



Strobic Air Corporation

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Borden's "Good Neighbor" Approach Eliminates Odor Problems in the Neighborhood and the Tea House

By combining two methods of odor control, electrostatic precipitation and dilution, Borden Decorative Products, a division of Borden, Inc., of Crestwood, MO, solved a persistent odor emission problem.

Borden is a rotogravure printing firm that produces decorative surfaces for home and recreational vehicle floors, walls, kitchen cabinets and furniture. Borden also extrudes PVC films for print stock used in its printing processes, and plastic films for many specialty products.

The Borden facility is located within an industrial park situated in a residential area in Crestwood, MO, a suburb of St. Louis. It is adjacent to an historic home site and city operated tea house restaurant. Borden management became concerned when they received occasional odor complaints from nearby residents and site visitors.

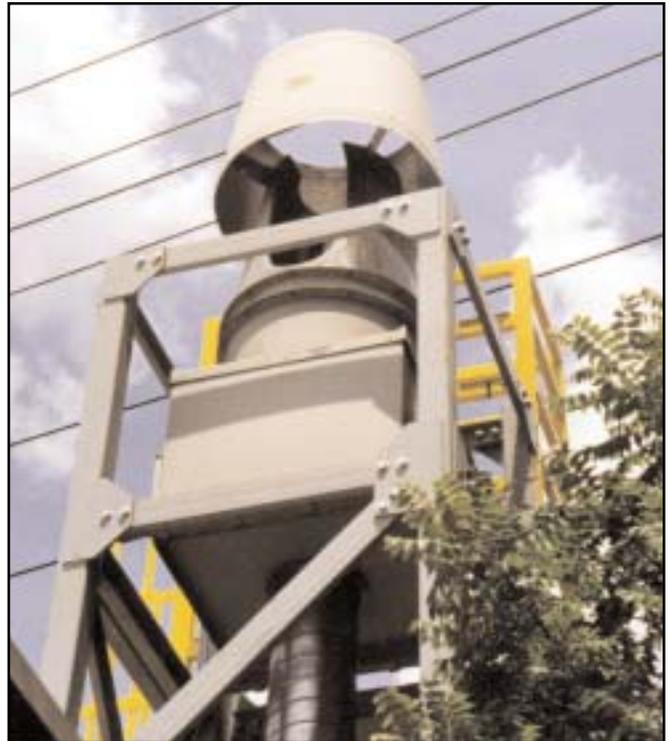
Previous odor control alternatives

The company has always been considered a "good neighbor," and had been using electrostatic precipitators (called Smog-Hogs) on their extrusion lines to eliminate odiferous emissions from its plant. The electrostatic precipitators were mounted between the exhaust hoods and outside exhaust stacks. Each Smog-Hog contained pre-filters, electrostatic precipitator cells, a belt-driven furnace-type blower, and a charcoal filter section served by an inlet and outlet plenum.

Phillip J. Bergmann III is one of two project engineers at Borden with total project management responsibilities that include installation of equipment such as printing presses, extrusion lines, converting, embossing, and graphics equipment, plant utilities equipment and projects involving building modifications or expansions. He and his staff are involved in virtually all phases of the mechanical, electrical, control, drive, hydraulic, pneumatic, steam, and HVAC systems at the facility.

Bergmann worked with environmental consultants who determined that two problems existed with Borden's odor exhaust system. He said they learned that the odor problem was caused by two extrusion lines and individual exhaust stacks nearest the residential and restaurant site. The consultants' report said that "odiferous mercaptans in the effluent were penetrating the charcoal filters in the precipitators."

Even though there was no reentrainment of odors back into the plant, Bergmann noted that "in addition, extrusion



exhaust fumes were not exiting the stack at sufficient height or velocity to overcome changes in wind direction due to local weather effects. This caused the fumes to blow toward our neighbors, and prompted their complaints."

Consideration of a solution

Bergmann pointed out that while Borden management did not want to lose the exhaust cleaning advantage of the Smog-Hogs, they needed a more effective means of diluting and dispersing the odiferous effluent away from the residential area and the Tea House, of course. Noise pollution was another critical issue since "we needed city government approval regarding this, and did not want to replace an odor problem with a noise problem," Bergmann added.

In seeking a solution, Bergmann learned about a unique method of solving Borden's odor problem. He was shown a Strobic Air Tri-Stack roof exhaust system by a representative who believed it could solve Borden's odor emission problem and operate quietly well below existing noise standards.

