NSWCDD Fixed Facility Collective Protection Efforts

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Agenda

- Capabilities
- History
- Technical Statistics
- Filtration System
- Program Evolution
- Lessons Learned
- Summary

Capabilities

- Project Management and Engineering
- Modeling and Analysis
- System Design
- Procurement Management
- System Installation, Certification and Operational Testing
- Commissioning Support
- System Life Cycle Support

History

- 1999: Overseas retro-fit installation, Naval Support Activity (NSA) Bahrain
- 2001-Present: Technical support and project management for other DoD organizations
- 2002-Present: Overseas new construction project, Air Combat Command
- 2002: ColPro site surveys, NSA Bahrain and NAVSUPPFACDG
- 2003: Memorandum of Agreement formalized between NSWCDD and other DoD Organizations.

Technical Statistics

- Total systems = 18
- Smallest system = 800 CFM
- Largest system = 31,200 CFM
- Smallest zone = 550 sq-ft
- Largest zone = 252,000 sq-ft
- Lowest CFM per sq-ft = 0.21
- Highest CFM per sq-ft = 2.50
- Operational overpressure = 0.05 – 0.15” w.g.

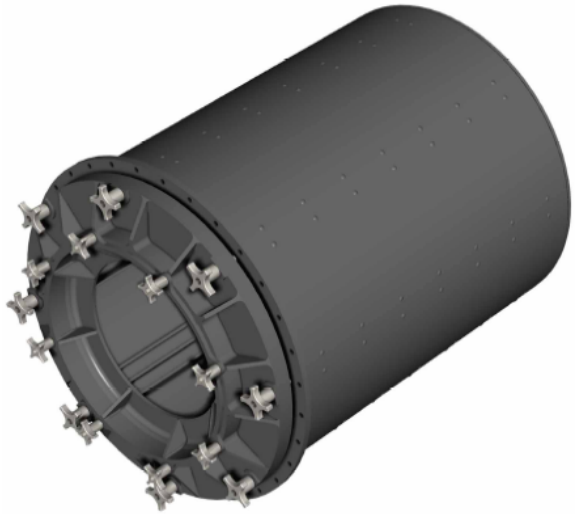
Filtration System

M98
(200 CFM)

