Engineering Analysis
Borbet Alabama
206-0040

Project Description

On May 29, 2014, Borbet Alabama Inc. submitted an air permit application for the decommissioning of four existing melt furnaces at the facility and replacing them with eight secondary aluminum melt furnaces with afterburners. Also, Borbet plans to make modifications to its Aluminum Scrap Processing Line. The facility is a synthetic minor source located in Auburn.

The facility proposes to install (4) four new virgin aluminum and scrap wheel melt furnaces as well as (4) four new recycled aluminum chip melt furnaces. These furnaces are classified as group 1 with the furnace room used the afterburner. The melting operations will therefore consist of a total of eight secondary aluminum melt furnaces with afterburners. SMOP 206-0040-X001 currently consists of two (2) Aluminum Reverbatory Melting Furnaces which the facility is proposing to remove. While the Aluminum Processing Line, SMOP 206-0040-X011, currently consists of; a Metal Shredder, Centrifuge, Thermal Chip Dryer, and Two Aluminum Melting Furnaces w/ Afterburners. These two melting furnaces will also be extracted from the facility. The processing line provides scrap aluminum to the secondary aluminum melt furnaces and the proposed modifications include the use of a different coolant (Blaser Blasocut BC 25SW), adding holding bunkers, and replacing the heated screw conveyor with a non-heated conveyor.

Emissions

The potential emissions are based on emission factors from similar aluminum melting/casting facilities and AP-42. The potential emissions based on 8,760 hours of operation per year are shown below:

Pollutant	**Four Virgin Aluminum and Scrap Wheel Melt Furnaces**	
	lb/hr	**TPY**
$PM/PM_{10}/PM_{2.5}$	2.63	10.40
SO_2	5.91	23.40

NO_X	4.99	19.76
CO	1.26	5.50
VOC	1.31	5.20
CO_2e	1777.1	7783

Pollutant	**Four Recycled Aluminum Chip Melt Furnaces**	
	lb/hr	**TPY**
$PM/PM_{10}/PM_{2.5}$	0.85	3.38
SO_2	1.92	7.60
NO_X	1.62	6.42
CO	0.44	1.96
VOC	0.43	1.69
CO_2e	630.8	2763.2

Pollutant	**For Each Secondary Aluminum Processing Unit**	
	lb/hr	**TPY**
D/F	0.829	3.358

	Emissions From Aluminum Scrap Processing Line					
	Scrap Processed		**Uncontrolled PM/PM10**		**Controlled PM/PM10**	
	lb/hr	**TPY**	**lb/hr**	**TPY**	**lb/hr**	**TPY**
Potential	3,857	16,892	5.39	23.63	0.126	0.55
Actual	2,955	12,945	4.57	20.03	0.126	0.55

Title V/PSD/NSPS/NESHAP/112g/Air Toxics

Borbet Alabama is currently a synthetic minor source with respect to Title V and PSD. The proposed facility wide limited potential emissions are shown below:

Pollutant	Current Emissions	Proposed Emissions
	TPY	**TPY**
PM	92.03	28.38
SO_2	22.75	31.83
NO_X	59.01	56.23
CO	67.64	78.25
VOC	66.16	69.70
HAP	----	1.32

*For production of 2.4 million wheels

With the inclusion of the proposed modifications, the facility wide limited potential emissions are below the 100 TPY threshold for any criteria pollutants, the 10 TPY threshold for any single HAP, and the 25 TPY threshold for total HAPs; therefore the facility is a still a synthetic minor source in regards to Title V. The facility is below the limited potential to emit threshold of 250 TPY for PSD, so Borbet Alabama Inc. would not be subject to PSD. There are no New Source Performance Standards applicable to the installation of the new aluminum melting furnace. The new aluminum melting furnace is subject to 40 CFR 63 Subpart RRR "National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production".

Air Toxics are not expected to be emitted in significant quantities, so an Air Toxics review would not be necessary. Because HAP emissions would not be expected to be above the major source threshold (greater than 10 TPY of any single HAP or 25 TPY of any combination of HAPs), a 112(g) case by case MACT review would not be necessary. Emissions from the new furnace would not be expected to impact any Class I Area, the closest of which is more than 100 km from Borbet Alabama.

NESHAP RRR – Applicability

40 CFR 63 Subpart RRR – National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production applies to each new and existing secondary aluminum processing unit, containing one or more group 1 furnace emission unit processing other than clean charge located at an area source. §63.1500(c)(4) states that the requirements of this subpart pertaining to dioxin and furan (D/F) emissions and associated operating, monitoring, reporting, and recordkeeping requirements apply to each new and existing secondary aluminum processing

unit, containing one or more group 1 furnace emission unit processing other than clean charge located at a secondary aluminum production facility that is an area source of HAPs.

