

DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: Self Initiated Inspection

*FY 2015 Insp.*

N360227769

FACILITY: MOELLER MANUFACTURING CO		SRN / ID: N3602
LOCATION: 30100 BECK RD, WIXOM		DISTRICT: Southeast Michigan
CITY: WIXOM		COUNTY: OAKLAND
CONTACT:		ACTIVITY DATE: 10/15/2014
STAFF: Iranna Konanahalli	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: FY 2015 inspection of Moeller Manufacturing Company, Aerospace Division ("Moeller"), a turbine parts manufacturing company for aircraft, aerospace, and power turbine industries		
RESOLVED COMPLAINTS:		

*E-file: N3602 - SAR - 2014 10 15*

**Moeller Manufacturing Company (N3602)**  
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**Permit-to-Install No. 926-92 dated January 15, 1992.**

On October 15, 2015, I conducted a level-2 self-initiated, unscheduled, inspection of Moeller Manufacturing Company, Aerospace Division ("Moeller"), a turbine parts manufacturing company for aircraft, aerospace, and power turbine industries, located at 30100 Beck Road, Wixom, Michigan 48393-2827. The inspection was conducted to determine compliance with the Federal Clean Air Act, Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451 and Michigan Department of Environmental Quality, Air Quality Division (MDEQ-AQD) administrative rules.

During the inspection, Mr. Frank Litfin III (Phone: 248-960-3999-ext. 486; Fax: 248-960-8858; E-mail: [litfinf@moeller.com](mailto:litfinf@moeller.com)), SPHR, CEBS, Human Resource Manager, and Mr. Andrew Kramer (Phone: 248-960-3999-ext. 542; Fax: 248-960-1593; E-mail: [kramera@moeller.com](mailto:kramera@moeller.com)), Asst. Facilities Manager, assisted me.

Mr. Joseph R Baker (Phone: 248-960-3999; Fax: 248-960-1228; E-mail: [bakerj@moeller.com](mailto:bakerj@moeller.com)), CPA, Chief Financial Officer, and Mr. Mark Blasiola (Phone: 248-960-3999-ext. 304; Fax: 248-960-1593; E-mail: [blasiolam@moeller.com](mailto:blasiolam@moeller.com)), HR / Accounting Manager did not participate during the inspection.

About 2011, Moeller bought an adjacent building to its south. It now operates manufacturing in two adjacent buildings known as North (Old) and South (New). While North Building exhausts some gases upon filtration to outside ambient air, South Building recirculates / recycles all exhaust gases upon filtration to the in-plant environment.

Moeller Manufacturing Company, Aerospace Division ("Moeller") is a machining facility that makes machine parts using precision CNC machines for turbine engine components. The parts are used in aircraft, aerospace, and gas turbine power generation industries. The parts find application in commercial and military aircraft on a global basis. Production of turbine parts involves machining, deburring (taking sharp edges off), polishing, etc. Moeller's products include precision machined parts ranging from small items such as bladelocks to complex

brackets, housings, and manifolds.

About 2011, between two buildings, Moeller installed 15-20 downdraft tables (Diversi-tech, Inc.) equipped with self-contained filters for deburing.

While machining is subtractive, 3D printing is additive manufacturing.

## **NORTH BUILDING**

### **CNC Lathe Machines (46)**

46 CNC Lathe Machines produce metal chip barrels, which are collected in 55-gallon drums and sold for scrap value. Lathe machines produce little or no particulate matter that can become air-borne. All lathe machines use water-based coolants to remove heat of friction due to cutting. The coolant also controls metal particle emissions.

Lathes perform circular cutting. Mills perform surface cutting. Integrex machines perform combination of both types (mills and lathes) of cutting.

### **Rule 287(c) Paint Spray Booth**

One water-based paint spray booth (10 ft. x 6 ft.) with a back-draft dry filter system is present. Although most paints are water based, some solvent-based (MEK) paints are used as well. Paint usage records are not kept; Ms. Phyllis Freeman, Painter, stated previously that about 10-15 gallons of paint per month was used. Both water (mostly) and solvent (sparingly) based coatings are used. I asked Mr. Kramer to install and inspect the filters such that they fit, at all times, snugly without gaps and holes. I also asked him to keep records of paint and solvent usage. The booth is exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.287(c). The PTI No. 926-92 limits are 50 pounds of VOC per month (SC17) and installation and operation of dry filter system (SC19).

