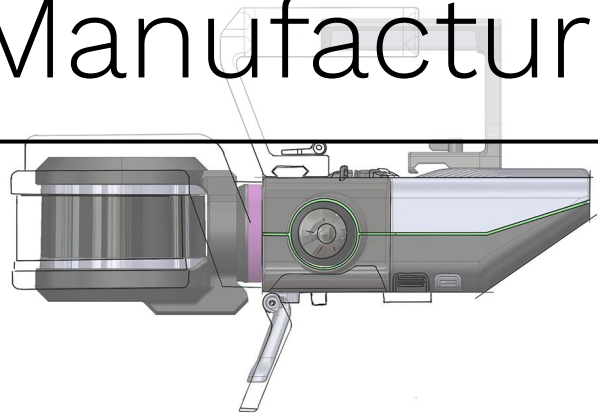


Bridge Manufacturing

We can shorten your
time to revenue.

MistyWest helps you build and test the first batches of 20 to 100 sellable units while we work to transfer the design to a scalable contract manufacturer or your internal team.

Our bridge manufacturing services enable a seamless transition from the lab to the field, cutting 2-6 months off of your time to a product launch and resulting in higher manufacturing yields.



Case Studies

The following case studies demonstrating how we've delivered *real* results for our clients represent **just a few of MistyWest's 400+ projects** over the past 15 years.

If you don't see your specific use case here, reach out—there's a good chance we've tackled something similar or can connect you with the right partner.



Borehole Muon Tomographer

Case Studies

CLIENT

Ideon Technologies

INDUSTRIES

Mining
Clean Tech

KEY SKILLS

FPGA Development
AWS IoT Framework
Power Electronics
DFMA
Miniaturization



LEARN MORE

[MistyWest Blog: Client Showcase](#)

Ideon Technologies is a pioneer in cosmic-ray muon tomography, enabling x-ray-like imaging up to 1 km underground. In an accelerated development schedule of 12 months, MistyWest developed the next generation of Ideon's muon detector, miniaturizing a benchtop system from 1x1x1m to a rugged, manufacturable Ø10cm by 3m form factor. 10 field-deployable prototype muon detectors were delivered that can operate reliably for months without failure.



MistyWest reduced time to market by 1-2 years, and has since assisted Ideon with building their own internal engineering team, as well as significantly contributed to a successful \$13M CAD Digital Supercluster Application. The technology developed by our team enabled Ideon's successful \$16M USD Series A lead by Playground Global.

LiDAR-based 3D mapping device concept and MVP

Case Studies

CLIENT

Exyn Technologies

INDUSTRIES

Mining

KEY SKILLS

Concept Development
User Research & Insights
DFMA
CAD & Prototyping
Low-Volume Production
Ruggedization



Exyn Technologies is commercializing LiDAR-based 3D mapping and autonomous navigation. They approached MistyWest for conceptual designs of a new commercial device that combined their existing handheld product ExynPak with their drone-mounted ExynAero product line.



In less than one year from the start of the initial research phase, MistyWest completed the engineering work necessary to reach low volume manufacturing for the commercial release of their new product line called Nexys. The resulting product will enable smooth operation at end-client facilities by combining the previous separate hand-held and drone mounted units into a single modular package.

99.999% Accurate Localization Sensor

Case Studies

CLIENT

Attabotics

INDUSTRIES

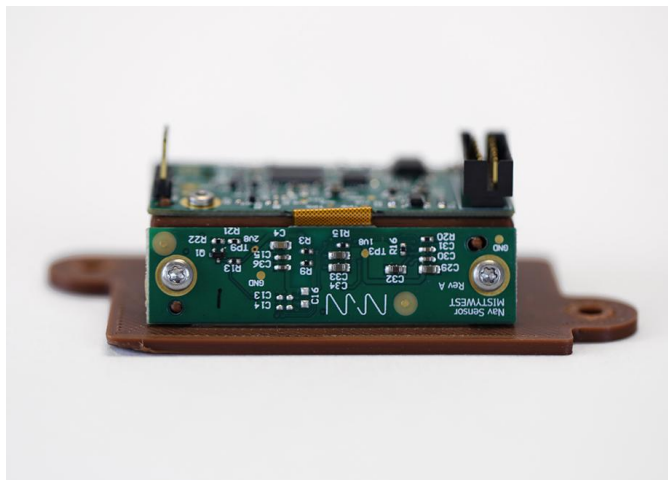
Smart Infrastructure
Shipping & Logistics

