

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

A382529631

FACILITY: Formsprag Clutch, LLC		SRN / ID: A3825
LOCATION: 23601 Hoover Road, WARREN		DISTRICT: Southeast Michigan
CITY: WARREN		COUNTY: MACOMB
CONTACT: Tim Mann , ABS Facilitator		ACTIVITY DATE: 06/03/2015
STAFF: Erik Gurshaw	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Self-Initiated Inspection		
RESOLVED COMPLAINTS:		

SRN: A3825

COMPANY: Formsprag Clutch

COMPANY ADDRESS: 23601 Hoover Road; Warren, MI 48089

PURPOSE OF INSPECTION: Self-Initiated

CONTACT PERSON: Mr. Tim Mann, ABS Facilitator (Ph: 586-834-9586 ext. 7586; E-mail: tim.mann@formsprag.com)

COMPANY PHONE NUMBER: 586-834-9586

On May 28, 2015, AQD staff, Erik Gurshaw conducted an unannounced, self-initiated inspection at Formsprag Clutch located at 23601 Hoover Road in Warren, Michigan. The inspection was completed on June 1, 2015, after AQD staff had an opportunity to conduct a file review of the company in the office. The purpose of the inspection was to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control of Natural Resources and Environmental Protection Act, 1994 Public Act 451; and Michigan Department of Environmental Quality, Air Quality Division (MDEQ-AQD) Rules. Formsprag Clutch had been issued Permit-To-Install (PTI) Number 107-94 for an electrolytic copper plating line, but this PTI was voided when the company ceased using cyanide in its plating tanks.

Upon arriving at the site, AQD staff introduced themselves and stated the purpose of the visit to Mr. Tim Mann, ABS Facilitator. Mr. Andy Zielaskowski, Operations Manager (Ph: 586-834-9555; Fax: 586-758-5204; E-mail: andy.zielaskowski), joined the inspection shortly after AQD staff's arrival. Mr. Zielaskowski indicated that Formsprag Clutch employs 110 people and operates 24 hours a day (3 eight hour daily shifts) Monday through Saturday. Mr. Mann and Mr. Zielaskowski assisted AQD staff during the inspection.

Formsprag Clutch manufactures power transmission equipment for the mining, aerospace, defense, and general commercial industries. Specifically, the company manufactures sprags and sprag retainer assemblies for the aerospace industry and outer races, inner races, sprags, and sprag retainer assemblies for the mining, defense, and general commercial industries. A sprag and sprag retainer assembly constitute a one-way freewheel clutch used in transmissions. The parts manufactured by the company are made from 8620 spec and 4150 spec steel bars. The parts made from 8620 spec steel are manufactured via a distinctly different process than the parts made from 4150 spec steel. Equipment at the company includes the following: 2 Amada bandsaws; 1 SKF electric induction heater; 1 Cincinnati centerless grinder; 3 Samsung CNC lathes; 2 DMG Mori CNC Lathes; 1 Amada surface grinder; 1 Torex corn cob dryer; 2 Tsune cut-off saws; 1 Fosdick drill press; 2 Almco drum tumblers; 1 Sharpe engine lathe; 1 Hammond Roto-Finish High Intensity Tumbler; 1 Lapointe horizontal broach; 2 Cincinnati inner diameter grinders; 3 Bryant inner diameter grinders; 1 Heald inner diameter grinder; 1 Okamoto inner diameter grinder; 1 Inductoheat electric Induction Hardener; 1 Cincinnati Heald Internal Grinder; 1 CMT Sunburst Laser Marker; 1 Excel Control Laser Laser Marker; 1 Haas Laser Mill; 1 Mori Seiki Lathe; 1 Haas Lathe; 1 Mazak Lathe; 1 Cincinnati Milacron Lathe; 1 Magnetic Products, Inc. Magnetic Separator; 1 Cincinnati outer diameter grinder; 1 Norton Slant outer diameter grinder; 1 Norton OD outer diameter grinder; 1 Norton Centerless outer diameter grinder; 1 Toyoda outer diameter grinder; 1 Hannifin press; 1 Reeves Punch Press; 1 Grotnes Roll Former; 1 Swisher Rotary Surface Grinder; 5 Blanchard Rotary Surface Grinders; 1 Huffman Superabrasive Grinder; 1 K.O. Lee Superabrasive Grinder; 1 Jones and Shipman Superabrasive Grinder; 1 Micron