Carbon Adsorber

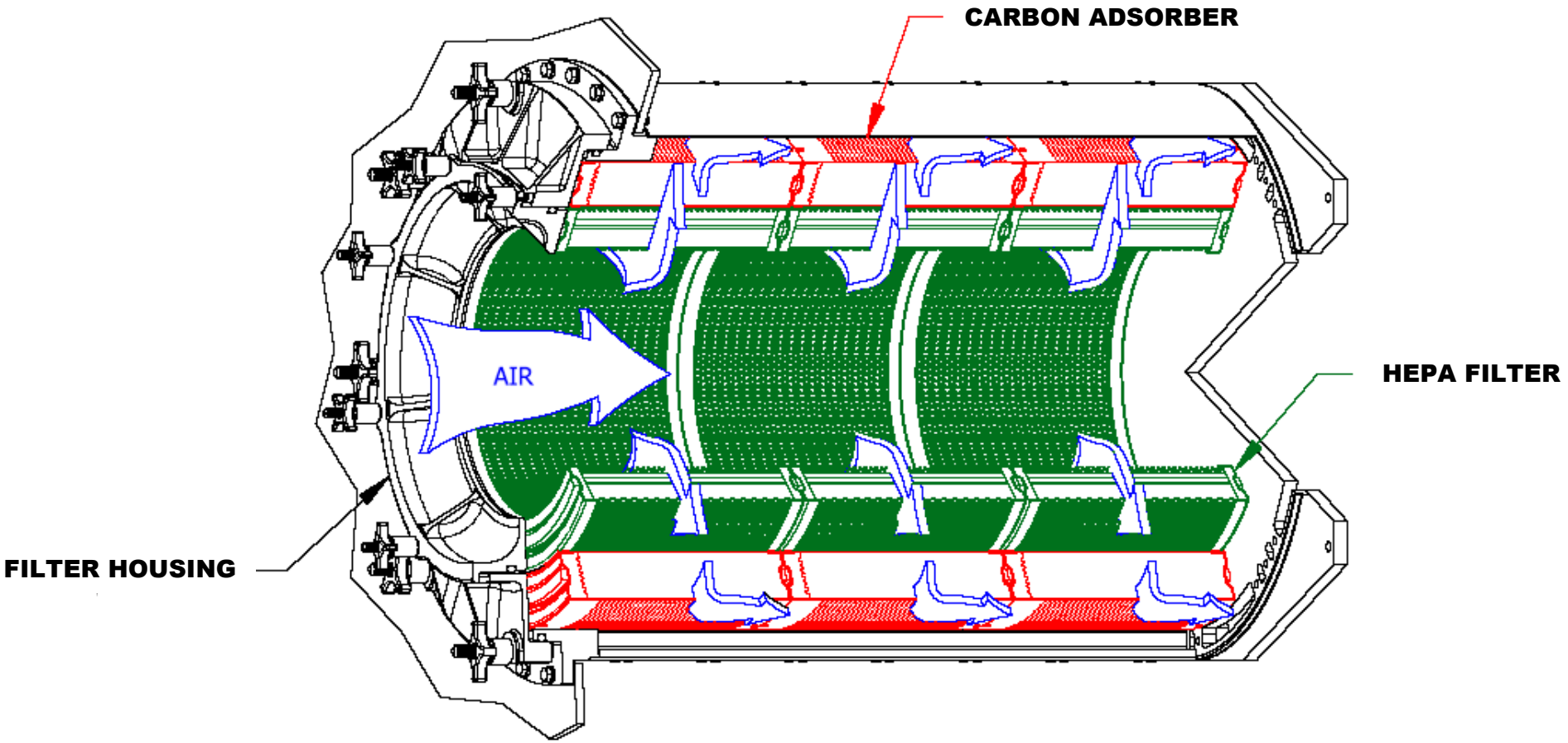
HEPA Filter

Bag Prefilter



U.S. Navy Standard Filter Housing
(400, 600, 800, & 1000 CFM)

