TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION

APPLICANT

New Millennium Building Systems, LLC
6115 County Road 42
Butler, Indiana 46721
Lake City
Facility ID No. 0230046

PROJECT

Project No. 0230046-006-AC
Application for Air Construction Permit
(2) Portable Plasma Cutters

COUNTY

Columbia, Florida

PERMITTING AUTHORITY

State of Florida
Department of Environmental Protection

Northeast District Office
Permitting Program
8800 Baymeadows Way West, Suite 100
Jacksonville, Florida 32256
Telephone: 904/256-1700
Fax: 904/256-1587

2/20/15

1. GENERAL PROJECT INFORMATION

Air Pollution Regulations

Projects at stationary sources with the potential to emit air pollution are subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The statutes authorize the Department of Environmental Protection (Department) to establish regulations regarding air quality as part of the Florida Administrative Code (F.A.C.), which includes the following applicable chapters: 62-4 (Permits); 62-204 (Air Pollution Control – General Provisions); 62-210 (Stationary Sources – General Requirements); 62-212 (Stationary Sources – Preconstruction Review); 62-213 (Operation Permits for Major Sources of Air Pollution); 62-296 (Stationary Sources - Emission Standards); and 62-297 (Stationary Sources – Emissions Monitoring). Specifically, air construction permits are required pursuant to Rules 62-4, 62-210 and 62-212, F.A.C.

In addition, the U. S. Environmental Protection Agency (EPA) establishes air quality regulations in Title 40 of the Code of Federal Regulations (CFR). Part 60 specifies New Source Performance Standards (NSPS) for numerous industrial categories. Part 61 specifies National Emission Standards for Hazardous Air Pollutants (NESHAP) based on specific pollutants. Part 63 specifies NESHAP based on the Maximum Achievable Control Technology (MACT) for numerous industrial categories. The Department adopts these federal regulations on a quarterly basis in Rule 62-204.800, F.A.C.

Glossary of Common Terms

Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of this permit.

Facility Description and Location

New Millennium Building Systems, LLC is an existing Fabricated Metal Product (Standard Industrial Classification No. 3441. The facility is be located in Columbia County at 1992 NW Bascom Norris Drive in Lake City, Florida. The UTM coordinates of the existing facility are Zone 17, 342.72 km East and 3340.64 km North; and, Latitude: 30°12’06” North and Longitude: 82°40’03” West.

This site is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to state and federal Ambient Air Quality Standards (AAQS).

Facility Regulatory Categories

- The facility **is not** a major source of hazardous air pollutants (HAP).
- The facility **has no** units subject to the acid rain provisions of the Clean Air Act.
- The facility **is** a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility **is not** a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

Project Description

Air Construction permit to use (2) Portable Plasma Cutters to make precision cuts to sections of mild carbon steel to be used in the joist manufacturing line. The Portable Plasma Cutters will be used by production staff on an intermittent basis to “bevel” steel before welding.

Processing Schedule

1/29/15 Received the application for a source air pollution construction permit.

2/16/15 Released EPSAP application for resubmission to include an air construction permit.

2/18/15 Resubmitted EPSAP application to include an air construction permit; application complete.

2. PSD APPLICABILITY

General PSD Applicability

For areas currently in attainment with the state and federal AAQS or areas otherwise designated as unclassifiable, the Department regulates major stationary sources of air pollution in accordance with Florida's PSD preconstruction review program as defined in Rule 62-212.400, F.A.C. Under preconstruction review, the Department first must determine if a project is subject to the PSD requirements ("PSD applicability review") and, if so, must conduct a PSD preconstruction review. A PSD applicability review is required for projects at new and existing major stationary sources. In addition, proposed projects at existing minor sources are subject to a PSD applicability review to determine whether potential emissions *from the proposed project itself* will exceed the PSD major stationary source thresholds. A facility is considered a major stationary source with respect to PSD if it emits or has the potential to emit:

- 250 tons per year or more of any regulated air pollutant; or
- 100 tons per year or more of any regulated air pollutant and the facility belongs to one of the following 28 PSD-major facility categories: fossil fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input, coal cleaning plants (with thermal dryers), Kraft pulp mills, portland cement plants, primary zinc smelters, iron and steel mill plants, primary aluminum ore reduction plants, primary copper smelters, municipal incinerators capable of charging more than 250 tons of refuse per day, hydrofluoric, sulfuric, and nitric acid plants, petroleum refineries, lime plants, phosphate rock processing plants, coke oven batteries, sulfur recovery plants, carbon black plants (furnace process), primary lead smelters, fuel conversion plants, sintering plants, secondary metal production plants, chemical process plants, fossil fuel boilers (or combinations thereof) totaling more than 250 million British thermal units per hour heat input, petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels, taconite ore processing plants, glass fiber processing plants and charcoal production plants.

Once it is determined that a project is subject to PSD preconstruction review, the project emissions are compared to the "significant emission rates" defined in Rule 62-210.200, F.A.C. for the following pollutants: carbon monoxide (CO); nitrogen oxides (NO_X); sulfur dioxide (SO_2); particulate matter (PM); particulate matter with a mean particle diameter of 10 microns or less (PM_{10}); volatile organic compounds (VOC); lead (Pb); fluorides (Fl); sulfuric acid mist (SAM); hydrogen sulfide (H_2S); total reduced sulfur (TRS), including H_2S; reduced sulfur compounds, including H_2S; municipal waste combustor organics measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans; municipal waste combustor metals measured as particulate matter; municipal waste combustor acid gases measured as SO_2 and hydrogen chloride (HCl); municipal solid waste landfills emissions measured as non-methane organic compounds (NMOC); and mercury (Hg). In addition, significant emissions rate also means any emissions rate or any net emissions increase associated with a major stationary source or major modification which would construct within 10 kilometers of a Class I area and have an impact on such area equal to or greater than 1 $\mu g/m^3$, 24-hour average.