KEY SKILLS

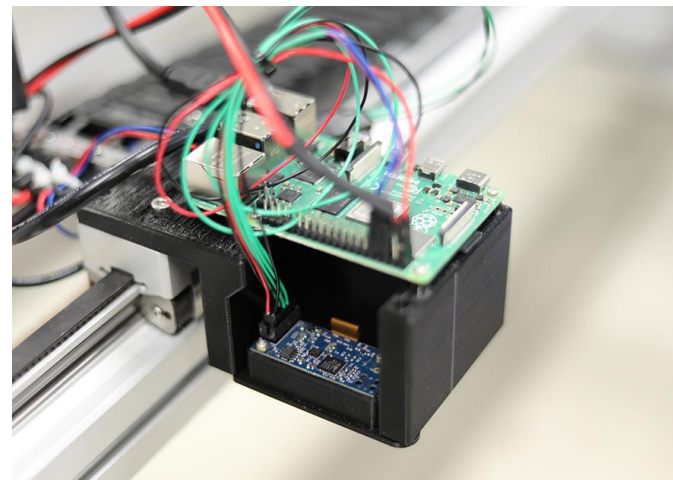
Optical Design
Data Science
Digital Signal Processing
DFM

LEARN MORE

Add link to blog posts or
other media (if applicable)



MistyWest designed and assembled 150 photometric sensor boards and shipped a total of 128 units, which integrated neatly with the Attabotics system and required minimal redesigns.



The project was completed within 9 months to meet certification and testing schedules; all amid global manufacturing and supply chain crises. The sensor suite is currently being A-B tested in real-world scenarios, with on-going support.

Novel BLE Beacon System Simulations

Case Studies

CLIENT

Confidential Client

INDUSTRIES

Smart Infrastructure
Shipping & Logistics

KEY SKILLS

Python
BLE
RF Engineering
Power Optimization



A leading innovation lab focused on solving global challenges tasked MistyWest with developing a novel BLE beacon system for inventory tracking to improve global supply chain management. MistyWest assessed feasibility with a power consumption simulation for battery optimization, prototyped an RF design, and developed firmware to evaluate BLE performance and refine algorithms.

The final Bluetooth beacons provide real-time inventory and location updates, reducing risk when shipping high-value items. By vetting ideas through cost-effective software simulations, MistyWest saved both time and money while ensuring the necessary investigations were completed in time for the silicon revision.

Sensor Suite for Hydradermabrasion Handpiece

Case Studies

CLIENT

Confidential Client

INDUSTRIES

Health & Wellness
MedTech

KEY SKILLS

Concept Generation
CAD & Prototyping
DFMA
User Testing



A leading medtech company approached MistyWest to research and develop a new facial hydradermabrasion handpiece with electronic control and a suite of sensors for data gathering and ensuring a seamless customer experience.

Through ideation sessions with client stakeholders and rapid prototyping, MistyWest engineered key components—including force and flow sensors, heat exchangers, and an NFC-based counterfeit detection system—enabling early user testing by estheticians. The resulting insights informed the client's IP portfolio and shaped future product development.

Data Collection Robot

Case Studies

CLIENT

Confidential Client

INDUSTRIES

Agriculture
Clean Tech

KEY SKILLS

RTK GPS
ROS
Sensor Development
High-Speed Image
Processing



The exploratory R&D division of a major US tech company is developing novel solutions for more scalable and sustainable food systems. They hired MistyWest to build an early-stage prototype and control interface for an agricultural data collection robot for monitoring soil health.

MistyWest delivered a functioning prototype on schedule that was used in initial field trials for data collection. Following successful deployment, additional internal funding was allocated, eventually resulting in the launch of a spin-out company around the data collection robot, with a mission to use data to cultivate sustainable agriculture.

