

N2824 - SAR - 20160115

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

N282433225

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|---|-------------------------------|---------------------------|
| FACILITY: Sensitile Systems | | SRN / ID: N2824 |
| LOCATION: 1735 Holmes Rd, YPSILANTI | | DISTRICT: Jackson |
| CITY: YPSILANTI | | COUNTY: WASHTENAW |
| CONTACT: Abhinand Lath , Owner/ President | | ACTIVITY DATE: 01/15/2016 |
| STAFF: Zachary Durham | COMPLIANCE STATUS: Compliance | SOURCE CLASS: MINOR |
| SUBJECT: Scheduled inspection of permit exempt processes and recent odor control equipment. | | |
| RESOLVED COMPLAINTS: | | |

Contact

Abhinand Lath, President
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Purpose

I met with Abhi Lath and Dave Gunter at around 1:00pm on Friday, January 15 to conduct a scheduled, announced inspection of Sensitile Systems. This is a minor source and its equipment is exempt from requiring a Permit to Install (PTI) by Rule 290. This inspection was primarily aimed at inspecting the exempt processes as well as to observe the new odor control units installed for each unit.

Background

Sensitile Systems operates equipment that uses a CO2 laser to etch acrylic sheets for use in decorative lighting displays and other commercial applications. They also have a cement mixing area where some etched patterns are incorporated into the surface design of the piece being poured. The company holds the patent for its laser etching process, which now consists of four operating units, and is up from two units since AQDs last inspection in 2012.

During the etching process the acrylic sheets, which are composed of polymethylmethacrylate (PMMA), off-gas a small amount of the monomer, methylmethacrylate (MMA). This vapor, though non-toxic, has a low odor threshold and has been the source of a few complaints over the years. The inspection in 2012 by Glen Erickson observed new, taller stacks to help the dispersion of this odorous compound, but another complaint was logged this year. A phone conversation with Abhi indicated that Camfil was contracted and four carbon adsorption units were installed, one for each unit.

Since the installation in September 2015, no odor complaints have been received by AQD. Odor observations have been ongoing to assess the effectiveness of the new control equipment employed by the company. Both Diane Kavanaugh Vetort and I observed the location and noticed the faint "garlic" odor associated with the process while offsite during a few visits, while no odors were present during other times. These odor observations have been logged and make note of the date, time and weather conditions.

Summary

Upon arriving at the location, I sat down with Abhi and Dave to conduct a pre-tour meeting and distributed copies of the "Environmental Inspections" brochure as well as the "Permit to Install Exemption Handbook." Abhi explained to me that the company operates much in the same manner since the last inspection, though two new units and four stacks had been installed. Additionally, a make-up air unit was installed in December 2015 to combat the negative pressure being caused by the stacks venting from the building.

During the walk through I observed the four CO2 laser units, two of which are enclosed in a hood while the other two were open to the general in-plant environment. One of the unenclosed units was operating and some vapors were visible coming from the surface of the sheet of PMMA being worked on. Abhi indicated that vents below the unit help to hold the sheet in place while also drawing out the vapors. The odor in this area was no stronger than those observed during times of odor observations.

From there Dave and I proceeded to the roof to observe the new stacks put in place by Camfil. Attached, are some photos of the newly installed system. Each stack is equipped in a manner that allows effluent gas to pass through a particulate filter and then granulated activated carbon (GAC). The filters are replaced as needed by Sensitile, and the GAC is serviced under a contract with Camfil.

We continued on the tour and I observed the curing ovens, which are typically run at around 200°F to laminate pieces of etched acrylic. Finally, I observed the cementitious area and associated dust collector controlling in-house processes.

To conclude, Abhi, Dave and I sat down to discuss what I had seen as well as the next steps of the inspection. I asked that Abhi send me over a copy of the document he keeps that tracks throughput for compliance with the Rule 290 exemption. I also expressed my concern about the carbon adsorption system and its odor control effectiveness over the target compound, MMA. The company seems receptive to the idea of doing what is necessary to mitigate any potentially objectionable odors coming from the facility.

Compliance Evaluation

The laser etching process has demonstrated that it meets Rule 290 exemption. The attached worksheet contains calculations that show a maximum emission rate of 45.3689 lbs/month of MMA for each unit, which has not accounted for the controls put in place. Combined, the emissions are still below the 500 lbs/month limit for air contaminants that have an initial threshold screening level (ITSL) greater than or equal to 2.0 micrograms per cubic meter per Rule 290(a)(ii)(A).