Superabrasive Grinder; 1 Norton Flat Surface Grinder; 1 Brown and Sharpe Surface Grinder; 1 Brother Tapping Center; 1 Clausing Kondia Toolroom Mill; 3 Haas Vertical Mills; 1 Mazak Vertical Mill; 1 Fadal Vertical Mill; 1 Vibratumbler Vibratory Mill; 2 Safety-Kleen heated parts washers; 1 Safety-Kleen non-heated parts washer; 4 Lindberg electric heat treat furnaces; 2 endothermic natural gas generators; 2 electric tempering furnaces; 2 electric chromizing furnaces; 1 shot peening machine; an electrolytic copper plating line; a copper plating stripping tank; and a down draft paint spray booth. All of the metalworking machinery with the exception of the Huffman Superabrasive Grinder, K.O. Lee Superabrasive Grinder, Jones and Shipman Superabrasive Grinder, and Micro Superabrasive Grinder vent to the general plant environment and are, therefore, exempt from PTI requirements pursuant to Rule 285(l)(vi)(B). The 4 aforementioned Superabrasive Grinders are equipped with Smoghog particulate filtration systems and are, therefore, exempt from PTI requirements pursuant to Rule 285(l)(vi)(C). The endothermic gas generators are used to crack natural gas which is fed into the heat treat furnaces to enrich the carbon content of the parts being treated. These generators are exempt from PTI requirements pursuant to Rule 285(l)(iv). The heat treat furnaces are electrically powered and are not a source of air emissions. The electrolytic copper plating line exhausts to the general plant environment and is exempt from PTI requirements pursuant to Rule 285(r)(vii) and Rule 285(r)(iii). The copper plating stripping tank exhausts to the general plant environment and is exempt from PTI requirements pursuant to Rule 285(r)(i). The facility has purchased 8 gallons of paint in the first 5 months of the 2015 calendar year, but is not maintaining paint usage records for the paint booth. AQD staff instructed Mr. Mann and Mr. Zielaskowski to immediately begin recording actual paint usage to demonstrate that the paint booth meets the Rule 287(c) exemption. The parts washers are exempt pursuant to Rule 285(r)(iv). The facility consists of 2 buildings sharing the same address. The main building houses the metalworking machinery and the ancillary building contains the heat treat furnaces, copper plating line, atmospheric natural gas generators, chromizing furnaces, shot peening machine, and copper stripping tank.