Upon keeping usage records, the coating booth now meets all of the Rule 336.1287(c) conditions:

1. The coating use rate is not more than 200 gallons, as applied, minus water, per month.
2. Any exhaust system that serves only coating spray equipment is supplied with a properly installed and operating particulate control system.
3. Monthly coating use records are maintained on file for the most recent 2-year period and are made available to the air quality division upon request.

### **Polishing, deburing machines**

4 polishing and 10 deburing machines are present. Each machine has its own capture device for particulate matter emissions. The captured particulate laden exhaust gases are transported via a manifold to two baghouses installed outside the building: one baghouse for deburring and other one for polishing. The deburing baghouse is equipped with three 55-gallon drums for collection of captured dust. The polishing baghouse is equipped with two 55-gallon drums for collection of captured dust. Both baghouses discharge cleaned air downward to outside air. Vertical discharge of exhaust gases is AQD policy but not a rule.

About 2012, Moeller installed one cyclone to pre-clean emissions from deburring machines by collecting large particles by centrifugal forces action. By preventing impaction of large particles on bags, the bag life is extended.

Pulse-jet air cleans the bags.

While deburing removes sharp edges, polishing gives good appearance.

The machines are exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1285.

### **Belt sanders (developer)**

A steel enclosure with plexiglass doors is used to machine parts. The parts are sprayed with dry powder known as "developer". This equipment is also known as "penetrant application station. Belt sanders with the powder are used to surfaces of parts. The process is equipped with Torit Dry Flo filter to collect and recycle the powder. No exhaust to outside air; cleaned air is discharged into the plant. The process is exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1285. The PTI No. 926-92 limits are 0.001 pounds of particulate matter (PM) per 1,000 pounds of exhaust (SC15) and 0.01 pounds of particulate matter (PM) per hour (SC16).

### **Cold-cleaner**

There is two 6-gallon parts- or cold-cleaners with a solvent tank for immersion cleaning; a lid is present. The cold-cleaner is subject rule 336.611 or 336.1707 depending on if it is new or existing. A cold-cleaner is exempt from Rule 336.1201 pursuant to Rule 281(h) or Rule 285(r) (iv). Existing cold cleaners were placed into operation prior to July 1, 1979. New cold cleaners were placed into operation on or after July 1, 1979.

I asked Mr. Kramer to ensure that the cold-cleaner is kept closed at all times when idled. In FY 2008, I gave Mr. Blasiola a copy of DEQ's "cold-cleaner operating procedures" Now the procedures are posted.

Cold-cleaner solvent: 100% acetone. Superior Solvent and Chemicals (317-781-4400) of Indianapolis supplies the solvent. With flash point of -4 (negative) °F and flammability range between 2.5% (LEL) and 12.8% (UEL), by volume, acetone storage and handling involves high risk of fire and explosion.

### **Titanium process**

Six titanium grinding, polishing machines are present. The machines generate titanium dust or particulate matter. All six processes are ducted to one Hydroton Scrubber (Filter-1, 800-289-0189, [www.filter-1.com](http://www.filter-1.com)). The scrubber is equipped with baffles.

About 2013, Integrex e-tower Mazak machines (7) were moved from South Building. The machines (7) are equipped with their own dust collectors known as TFP Eliminators; one for each machine. Exhaust gases are released into the in-plant environment. The TFP Eliminator consists of 3 stage filters: sponge, mesh, pleated box filters. The TFP Eliminator controls oil based coolant emissions (particulate mist).

Hence, indoor air quality is better than ever before.

### **SOUTH BUILDING**

Hydroton Scrubber controls dust from titanium grinding and polishing operations. One common manifold delivers particulate matter laden exhaust gases to the scrubber equipped

with baffles. Upon filtration using the scrubber, exhaust gases are released into the in-plant environment.

Integrex e-tower Mazak machines (11) are equipped with their own dust collectors known as TFP Eliminators; one for each machine. Exhaust gases are released into the in-plant environment.

Several downdraft tables (Diversi-tech, Inc.) equipped with self-contained filters for deburing are present.

As exhaust gases are released into the in-plant environment upon filtration, all process equipment in South Building are exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1285(l).

### **Conclusion**

All process equipment are exempt from Rule 201 (Permit-to-Install) but subject to PM, VOC regulations via Rule 285, 287. Two adjacent buildings known as North (Old) and South (New) operate as one integrated plant.

NAME

A. S. Hennaholt

DATE

11/14/2014

SUPERVISOR

CJE