The ovens used to laminate acrylic pieces appear to meet the requirement of Rule 282(b)(i) by firing natural gas on equipment with a rated heat capacity of less than 50 MMBtu/hr.

Compliance Status and Recommendations

I have determined that this facility is in compliance with State and Federal air use rules and regulations.

I recommend that PTI 10-91 held by American General Products, which was previously located here, be voided since the paint booth has never been located on site while Sensitile Systems has owned the property.

Also, I recommend continued odor observations by AQD staff as well as company employees to track the effectiveness of the new odor controls. If more issues arise, different odor control technology should be considered.

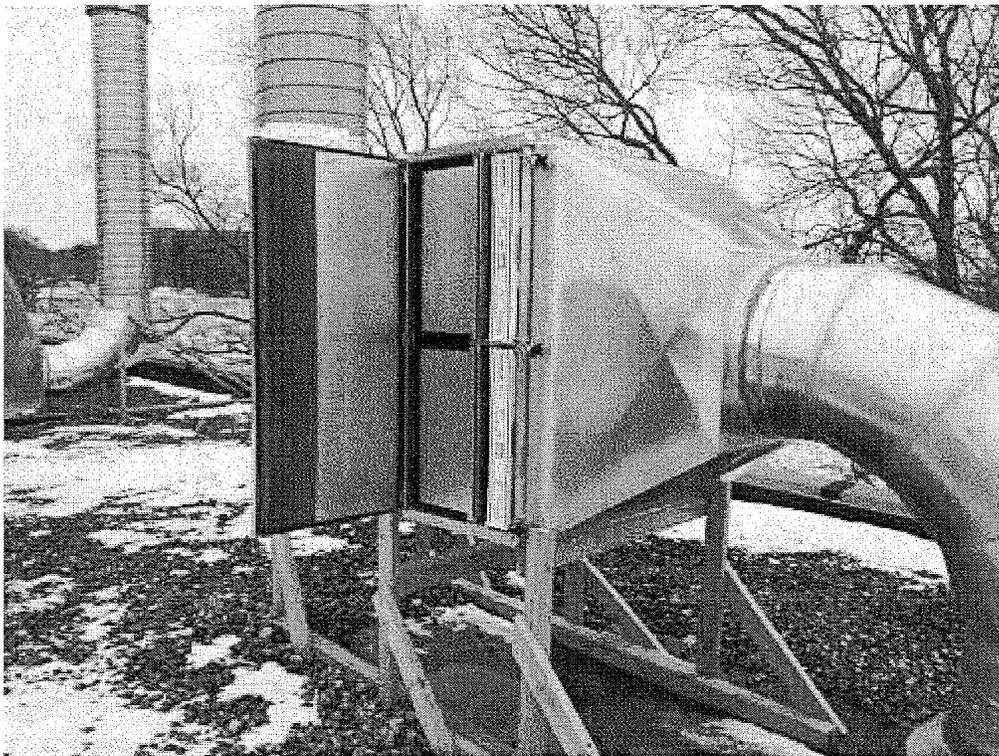


Image 1(Open Stack) : GAC and PM filters



Image 2(Roof) : 2 of 4 stacks fully pictured.

