

Aerospace Company

Moveable Coating Booth with Advanced Recirculating Exhaust System for Hexavalent Chromium & High-Hazard Coatings

Sector: Aerospace

Project Overview

Duroair was approached by an aerospace company for a highly specialized and completely custom coating application inside a treated-air manufacturing space. The project involved a moveable coating booth designed to traverse the full length of a large tank, applying coatings in four sequential spray stages. The coatings contained hexavalent chromium, isocyanates, and VOCs. Because the facility's manufacturing space utilized treated air, venting to the exterior was not an option requiring a fully recirculating, non-vented solution. They selected Duroair based on a long history of collaborative projects and Duroair's patented recirculating air filtration technology, capable of returning clean, compliant air back into controlled environments.

The Challenge

- Design a moveable, rail-mounted coating booth (40'H x 40'W x 30'L) that traverses the full length of a large tank
- Apply coatings containing hexavalent chromium, isocyanates, and VOCs within a treated-air space where exterior venting was not permitted
- Support four sequential spray stages as the enclosure traverses the tank
- Precisely control airflow to maintain LEL (Lower Explosion Limit) below 10% throughout operation
- Minimize overspray and capture all hazardous contaminants before safely recirculating clean air back into the facility

The Solution

Duroair engineered a fully custom, rail-mounted containment and exhaust system designed specifically for this high-hazard application.

System Specifications

| | |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Enclosure | 40'H x 40'W x 30'L DuroRoom™ Moveable Coating Booth on removable rails |
| Filtration Units | 4 × 25,000 CFM DuroPure™ units, each operating at 18,000 CFM |
| Filtration Stages | Enhanced multi-stage: additional carbon layer, ozone treatment stage, final particulate to NESHAP 319 |
| Airflow Design | Clean air enters via roof membrane; filtered air discharged along both side walls; mesh curtains on ceiling and sidewalls for even distribution |
| Application | Aerospace coatings, hexavalent chromium, isocyanates, and VOCs; four-stage sequential spray process |
| Design | Recirculating, non-vented; removable rails allow extension and traversal along tank length; bifold doors and custom front/rear walls fully encircle tank during coating |

The Result

- ✓ **Safe recirculation** within a treated-air manufacturing space and no exterior venting required
- ✓ **Hazardous contaminant capture** compliant with NESHAP 319 standards for hexavalent chromium, isocyanates, and VOCs
- ✓ **LEL maintained** below 10% throughout all four spray stages
- ✓ **Uniform airflow** minimized overspray via mesh curtains on ceiling and sidewalls
- ✓ **Flexible mobile containment** enabled full-length tank coating with a rail-mounted traversing booth

Why This Project Matters

This installation demonstrates Duroair's ability to:

- Engineer complex, high-risk recirculating systems for aerospace environments where traditional vented solutions are not feasible
- Deliver fully custom rail-mounted, traversing containment for large and unconventionally shaped workpieces
- Achieve NESHAP 319 compliance in recirculating applications through enhanced multi-stage filtration with additional carbon and ozone treatment
- Control explosion risk (LEL <10%) while managing hexavalent chromium, isocyanate, and VOC exposure in a shared high bay environment