If the potential emission exceeds the defined significant emissions rate of a PSD pollutant, the project is considered "significant" for the pollutant and the applicant must employ the Best Available Control Technology (BACT) to minimize the emissions and evaluate the air quality impacts. Although a facility or project may be *major* with respect to PSD for only one regulated pollutant, it may be required to install BACT controls for several "significant" regulated pollutants.

PSD Applicability for Project

This facility is not on the list of 28 thus making the PSD applicability threshold 250 TPY. Since the facility previously established a VOC cap of 249 making it a minor PSD source, the project itself would have to be 250 TPY, as applicable, in order to trigger PSD review.

3. APPLICATION REVIEW

The Portable Plasma Cutters emissions were based off of a PakMaster 150XL Model. This unit will not be subject to any unit-specific applicable requirements nor any unit-specific limitation or requirement.

The permittee shall submit to the Air Compliance Authority of this Office electronic or written notification of the specific Make and Model Nos. of the Portable Plasma Cutters. Submit this notification within 30-days after installation of the Portable Plasma Cutters.

Potential emissions from plasma cutters include PM, nitrogen oxides (NOX), and various metal HAPs. New Millennium has estimated PM, NOX, and metal HAP emissions from the Lake City facility using data presented in *Emissions of Fume, Nitrogen Oxides, and Noise in Plasma Cutting of Stainless and Mild Steel*.[1] PM emissions are dependent on the type of cutting being performed (i.e. wet, semi-wet, or dry), the type of steel being cut, and the volume of steel being cut.

[1] Bromsen et. al, Emissions of Fume, Nitrogen Oxides, and Noise in Plasma Cutting of Stainless and Mild Steel. March, 1994.

Discussion of Emissions

PM, HAPs and NOx.

Plasma Cutter	
Potential PM Emissions	
Steel Thickness[1]	0.50 inch thick steel
Cut Thickness[3]	0.16 inch thick kerf
Cut Speed[2]	55 in/min
Volume of Material Cut	259.84 in^3/hr
Fume Percentage[3]	5% of cut steel becomes fumes
Fume Flowrate	12.99 in^3/hr
Density of Steel	0.28 lb/in^3
Total Fume Emissions	3.69 lb/hr
Hours of Operation	8760 hr/yr
PM_{10} Emissions[4]	16.16 TPY
$PM_{2.5}$ Emissions[4]	16.16 TPY

Plasma Cutter	
Potential NOx Emissions	
Flowrate[3]	5.50 l/min
Pressure	1.00 atm
Temperature	294.26 K
Ideal Gas Constant	0.08(L * atm)/ (K * mol)
% NO_2[3]	8%
% NO[3]	92%
Molar Mass	31.3 g/mol
Molar Emission Rate	0.228 mol/min
NO_X Mass Emissions	7.12 g/min
	0.942 lb.hr
	4.128 TPY

1. New Millennium will typically cut 1/2" and 3/4" thick steel and occasionally cut 1" thick steel. The cutting speed of the plasma cutters varies based on the thickness of the steel being cut. New Millennium has estimated emissions from the plasma cutters assuming 1/2" thick steel because when combined with the cutting speed, 1/2" thick steel represents the most conservative rate of cutting.
2. Cut speed is from the Pak Master 150 XL Cutter and used as an example for a plasma cutter. New Millennium has not yet determined what model of plasma cutter will be used at the Lake City facility.
3. Bromsen et. al, *Emissions of Fume, Nitrogen Oxides, and Noise in Plasma Cutting of Stainless and Mild Steel. March, 1994.*
4. PM_{10} and $PM_{2.5}$ emissions conservatively assumed to be equal to PM emissions.

HAP Emissions			
Chemical Compositions[1]		PTE (lb/yr)	HAP? (Y/N)
Iron	99%	31,999	N
Chromium	0.9%	291	Y
Manganese	1.7%	533	Y
Carbon	1.1%	356	N
Copper	1.0%	323	N
Nickel	0.8%	242	Y
Silicon	0.5%	162	N
Molybdenum	0.2%	64.6	N
Aluminum	0.1%	32.3	N
Sulfur	0.1%	25.9	N
Lead	0.1%	22.6	Y
Phosphorus	0.1%	19.4	N
Potential Emissions of HAP	3.4%	1,089.3	

State Requirements

Emissions Standards. This EU is only subject to the less than 20% Opacity standard which is applied on a facility-wide basis. No annual or prior to permit renewal VE compliance testing is required. However, if the Department believes the VE standard is being violated, a special compliance test can be requested pursuant to Rule 62-297.310(7)(b), F.A.C.

[Rule 62-296.320(4)(b)1., F.A.C.]

Other Draft Permit Requirements

There are no additional production, operation limitations, or monitoring requirements.

4. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the draft permit. Leslie Maybin is the project engineer responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting the project engineer at the Northeast District Office, Permitting Program, 8800 Baymeadows Way West, Suite 100 Jacksonville, Florida 32256.