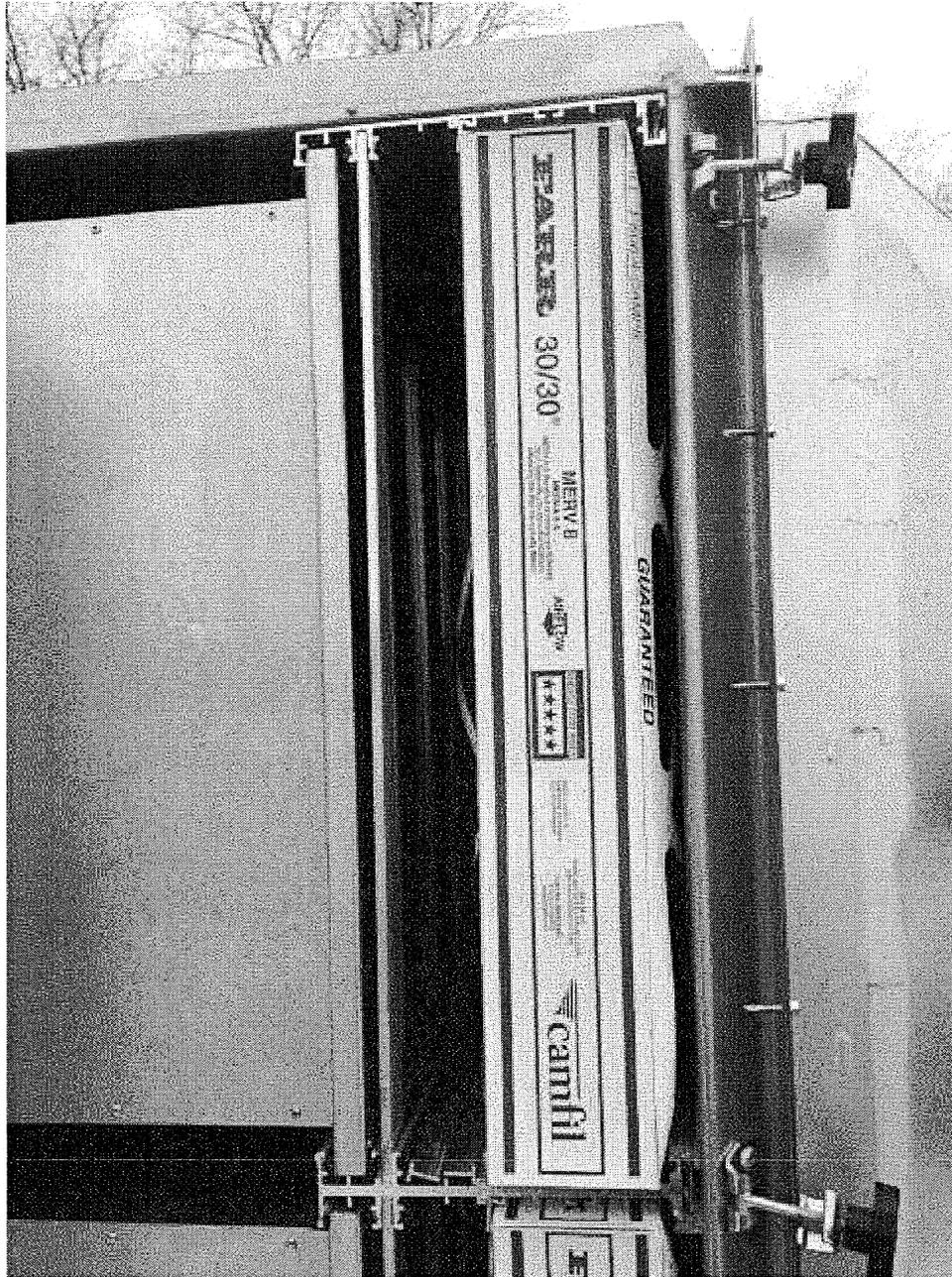


Image 3(PM filter) : Camfil brand particulate filter (right) and GAC tray (left).

NAME *Fack Dunham*

DATE *2/5/16*

SUPERVISOR *[Signature]*

Emission work sheet
Controlled emission calculator

Units

| | | |
|---|----------------|---------------------|
| Maximum number of entities/design/strip | 320.00 | # |
| Length per entity (inches) | 0.50 | inches |
| Strips per 96"x 48" sheet | 90.00 | # |
| Maximum line length per sheet (inches) | 22590.00 | Inches |
| Average maximum laser kerf width (inches) | 0.0075 | Inches |
| Sheet thickness (inches) | 0.2360 | Inches |
| Total volume of material removed/sheet (inch ³) | 39.9843 | Inches ³ |
| Density of acrylic sheet (lb/inch ³) | 0.04 | lb/in ³ |
| Pounds removed per sheet | 1.70 | lb/sheet |
| | | |
| | | |
| Pounds of material removed per hour | 0.2836 | lb |
| Average hours per sheet | 6.00 | hours |
| Maximum sheets per day/machine (10 hour day) | 1.67 | # |
| Average hours per month/laser | 200.00 | hours |
| Usage efficiency ratio (down time, load/reload) | 0.80 | # |
| Maximum amount removed per month/laser | 45.3689 | lbs |