Smart Toilet

Case Studies

CLIENT

Confidential Client

INDUSTRIES

Health & Wellness
MedTech

KEY SKILLS

RF Engineering
App Development
Ruggedization
Optical Design



A Menlo Park-based nonprofit research institute developed a smart toilet camera to support bowel-based health monitoring for seniors, aiming to reduce medical interventions. MistyWest conducted a feasibility assessment, designed, and manufactured the device, developing an AI-powered system to automate monitoring and detect anomalous health trends.

In just eight months, MistyWest delivered a self-contained, multi-sensor toilet insert capable of automated visual data collection. The client deployed 15 smart toilet cameras in senior care facilities, where they have been successfully operating for since 2019. These devices enhance residents' quality of life by helping doctors monitor medication and diet effects, enabling early detection of gastrointestinal issues and reducing medical intervention costs.

Polar Bear Tracking Device

Case Studies

CLIENT

World Wildlife Fund

INDUSTRIES

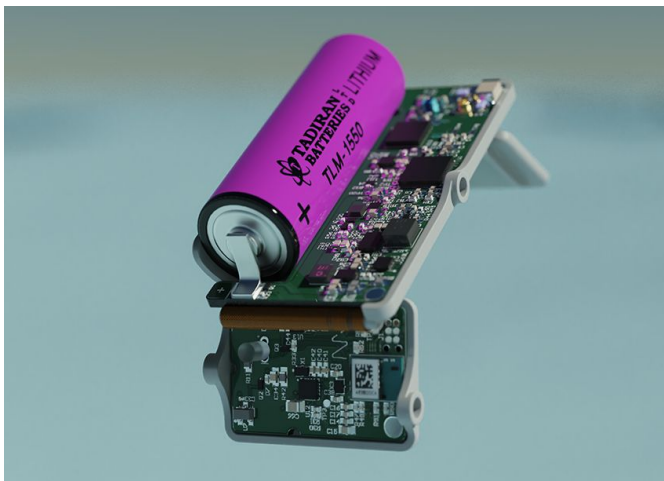
Clean Tech

KEY SKILLS

BLE
PCB Design
Custom Antenna Design
Power Optimization
Ruggedization

LEARN MORE

[Argos: Engineers and scientists collaborate to develop the first open-source Argos ear tag](#)



To help WWF track polar bear migration patterns impacted by climate change, MistyWest was asked to design a compact, ear-mounted device capable of transmitting location data via satellite. We developed a waterproof enclosure—capable of withstanding the harsh environment of the arctic—with a 6 month battery, custom RF front end, and intelligent firmware algorithm.



MistyWest is one of the first engineering teams to produce an Argos-based tracking device with such compact internal antenna.

Four units were sent to the Winnipeg Zoo for field trials, and US Fish and Wildlife Services conducted fit tests in captivity in Anchorage, Alaska. The results and open-source files of this project are available on [Github](#).

Indoor Positioning System Tracker Module

Case Studies

CLIENT

Guide Robotics

INDUSTRIES

Smart Infrastructure

KEY SKILLS

Thermal Design
Ruggedization
Power Electronics
Low-Volume Production
DFMA



Guide Robotics develops SLAM-based navigation and robot autonomy technology for optimizing industrial operations. MistyWest was asked to redesign a rugged, compact, thermally managed device for mounting to forklift overhead racks, while eliminating the 10% failure rate of their existing device's power converter.



MistyWest enabled Guide Robotics to procure critical systems otherwise inaccessible in Japan, ensuring successful deployment of the solution. The redesigned device supports a wider range of battery voltages, offering more flexibility across forklift platforms. By eliminating the 10% failure rate, MistyWest enhanced Guide Robotics' ability to deliver scalable, effective solutions, boosting customer satisfaction and strengthening their market position.

