

Eight Tips for Planning and Executing Dust Collection Projects



The implementation of a dust collection system offers many benefits to a production facility including increased manufacturing effectiveness and a generally cleaner and safer work environment for employees. Given the positive impacts a quality dust collection system affords, it would be nice if its installation could go smoothly so the system can start delivering those benefits quickly.

Once the budget has been submitted and capital has been approved, there are a few key things to consider to increase the chances of the project going smoothly. Consider the following eight tips to help ensure your project does just that with the right equipment delivered, installed, and started-up on time.

1. Ensure project requirements have not changed since the budget was submitted.

In many cases, the budget that was originally submitted may no longer reflect the current project requirements. Scope changes along the way—including even small changes—can affect system performance in very big ways. For example: A minor change in the location of the dust collector may require changes in duct layout. This means duct system calculations need to be checked to ensure the fan selection will still be sufficient. Other changes could include: increases or decreases in system air volume requirements due to added or shifted production layouts on the floor.

In today's markets, plants often adjust processes or they change the materials they work with, or their production rates shift. Each of these events changes the amount of dust the collection systems have to handle. In addition, reviews of the potential hazards for materials being collected are critical. Many materials may require considerations on collector location or possible hazard mitigation strategies, and these are often easier to address before you order equipment. Materials you collect may also require process monitoring devices or material handling system features, which must be added to the collector. These changes may also require adjustments in the utilities provided to the collection system.

No matter how insignificant the change(s) might seem at the surface, invite a knowledgeable dust collector supplier in to review your project requirements before you write a purchase order. The supplier can help confirm the dust collection equipment originally selected fits the current project needs and scope. If the original collection equipment cannot meet the current needs, the supplier can help explore options to meet the revised requirements.

2. Ensure your company has standard component requirements established.

Standard components include anything from motors and gearboxes, rotary airlock valves, or electrical items such as motor starters and PLCs. If your company has standardized on a set of components based on your prior successes with them, be sure to let the dust collection system provider know. Incorporating your established components into a new dust collection system makes it easier for your personnel to perform maintenance on items and increase their confidence in the total system.

3. Consider involving resources beyond a design/build contractor or engineering company in the project.

Design/build contractors or engineering firms sometimes provide layouts for space without taking into consideration key industrial ventilation engineering principles and practices. As an example, the influence of inlet and outlet duct requirements on the performance of dust collection equipment is well understood by quality dust collector suppliers, but may not be evident to the engineering firm. To ensure overall system performance, include a knowledgeable dust collector supplier along with the contractor or engineering firm in a thorough review of your project drawings. The dust collector supplier should be able to make recommendations on good industrial ventilation practices based on their experience with dust collection systems. Beyond just

how the ducts are connected to their collector, a good collector supplier may be able to offer recommendations on subtle adjustments in ducts or hood design, which could improve overall system performance. And those types of recommendations represent changes that are much less expensive on paper than trying to optimize the system once it is all already installed.

Never forget that good inlet and outlet duct designs will improve long-term collector filter performance by increasing filter life and reducing filter maintenance requirements.

4. Host a kick off meeting and ensure all parties are involved.

To ensure all stakeholders are involved and understand the scope of the project, invite everyone to a pre-installation meeting. Inclusion of plant management and production and/or maintenance staff allows them to voice their concerns before they have to live with the disruptions an installation could have on their facility. This step can often reduce or eliminate some downtime. The engineering company overseeing the project and the outside contractors and equipment providers, including the dust collector expert, should attend to ensure effective communication between parties throughout the project.

5. If the equipment is custom or configured, have the manufacturer preassemble sections at their factory.

If your dust collection project includes special order equipment with custom items, ask the manufacturer when you place the order to pre-assemble key sub-sections at their factory to ensure fit. Having a factory pre-assemble parts of the equipment can eliminate many assembly concerns once the equipment is in the field, allowing you a smoother installation. Some of the challenges of fit can be reduced if you work with manufacturers that build their products in-house rather than through subcontractors.

6. Have a factory representative for equipment on-site during installation.

Make sure to schedule representatives from each of the equipment suppliers on-site when their products are in assembly and installation. As an example, a qualified dust collector representative can quickly eliminate confusion by clarifying collector assembly drawings or assembly instructions, and they can then interface with plant staff if any detail interpretations

are required, such as the identification of parts for proper location. They can also answer questions on how to simplify installation.

7. Consider ordering spare parts for use during installation.

Most contractors take great care when installing collection systems, however, the risk of components getting bumped, ripped or torn during installation is a reality. Some items can be reworked on-site, but there may be some items that need to be replaced, and a purchased part such as an explosion vents or filter may not be in stock. Standard items usually are and can be shipped to the site quickly, but special items may have long lead times for replacement, and it might be best to order spares up-front to reduce the risk of project delays.

8. Make sure suppliers of equipment provide both start-up assistance and product training.

Once all of the mechanical and electrical equipment has been installed and contractors are in the final phases of proving or commissioning equipment, schedule the dust collector expert back in for additional start-up and commissioning assistance too. Having this resource on-site ensures the collector start-up process includes support for troubleshooting. Once the system is operating, the experts can inspect the system, measure airflows and verify static pressure, often adjusting the system to ensure design airflow parameters are matched. They can also check the overall operation of the filter cleaning system and, once the dust collector is successfully running, the collector expert can offer operator and maintenance training to plant staff.

Dust collection systems require close integration into production processes and often require modifications to production equipment, rerouting of plant services such as power and compressed air, and, of course, the installation of new capital equipment. The potential for delays and challenges from even moderate-sized projects can be enormous, but proactive planning and the tips above can help you reduce or eliminate many of the delays and challenges associated with installing a dust collection system in your facility. Your investment on the front-end of any project helps ensure its ultimate success.