

# Industry Applications

BioNAV® APID Extreme Edge — Multi-Industry Particle Detection Solutions

## I. Clean Rooms & Laboratory Analysis

Deploy APID as a centralized analysis hub integrating multiple imaging technologies for comprehensive particle classification.

- Connect microscopes, IR, UV, laser, and specialized imaging systems as CV inputs
- Real-time contamination monitoring across filtration systems
- Train custom particle classes specific to cleanroom protocols
- Session reporting for compliance documentation and audit trails
- Integrate with existing LIMS and quality management systems

## II. HVAC — Residential & Commercial

Fastest go-to-market strategy: Equip field technicians with APID Extreme Edge units to create new revenue streams in maintenance programs.

- Analyze seasonal allergens, mold spores, and debris during routine filter replacements
- Deliver detailed particle reports to customers as value-added service
- Build historical data for predictive maintenance recommendations
- Enable OEM manufacturers to integrate APID into future product lines
- Differentiate service offerings with AI-powered environmental health insights

## III. Product Development & Stress Testing

Accelerate R&D cycles by integrating AI-powered debris detection into aerodynamic and environmental stress testing workflows.

- Monitor wind tunnel filters for product fragments and material degradation
- Configure alert notifications when specific debris types are detected
- Quantify QC metrics with automated particle counting and classification
- Reduce manual inspection time with real-time detection
- Document test results with comprehensive session reports

## IV. Field Science & Environmental Research

Extend laboratory capabilities to remote locations where traditional equipment is unavailable.

- Capture samples via mobile phones, portable microscopes, or handheld air filters
- Train new particle classifications on-site for immediate team-wide detection
- Low-power operation compatible with solar/battery in remote deployments
- Satellite link ready for transmitting discoveries or receiving updated datasets
- Preserve all captured data for formal laboratory classification

## V. Automotive & Transportation

Analyze cabin air filters, engine intake systems, and environmental contamination for fleet management and R&D applications.

- Identify debris patterns affecting cabin air quality across vehicle fleets
- Support filter performance testing with quantified particle detection
- Integrate with Keyence and other industrial vision systems via GigE/file upload
- Train custom models for OEM-specific contamination classifications
- Generate compliance documentation for environmental health standards

*\* If your organization does not have computer vision specifications defined, contact BioNAV for referrals to qualified consultants and systems integrators who can recommend the right imaging technology for your application. [www.bionav.com](http://www.bionav.com)*