Wearable Sleep Monitoring Device

Case Studies

CLIENT

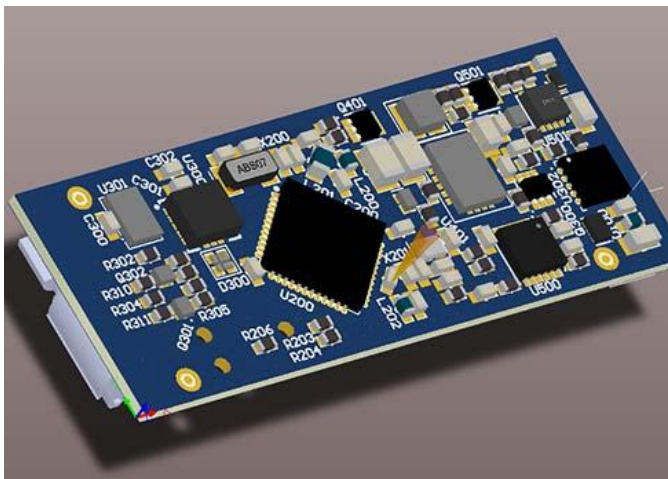
Fatigue Science

INDUSTRIES

Mining Tech
Health & Wellness

KEY SKILLS

Hardware Quality Assurance
Power Optimization
FCC Certification
Chip-Level Design



LEARN MORE

FS / Chicago Cubs
FS / Toronto Raptors

Fatigue Science, a Vancouver-based company providing predictive fatigue analytics for industrial workers and athletes using machine learning and continuous actigraphy, partnered with MistyWest to update the hardware and firmware for their Readi wristband. MistyWest delivered a chip-level redesign, and firmware optimization that extended battery life from 7 to 45 days—well beyond the client's 30-day goal.

Initially intended for a 5,000 unit run, MistyWest's successful design scaled to 25,000 units with no changes. The REDI wristband has since been adopted by top-tier organizations like the Chicago Cubs and Toronto Raptors during their championship seasons, and deployed across 20 mine sites globally—cementing its role as a gold standard for fatigue management in both sports and heavy industry.

Low Volume Production of Neural Earbuds

Case Studies

CLIENT

Confidential Client

INDUSTRIES

Health & Wearables

KEY SKILLS

Hardware Assembly

3D CAD Modelling

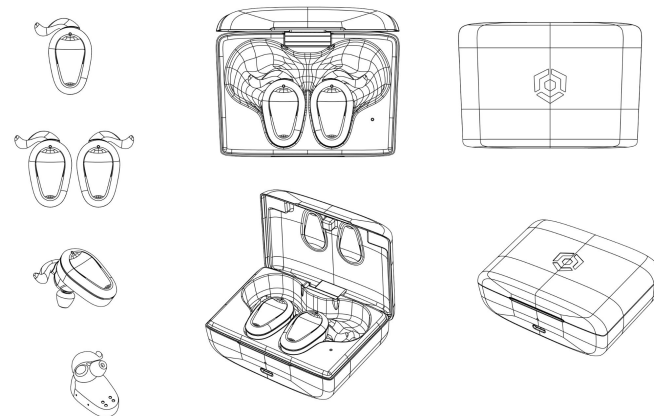
DFMA

Contract Manufacturer

Ramp Up



Our client is a startup developing hands-free, speechless control of electronic devices with neural earbuds who partnered with MistyWest as their transition team to take their prototype from engineer-based low-volume assembly to scalable high-volume production. Our team developed jigs to standardize hardware assembly, optimized the existing neural earbud design for ease of testing, and refined the product and packaging to achieve a consumer-grade finish.



Within a year, MistyWest enabled the full transition to volume manufacturing. The reduced time to market increased revenue and secured further funding for our client. The neural earbuds have been named one of Time's Best Inventions of the year and have received an Innovation Award at CES.

Handheld Sonar and Scanning Device

Case Studies

CLIENT

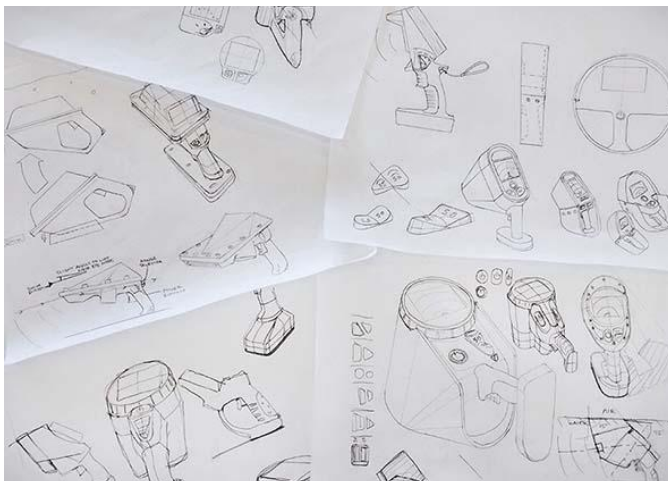
VodaSafe

INDUSTRIES

Health & Wellness

KEY SKILLS

UX/UI Design
Waterproofing
PCB Design & Integration
Sensor Integration
Power Optimization



VodaSafe is a BC startup dedicated to creating life-saving products that enhance public safety in aquatic activities. With core technology already proven, VodaSafe contracted MistyWest to develop a Minimum Viable Product (MVP) of a first-of-its-kind device named the AquaEye®: a handheld sweeping sonar technology intended to quickly scan underwater for drowning victims.



