

CASE STUDY



Housekeeping Upgrades to Handle Combustible Wood Dust

Customer Overview

Matthews International is comprised of two business segments, Industrial Technologies and Memorialization. They are located in Pittsburgh, PA, and provides products, business solutions, technology services to customers that include cemeteries, funeral homes, monument dealers, and sign shops across the United States and in other countries around the world. Memorialization is a market leader, holding the number one or two positions across all its industries.

SERVICES PROVIDED: Engineering, Design & Installation

METHODS & TOOLS: Patented PLĒCO HEPA Vacuum System



Old system of housekeeping.

Project Overview

Matthews International, a global manufacturer known for its high-quality, ornate wooden caskets, operates a large-scale wood production facility where nearly every component is crafted in-house. The production process, while precise and efficient, generates significant quantities of ultra-fine wood dust. To maintain safe working conditions and adhere to both OSHA regulations and internal cleanliness standards, Matthews initially relied on a basic housekeeping system. However, as production volume increased, it became clear that the existing system was not adequate to control the growing dust hazard.

Recognizing the need for a more effective solution, Matthews International turned to Air Dynamics Industrial Systems Corporation for their engineering expertise and proven track record. Air Dynamics proposed and installed a tailored system featuring the patented PLĒCO Portable Industrial HEPA Vacuum—offering Matthews a cleaner, safer environment at a fraction of the anticipated cost. What began as a single-unit trial quickly expanded to three full PLĒCO systems after the initial success.



Example of tubing drops.

The Challenge

The facility's four active production lines were creating multiple truckloads of wood dust daily. Traditional methods—blowing dust with compressed air and using shop vacuums—were not only inefficient but also unsafe. Fine dust was accumulating on elevated surfaces and equipment, increasing the risk of fire and posing a serious health hazard. In fact, one shop vacuum overheated and caught fire due to clogging. Matthews sought a heavy-duty, code-compliant solution that could keep up with their continuous, dust-intensive operations. Initial quotes for central vacuum systems were prohibitively expensive and failed to provide the flexibility Matthews required.

The Solution

Air Dynamics recommended the PLÉCO 22 Portable Industrial HEPA Vacuum System, selected for its ability to deliver high-volume suction with exceptional filtration—99.97% efficiency at 0.3 microns—ideal for combustible wood dust. The system featured an 11.5 HP regenerative blower and a custom Drum Top Cyclonic Separator mounted on a 55-gallon vacuum-rated drum. The separator was specifically designed to match Matthews' dust profile and was NFPA 654 compliant.



Wood dust covers the support structure beams.

The PLÉCO system was connected using Camlock fittings for quick disassembly and maintenance. Flexible 3" hoses connected the system to a metal tubing network that interfaced with hand sanders and vacuum tools across multiple workstations. Utility vacuum outlets were installed adjacent to each sanding station, allowing direct dust extraction at the source. Each workstation was supplied with a six-piece industrial tool kit and 25 feet of 1½" vacuum hose for extended reach.

Performance testing showed that a single PLÉCO unit could support up to six workstations simultaneously. Following the success of the initial installation, Matthews purchased two additional systems, expanding their dust control capabilities without the cost or complexity of a full central vacuum system.

The Results

The implementation of the PLÉCO 22 system significantly improved workplace safety, operational efficiency, and compliance. Key outcomes included:

- Fire hazard elimination, with submicron dust effectively captured before it could accumulate in ducts or on surfaces
- Dramatically improved air quality, reducing airborne particles and creating a healthier environment for workers
- Maintenance savings, as the high-efficiency separation system prevented clogs and reduced cleaning downtime
- Cost reduction, with Matthews saving approximately 70% compared to initial quotes for a central vacuum system
- Operational scalability, allowing simultaneous use across multiple workstations with minimal disruption

These results reinforced the decision to expand the system footprint within the facility and confirmed the PLÉCO as a long-term solution.

Conclusion

Matthews International overcame a significant wood dust challenge with the help of Air Dynamics' engineering expertise and the PLÉCO HEPA Vacuum System. The solution delivered safer, cleaner, and more efficient operations—at a fraction of the expected cost.



PLÉCO 22 with Top Hat Attachment.