The parts manufactured from 8620 spec steel bars are produced by sawing the bars into appropriately sized parts with a bandsaw or a chopsaw. After being sawed to the appropriate size, the resulting parts are then lathed and milled. After being lathed and milled, some of the parts are plated in an electrolytic copper plating line to protect the steel during the heat treat process. The copper plating line exhausts to the general plant environment and consists of 5 sequential dip tanks consisting of wash, rinse, neutralization, and electrolytic copper plating stages. Specifically, parts are plated with copper by washing them in a tank consisting of a 6% soap solution. From the wash tank, the parts are rinsed in a water tank at ambient temperatures before being neutralized in a 6% sulfuric acid tank. After being neutralized, the parts are rinsed again in another water tank at ambient temperatures before being plated with copper in an electrolytic copper tank at 110 to 115 degrees Fahrenheit for 2 to 3 hours. After being copper plated, the parts are allowed to drip dry before being sent to the heat treat furnaces. Mr. Zielaskowski indicated that only a small percentage of parts produced by the facility undergo copper plating and that these parts are plated with copper to maintain the integrity of the steel during the heat treat process. The majority of the parts produced from 8620 spec steel are not copper plated and are sent directly to the heat treat furnaces after being lathed and milled in the company's main building. In the heat treat process, parts are loaded into one of the company's 4 heat treat furnaces at 1675 degrees Fahrenheit for 3 hours where they are carbonized in a carbon rich environment (the excess carbon changes the chemical properties of the parts being heat treated). The carbon is produced by the cracking of natural gas in an endothermic natural gas generator. Once natural gas has been cracked, it is sent to the heat treat furnaces. The parts are quenched in an internal oil quench bath concurrent to the carbonization process. After being quenched and carbonized in a heat treat furnace, the resulting parts are transferred to a tempering furnace at 750 degrees Fahrenheit for 2 to 3 hours before being sent back to the main processing building to be grinded, painted, and assembled into the final product. Less than 10% of the parts the company fabricates are painted according to Mr. Zielaskowski. Some of the parts are tumbled or turned after being heat treated. Tumbling and turning generally occurs before and after the grinding stage. Turning is the machining of a part in a lathe which takes place by holding the part stationary while a tool cuts into the part in a helical nature. Tumbling takes place in an enclosed drum and is done to smooth out the rough edges and surfaces of parts prior to final assembly. The copper plating applied to parts prior to

heat treating is stripped from the parts after the heat treat stage in a chemical bath which is not heated, nonelectrolytic, and not agitated. The copper stripping bath is located in the heat treat building and vents to the general plant environment. After being stripped of copper plating, the parts are sent to the main building for grinding, painting, and final assembly.

Parts manufactured from 4150 spec steel bars are produced by cutting them to the appropriate size, turning them, hardening them in a self-contained electric induction furnace, and machining them to customer specs. The only parts hardened in the electric induction furnace are inner races manufactured for the mining, defense, and general commercial industries. The rest of the parts manufactured from 4150 spec steel are produced solely via cutting, turning, and machining.

Based on this inspection, it was determined that Formsprag Clutch is a minor source of air emissions whose processes and process equipment are exempt from PTI requirements. The following information is attached to this report in this order: the company's Production Machinery List; the MSDS sheet for the cleaning solvent used in the parts washers (Chemetall Low Heat Cleaner 1); the MSDS sheet for the lubricating oil used in the metalworking machinery (Castrol Performance Biolubes NuCut Plus); MSDS sheets for the chemicals used in the electrolytic copper plating tank (Haviland Havasheen NC-A, Haviland Products Company Havasheen NC-C, and Chemetall Oakite 96); MSDS sheets for the 2 different type of quench oils used by the company in the heat treat process (Park Metallurgical Corporation AAA Quench Oil and Heatbath Corporation Marquench Oil M); the MSDS sheet for the chemical used in the copper plating line's wash tank (Houghton International, Inc. Aqua Quench 3699); the MSDS sheet for the sulfuric acid used in the sulfuric acid neutralization tank (EMD Chemicals, Inc. Sulfuric Acid); the MSDS sheet for the stripping solution used to remove copper plating from parts (Haviland Products Company Havastrip NCCU Liquid); and an air inventory review of the company conducted by Growth Resources, Inc. on November 21, 1996. The air inventory review was conducted to demonstrate that the company would not be subject to Title 5 permitting requirements. It was determined during the review that Formsprag Clutch is a minor source of air emissions based on its Potential-To-Emit (PTE). The highest PTE of any one pollutant was 1.8 tons of xylene since the company operated a halogenated degreaser at the time of the review. Since the time of the review, however, the company has ceased operation of the halogenated degreaser and overall emissions are even lower than they were at the time of the review. A review of the MSDS sheets listed above showed that none of the compounds used by the company's process equipment contain any hazardous air pollutants.

NAME Erick DurshawDATE 6/3/15SUPERVISOR CJE