The prototypes from MistyWest were successfully demonstrated at a conference, resulting in VodaSafe securing additional pre-seed funding. In July 2020, VodaSafe raised an additional \$1.4M in seed financing to further expand the availability of AquaEye®. The device is now in use by Fire Rescue, Lifeguard, Law Enforcement and Search and Rescue teams for rescue or recovery missions.

Computer Vision Diagnostic Tool

Case Studies

CLIENT

Light AI

INDUSTRIES

Health & Wellness

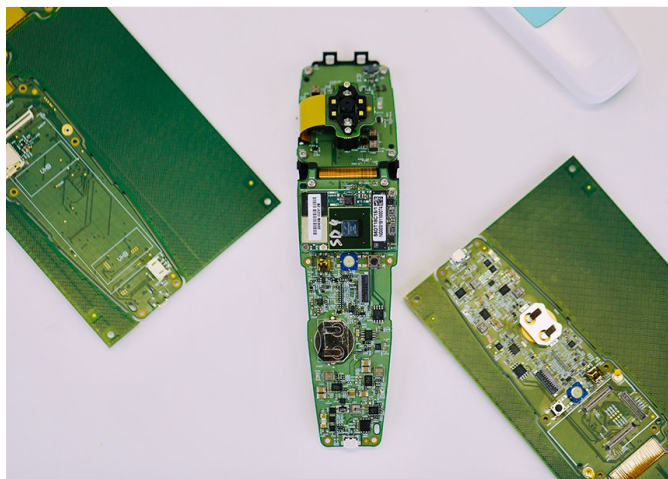
KEY SKILLS

Hardware Quality Assurance

Optical Design

Medical Device Redesign

IRB & Clinical Compliance



Light AI is an emerging Artificial Intelligence company with a novel solution to diagnosing streptococcal pharyngitis (strep throat) approached MistyWest with a pre-existing prototype of a handheld spectroscopic device. The device required a complete redesign, as it was deemed unsafe for clinical trials by the Internal Review Board (IRB) of key clinical partners, due to requiring direct patient contact.



MistyWest prepared a full documentation package for hospital IRB submission, and the updated spectroscopic device met the requirements for usability and deployment in a clinical setting, achieving a critical milestone for our client. Light AI ran successful clinical studies at UCLA involving hundreds of patients. They later raised \$5 million in funding from major venture partners, allowing them to further develop and improve the device for wider use.

Autonomous Vehicle Sensor Cleaning System

Case Studies

CLIENT

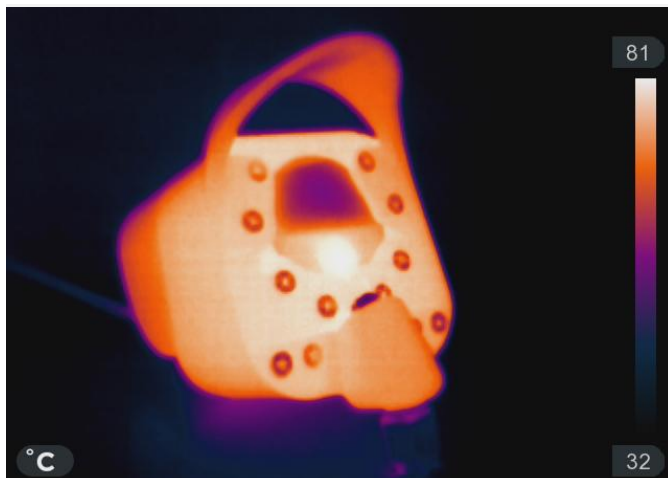
NuPort Robotics

INDUSTRIES

Smart Infrastructure
Shipping & Logistics

KEY SKILLS

Ruggedization
Design for Ingress Protection
Thermal Design
Rapid Prototyping



LEARN MORE

<https://www.nuport.ai/blog/through-rain-or-shine>

NuPort Robotics is developing an autonomous driving system for ground freight in collaboration with Canadian Tire. MistyWest enabled NuPort to demonstrate their core machine vision algorithm in real world on-truck pilot trials in a variety of weather conditions. The success of the pilot study allowed our client to secure critical funding and continue key strategic partnerships with Canadian Tire and Port of Prince Rupert.