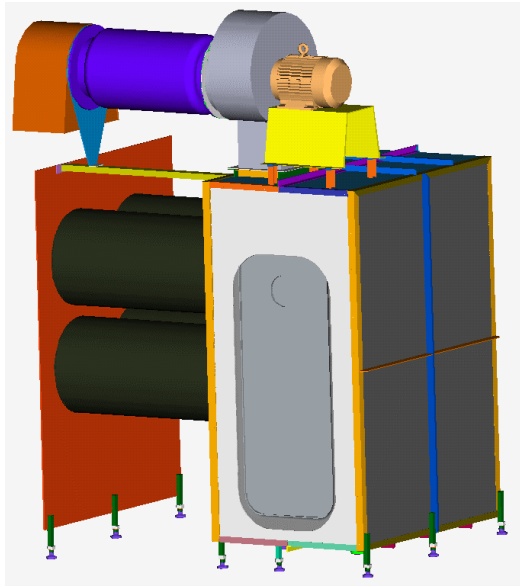
Filtration System

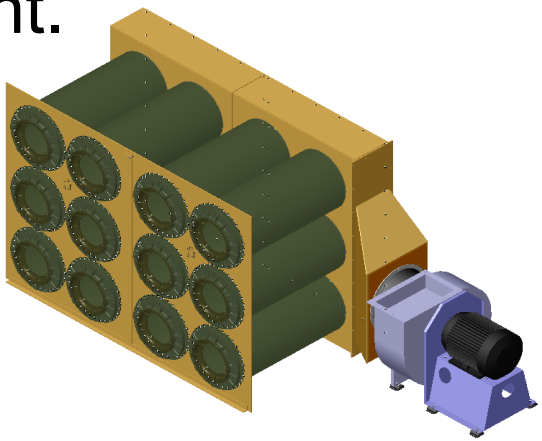


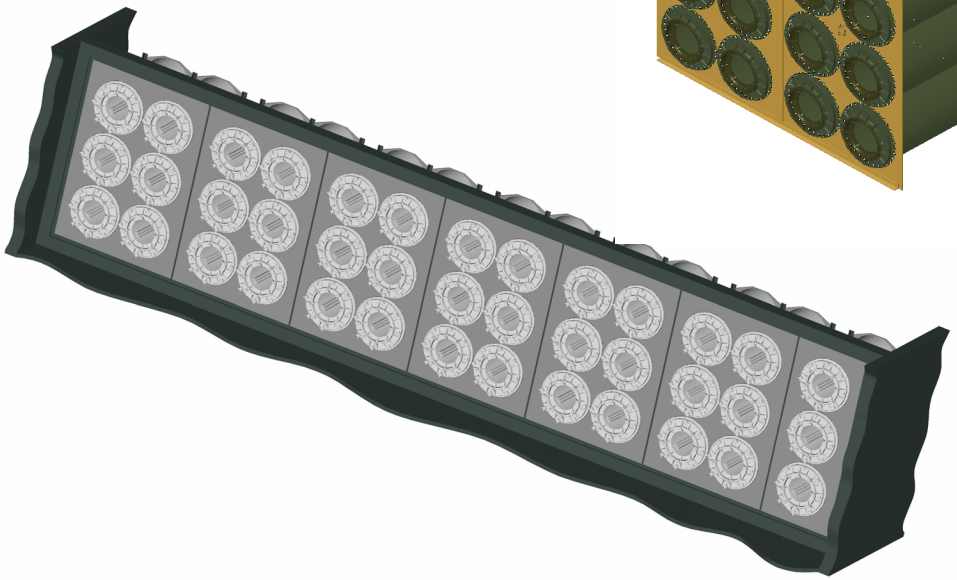
U.S. NAVY STANDARD FILTER HOUSING

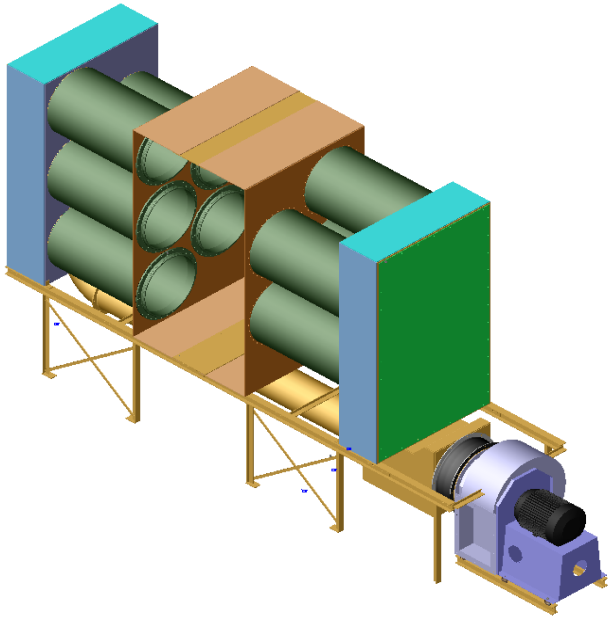
Filtration System

The modularity of the Navy Standard Filter Housing allows for tremendous design flexibility both in capacity and equipment footprint.



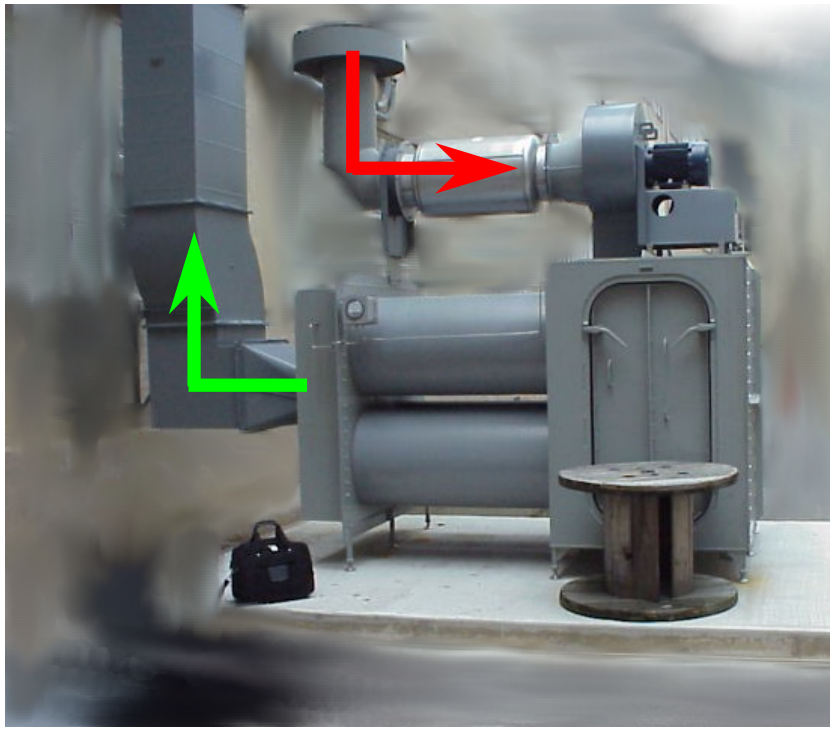






Program Evolution

- Early retrofit systems
  - ColPro system added to upstream side of AHU
  - Zone HVAC isolated
  - Boundary sealed
  - Vestibule(s) constructed