Bergmann added that “we did noise studies beforehand, and Strobic Air sent us a video tape that demonstrated how quiet its Tri-Stack system was during operation.”

For further investigation, Bergmann and a local environmental committee member also went to an Alcan Aluminum plant, where two Tri-Stack systems were exhausting fumes from 11 research and development laboratory fume hoods. He said “we became very confident about the Tri-Stacks, because there were no start up noises, and we liked the system construction.” He recommended the Tri-Stack system for Borden, because “we felt the Tri-Stacks could dilute and disperse the extrusion line odors away from our neighbors’ air space.” He was impressed that Tri-Stacks consistently provide effective plume dispersion with stacks 60% lower than found in other exhaust systems.

City approves the installation

By connecting the Tri-Stacks to the existing Smog-Hogs, Borden would retain elements of the original system with only minor modifications. With this combination, Bergmann was certain Borden would be able to eliminate its odor problems.

Before Borden management could remove the faulty blowers and connect the Tri-Stacks into the Smog-Hog stacks, they needed the approval of the Air Quality Control Section for St. Louis County, to “modify permitted control equipment.” The agency was “eager to make improvements in the system and eliminate the odor problem, so they agreed to the Tri-Stack installation on a conditional basis,” Bergmann added.

Bergmann then decided to take an additional step to relieve neighbors of the odor problem. He explained that the County “was agreeable to our mounting the Tri-Stack systems on 35 foot towers, the local legal maximum stack height. We would have the advantage of the combined stack height, and every opportunity for success. I was convinced that the odor problem would be totally eliminated.”

To receive city approval for the Tri-Stack installation, Bergmann and Borden management met several times with the St. Louis County Board of Aldermen, the mayor, chief engineer of Crestwood, and concerned citizens. The Borden group “laid out the project and answered questions from the municipal officials and residents about the Tri-Stacks’ proposed location, aesthetics and overall performance.” This was crucial to receiving a county building permit.

Borden’s staff distributed copies of the Strobic video tape to the Board of Aldermen, “which allayed their concerns over the potential noise levels,” Bergmann said. He also had an architectural rendering done of the proposed 35

foot stack towers. Their unobtrusive design won the approval of the neighborhood residents, and the Tri-Stack installation was permitted.

Installation and maintenance cut costs

Ease of Installation and connection to the existing Smog-Hog extrusion stacks were also major factors that led Borden to choose the TriStack roof exhaust system. Bergmann said the installation of two 10 HP Strobic BS-2/10 Tri-Stack systems into the extrusion lines took little time and went smoothly. According to Bergmann, this involved “removing the blowers from inside the Smog-Hogs, extending the stack height to the legal limit, and connecting the Tri-Stacks to the outlet of the Smog-Hogs’ exhaust stacks.”

One Tri-Stack system now draws 2000 cfm from one Smog-Hog, for a total entrained exhaust flow of 26,000 cfm, while the other takes 4000 cfm from the other Smog-Hog, for a total flow of 30,000 cfm. Bergmann is pleased with the Tri-Stacks’ unique odor dilution and dispersion capabilities. He is also satisfied that he could retain the electrostatic precipitator units, in order to capture exhausted particulate and oil mist. The precipitators are mandated for Borden to maintain its county operating permit for active extrusion lines.

Bergmann pointed out that Borden also benefits from virtually maintenance-free Tri-Stack performance, since none has been needed since installation. He said that “this has saved us from the downtime and expense of replacing the Smog-Hog blowers, which we were doing on a fairly regular basis. Overall maintenance has been reduced, since the blower wheel (fan blade) is well balanced and directly coupled to the Tri-Stack motor. All we have to do is periodically clean the electrostatic precipitator cells.”

Lower costs over alternative systems

Borden has successfully solved its odor problem. And, as Bergmann put it, “since the Tri-Stacks were installed we haven’t received any more extrusion odor complaints.” Although the company is using a bit more energy with the Tri-Stacks (each Tri-Stack system is 10 hp vs the 2 and 5 hp of the original centrifugal blowers); the added energy costs are minimal and easily justified by significantly more efficient operating advantages and virtually no maintenance costs. The slight increase in power consumption enhances odor effluent dilution and dispersion capabilities. This has also contributed to lower overall operating costs, since most of the original Smog-Hog system did not have to be replaced at additional expense. More important, Borden continues to implement its “good neighbor” policy, in response to resident concerns over odor emissions.



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