Optical Particle and Environmental Sensing Platform

Case Studies

CLIENT

HAVEN

INDUSTRIES

Smart Infrastructure

KEY SKILLS

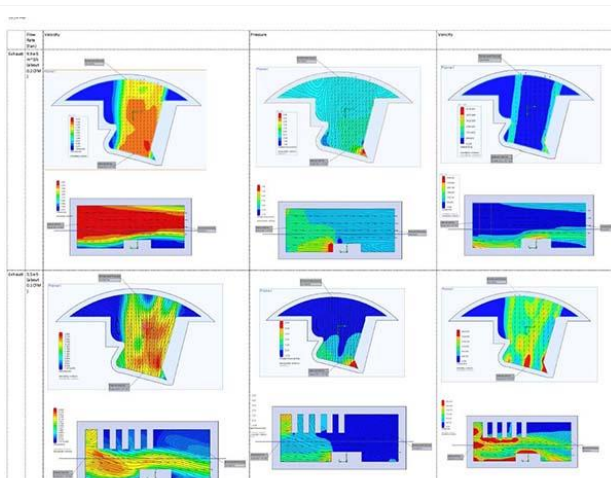
Optical Sensor Development

Low-Volume Production

DFMA

IP & Patent Development

Supply Chain Management



LEARN MORE

[Time: Best Inventions of 2015](#)
[TZOA in Altium](#)

MistyWest's novel optical particle counting technology matched the efficacy of a \$10K device in a \$100 device, and the designs were refined for volume manufacturing to fulfill HAVEN's successful IndieGoGo campaign.

Over a 5 year partnership, MistyWest leveraged HAVEN's technology into a new design that integrates with commercial HVAC systems, allowing the startup to pivot to B2B solutions.

MistyWest supported HAVEN as they grew their internal team to include electrical engineering staff and production support, and the startup is now a fully fledged company offering a central air quality monitoring system.

Thanks to high accuracy and reliability, HAVEN's smart systems have gathered support from academic and environmental research institutions, who are choosing the device over alternative particle sensor devices.

Supercritical CO2 Rock Pulverization Apparatus

Case Studies

CLIENT

Rockburst Technologies

INDUSTRIES

Mining

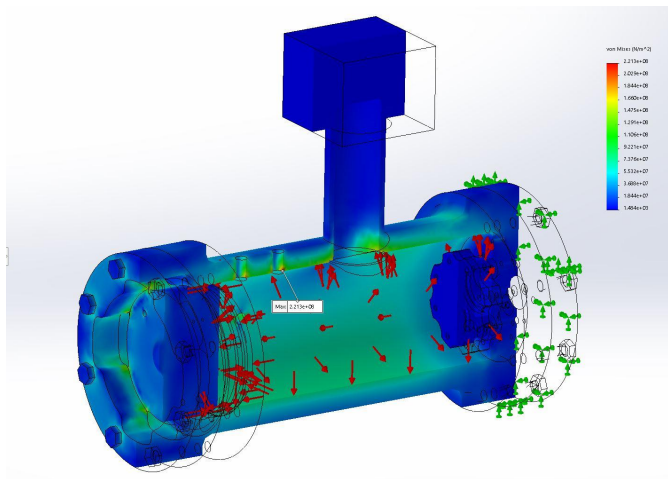
KEY SKILLS

Concept Generation

3D CAD Modelling

DFMA

Prototyping and Testing



Rockburst Technologies is working to significantly reduce comminution energy consumption through their patent-pending Transcritical CO2 Pulverization (tCO2) technology. They collaborated with MistyWest to design a 'one-shot' proof-of-concept apparatus with a 200ml pressure chamber, and successful tests led to the design of a novel thermodynamic cycle that was later built into a 3m tall experimental system.