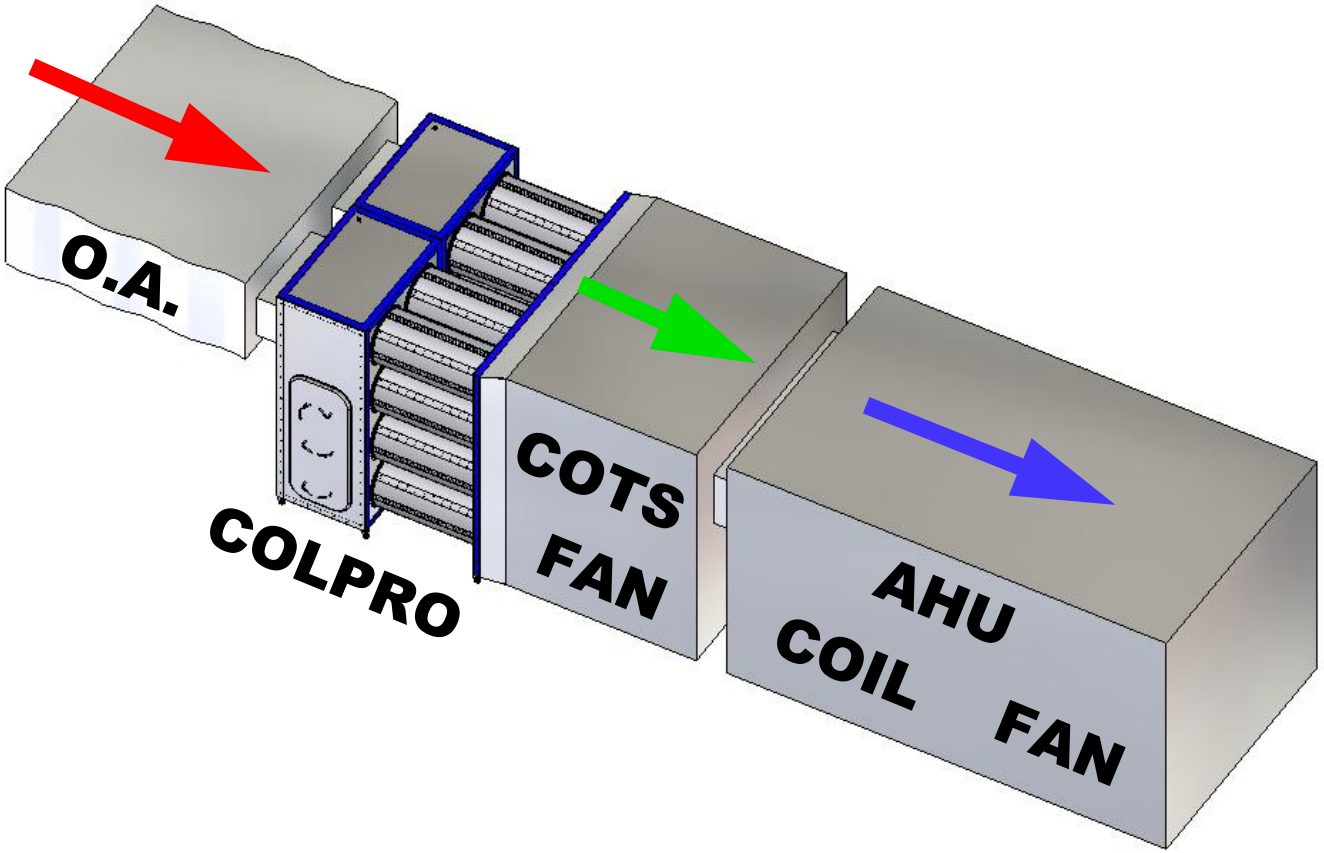


Program Evolution

- New Construction
  - ColPro systems are installed in conjunction with building construction and fully integrated with the air handling unit design.
  - Boundary is sealed and vestibules constructed during building construction.
  - Commercial fan sections used for lower noise and simpler maintenance.

Program Evolution

- New Construction = Integrated HVAC design



Program Evolution

- System Operation and Maintenance Manual provided upon project completion.
- Building Maintenance Organization is responsible for routine system maintenance and pre-filter change-outs.
- NSWCDD performs regular inspections and CBR filter change-outs.

Lessons Learned

- Agree to a requirements document prior to design and construction.
- Review sequence of operations and controls diagrams.
- Review HVAC design for system optimization.
- Design systems for optimal maintainability.
- Seek input and involvement from all stakeholders.

Standards

- ColPro design criteria – UFC 4-024-01
- CBR Filters – MIL-PRF 51525b, 51526b
- Certification – ASME N510
- Pressurization testing – ASTM E779
- OA Requirements – ASHRAE 62.1-2004

Summary

- Involved with facility installations since 1999.
- Support includes project planning and management, life-cycle support, and CBR consultation.
- Close coordination with the Facility Construction Programs and Building Management to fully integrate ColPro systems.
- Utilize DoD and industry standards.