

Ambient Air Collection System Yields Healthy Work Environment

Cherubini Metal Works fabricates large structural steel assemblies for bridges and buildings. Over the years, Cherubini has supplied hundreds of thousands of tons of cut, shaped, welded and pre-assembled steel into a variety of standard and custom designs. Cherubini's newest fabrication facility in Eastern Passage, Nova Scotia measures 56,000 square feet and is located alongside a wharf.



Focus:

Cherubini Metal Works

Challenge:

Design a large facility capture system with no exhaust air

Solution:

Multiple SmogHog® SG-4S units

Impact:

- Avoided large winter heating bills
- Reduced exhaust make-up air by up to 80%
- Minimized maintenance on collection equipment
- All local health/safety requirements met

Challenge

Depending on workload requirements, 15 to 20 welders can be welding at the same time in Cherubini's large open workspace. The resulting weld smoke and fumes can harmfully affect the plant environment unless they are successfully captured and clean air is maintained.

Typically, source capture systems do the best job of capturing weld fume contaminants with the least amount of air volume requirement or CFM. Source capture systems include fume collection hoods, ducting, an air cleaning device and air moving devices (fans). But in a large, open facility like Cherubini's, with overhead cranes and large fabricated structural pieces, a source capture system was impractical.

Cherubini also determined a need to re-circulate filtered air since outside temperatures during the winter can range from -4° to -22°F (-20 to -30°C). Pulling in outside replacement air and heating it would result in high energy costs.

Solution

Many metalworking operations face similar challenges of collecting dusts, fumes, oil smoke or coolant mists from an open-air work environment. Typically, there are two ambient air collection options.

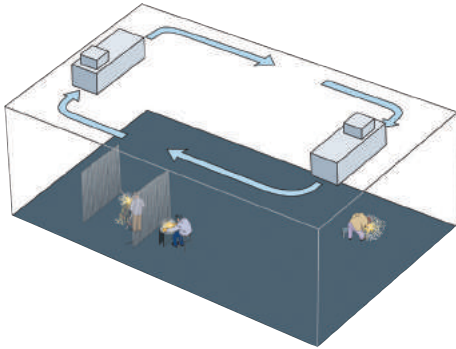
One is to utilize a large central air change within the facility. This would be a large collection system that would pull air out of the area, force it through a reverse pulse-jet cartridge dust collector, and then re-circulate the air back into the facility.

The second is use of multiple smaller units, such as electrostatic precipitators (ESPs), mounted above the plant floor to move air in a predetermined pattern. This allows workers unrestricted movement.

Re-circulating air through the Cherubini facility, as opposed to exhausting it outside, provided a healthy work environment while saving the company energy costs.

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Based on the recommendation of the Parker distributor, Cherubini chose to install 10 SmogHog SG-4S mist/fume collection units with automated in-place cleaning.



Cherubini's multiple welder facility called for unrestricted clean air systems.

SmogHog are ESPs, which are highly efficient, heavy-duty air cleaning devices that remove smoke, fumes, dusts and coolant mist from the air stream to achieve clean air standards when a source capture system is not an option. In unducted applications, such as the Cherubini facility, multiple units are used to circulate the air from unit to unit in a circular racetrack configuration.



SmogHog systems are arranged in a racetrack configuration.

ESPs work by electronically charging both large and microscopic contaminants, then capturing the impurities like a magnet in collection cells. Operating continuously, ESP units draw fumes, dust and other airborne contaminants from the workspace into a unicell, and then re-circulates clean air back into the plant.

Impact

Renato Gasperetto, vice president of Cherubini Metal Works Ltd., finds the SmogHog units to be a reliable, cost-effective solution for all of their plant facilities. "I continue to purchase SmogHog electrostatic precipitators," Gasperetto noted, "because they are effective and I am informed that they meet all local air quality and occupational health and safety requirements. And, because building heat is too expensive to waste."

Cherubini's SmogHog systems not only re-circulate clean air throughout the facility, they also reduce exhaust make-up requirements by up to 80%. The air is recycled into the workspace, saving the company thousands of dollars a year in heating cost during the cold winter months. Maintenance is also minimal. In Cherubini's case, the 10 SmogHog SG-4S units are cleaned via an automatic wash system, depending on weld work volume.

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*- Renato Gasperetto, vice president,
Cherubini Metal Works Ltd.*