After taking over the experimental operation of the system, Rockburst Technologies and [UBC Mining](#) were able to successfully and safely demonstrate ~50% energy reduction. The industrial apparatus continues to demonstrate the technology of pulverizing rock with transcritical CO₂, aiding Rockburst in securing investment for future development.

Prototype Horse Wearable for Temperature Measure

Case Studies

CLIENT

Confidential Client

INDUSTRIES

Health & Wearables
Sports & Fitness

KEY SKILLS

Bluetooth Integration
Electronics Design
User-Centered Design
Rapid Prototyping



MistyWest was asked to develop a wearable-boot prototype for a client using predictive analytics to monitor horse leg temperature, detect inflammation, and guide injury prevention, as their existing PoC proved unusable. We visited stables to measure horse legs and meet with end-users, and designed a flexible PCB to wrap around the leg and contact over 90% of the 184 sensors—a challenge due to size, mechanical loading, and contact requirements.

MistyWest also 3D printed test fixtures for rapid iteration and developed firmware to transmit temperature data via Bluetooth, optimizing battery life and simplifying user interaction. The prototypes will be showcased to attract funding and used in pilot studies before the full product launch, enabling the client to collect data for analytics and subscription services to inform further development.

Computer Vision Golf Swing Detection

Case Studies

CLIENT

Confidential Client

INDUSTRIES

Sports & Fitness

KEY SKILLS

Optical Design
Machine Learning
Cloud Infrastructure
App Integration
Aws Iot Core/Greengrass



MistyWest was engaged to develop a golf course-deployable computer vision prototype that would allow golfers to capture video and receive feedback on their swings, with key requirements to limit recordings to swing events, differentiate golfers in a group, and sync data to an iOS app.



Despite a global supply chain crisis, MistyWest delivered six field-deployable Proof-of-Concepts within seven months that were equipped with 8-hour battery life, live preview capabilities, and tripod mounting options. Features were refined through user interviews and research, and the system underwent field trials and investor demos which received positive feedback from trial users and validating its market potential.

Robotic Biologist

Case Studies

CLIENT

Confidential Client

INDUSTRIES

Health & Wellness
MedTech

KEY SKILLS

Concept Generation
3D CAD Modelling
DFMA
Prototyping & Testing



As part of the global health initiative of a Fortune 500 Company, MistyWest was tasked with developing a field-deployable live-insect trap featuring a stasis chamber to preserve viral DNA samples, designed to monitor and predict disease spread by analyzing viruses in the blood-meals of biting insects.

Using First-Principles analysis, MistyWest developed a novel CO₂-based system that enabled refrigeration, venturi-conveyor insect capture, pneumatic trap actuation, and dispersed insect lure. We engineered several subsystem prototypes before delivering two final integrated prototypes, exceeding expectations for insect capture efficacy.

IoT Connected Outdoor Signage

Case Studies

CLIENT

Amazon Fresh

INDUSTRIES

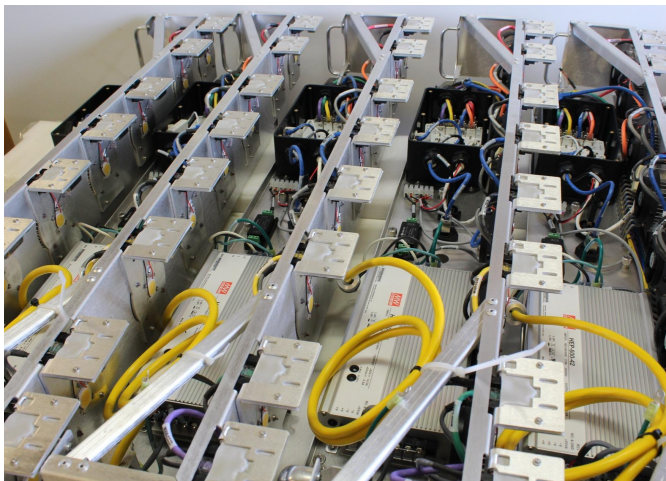
Smart Infrastructure

KEY SKILLS

FCC Certification

Miniaturization

Ruggedization



MistyWest was contracted to design custom outdoor LED signage for the flagship launch of Amazon Fresh shopping locations in the US, with requirements for units rugged enough to withstand fluctuations in outdoor temperature, weather and light conditions.



The project was successfully completed and shipped on schedule. Amazon Fresh was able to launch their grocery pickup services which included this connected signage at several locations in Seattle, WA in 2017

Lithium Wall Diagnostic Tests & Architecture

Case Studies

CLIENT

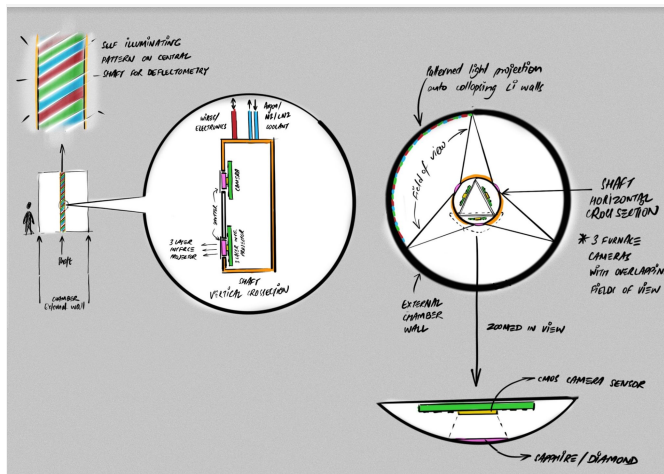
General Fusion

INDUSTRIES

Clean Tech

KEY SKILLS

Optics
Concept Generation
Brainstorming
Signal Processing



General Fusion is developing a novel approach to fusion energy and partnered with MistyWest to explore ways to measure the shape of a rapidly changing liquid lithium surface. After a collaborative ideation session, MistyWest proposed and researched four measurement concepts designed for high EMI and lithium compatibility, and created a scalable system architecture to capture analog signals in General Fusion's high-voltage, high-EMI test environment.



MistyWest's work with General Fusion is helping strengthen partnerships with BC-based tech companies, aligning with their strategy to create clusters that accelerate innovation in fusion and related technologies. General Fusion has since received approval to build a plant near the United Kingdom Atomic Energy Authority's (UKAEA) Culham Campus.

Hub Mounted Electric Bicycle Wheel

Case Studies

CLIENT

MIT University

INDUSTRIES

Smart Infrastructure
Sports & Fitness

KEY SKILLS

3D Modelling
Thermal System Design
Cost-Reduction Engineering
Material Sourcing
Remote Engineering Support



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[New York Times](#)
[Mashable](#)
[Digital Trends](#)

MIT's SENSEable City Lab initially developed a prototype for a next-generation rear bicycle wheel that converts pedal bikes into e-bikes. MistyWest was responsible for the sourcing, part creation and design of a more cost-effective and reliable prototype, whose final technology was exclusively licensed by its co-inventor Assaf Biderman for commercial sale. Biderman founded [SuperPedestrian](#) Inc. and launched the [Copenhagen Wheel](#) in 2017 to overwhelming success.

SuperPedestrian raised over \$6 million in venture funding and are considered the biggest-and-best-funded next-generation bike technology company. While the company stopped distributing the Copenhagen Wheel in 2020, it is still considered a next-level achievement in enabling transition to smarter cities and urban environments.

Smart Ski Grip

Case Studies

CLIENT

Proskida

INDUSTRIES

Sports & Fitness

KEY SKILLS

Hardware Design Support

Firmware Development

System Architecture

Bluetooth Optimization

Comprehensive System



Proskida developed the world's first power meter for cross-country skiing—designed to measure force, efficiency, and technique in real time. After encountering issues with their initial smart ski grip design, Proskida turned to MistyWest for firmware and electrical design support.




MistyWest delivered a scalable FreeRTOS-based architecture with custom sensor drivers, optimized system performance for field testing, and added on-device data storage. The team also supported hardware improvements, boosted Bluetooth data throughput, and conducted full-system testing—delivering a robust, high-performance solution ready for real-world use.


Let's build the physical
edge of the digital world.



mistywest.com

contact@mistywest.com

 [mistywestvr](#)

 [mistywest](#)

554 East 15th Ave
Vancouver, BC V5T2R5
Canada