NESHAP RRR – Emission Standards

§63.1505(i)(3) states that the owner or operator of a group 1 furnace must use the following limit to determine the emission standard for a secondary aluminum processing unit: 15 μg of D/F TEQ per Mg (2.1 x 10^{-4} gr of D/F TEQ per ton) of feed/charge from a group 1 furnace at a secondary aluminum production facility that is a major or area source.

NESHAP RRR – Operating and Monitoring Requirements

The facility must operate the reverbatory melting furnace in accordance with §63.1506(a)(1), (b-d), and (p). The facility must comply with the applicable monitoring requirements of §63.1510(a-e), (g), (j) and (u-w).

- The facility must prepare and implement a written operation, maintenance, and monitoring (OM&M) plan for this unit according to the applicable portions of §63.1510(b) of 40 CFR Part 63 Subpart RRR.
- The facility must provide and maintain easily visible labels for this unit according to §63.1506(b) of 40 CFR Part 63 Subpart RRR.
- The facility must inspect the labels associated with this unit at least once per calendar month to confirm that posted labels are intact and legible.
- The facility must design, install, operate, and maintain the capture and collection system associated with this unit according to the requirements in §63.1506(c)(1)-(3) and §63.1510(d)(1)-(2) of 40 CFR Part 63 Subpart RRR.
- The facility must inspect the capture/collection system associated with this unit at least each calendar year to ensure that the system is operating in accordance with the operating requirements in §63.1506(c) of 40 CFR Part 63 Subpart RRR and record the results of each inspection.
- The facility must measure and record the total weight of feed/charge or aluminum production according to the requirements in §63.1506(d) and §63.1510(e) of 40 CFR Part 63 Subpart RRR.
- The facility must operate the afterburner in accordance with the OM&M plan and maintain the 3-hour block average operating temperature of the afterburner at or above the average temperature established during the performance test.

- The facility must conduct an inspection of each afterburner at least once a year and record the results according to the requirements in §63.1510(g)(3) of 40 CFR Part 63 Subpart RRR.
- The facility must monitor and record the total reactive flux injection rate according to the requirements in §63.1510(j) of 40 CFR Part 63 Subpart RRR.
- When a process parameter or add-on air pollution control device operating parameter deviates from the value or range established during the performance test and incorporated in the OM&M plan, the owner or operator must initiate corrective action. Corrective action must restore operation of the affected source or emission unit (including the process or control device) to its normal or usual mode of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions. Corrective actions taken must include follow-ups actions necessary to return the process or control device parameter level(s) to the value or range of values established during the performance test and steps to prevent the likely recurrence of cause of deviation.
- The facility must conduct performance tests according to the requirements in §63.1511 and §63.1512 of 40 CFR Part 63 Subpart RRR every 5 years following the initial performance test.

NESHAP RRR – Recordkeeping and Reporting Requirements

The facility must comply with the applicable recordkeeping requirements of §63.1517(a) and (b). The facility must comply with the applicable reporting requirements of §63.1516(a), (b), and (c).

- The facility must develop and implement a written startup, shutdown, and malfunction plan according to the requirements in §63.1516(a) of 40 CFR Part 63 Subpart RRR.
- The facility must submit semiannual reports within 60 days after the end of each 6-month period according to the requirements in §63.1516(b) of 40 CFR Part 63 Subpart RRR.
- The facility shall maintain files of all information (including all reports and notifications) required by 40 CFR Part 63 Subpart RRR including the following records for this source:

  (a) Records of the 15-minute block average afterburner operating temperatures, including any period when the average temperature in any 3-hour block period falls below the compliant operating parameter value with a brief explanation of the cause of the excursion and the corrective action taken.
  (b) Records of annual afterburner inspections.

(c) Records of the 15-minute block average weights of gaseous or liquid reactive flux injection, total reactive flux injection rate and calculations (including records of the identity, composition, and weight of each addition of gaseous, liquid, or solid reactive flux), including records of any period the rate exceeds the compliant operating parameter value and corrective action taken.

(d) Records of feed/charge (or throughput) weights for each operating cycle or time period used in the performance test.

(e) Operating logs documenting conformance with operating standards for maintaining the level of molten metal above the top of the passage between the sidewell and hearth.

(f) Records of monthly inspections for proper unit labeling for each unit subject to labeling requirements.

(g) Records of annual inspections of emission capture/collection and closed vent systems.

(h) Records for any approved alternative monitoring or test procedure.

Recommendation

I recommend that Synthetic Minor Operating Permit (SMOP) No. 206-0040-X012 be issued for (4) Four Virgin Aluminum and Scrap Wheel Melt Furnaces with Afterburners and Synthetic Minor Operating Permit No. 206-0040-X013 to include Aluminum Processing line and (4) Four recycled chip melt furnaces with Afterburners after a 15-day public comment period. If Borbet Alabama Inc. adheres to all permit conditions, the operation is expected to meet the applicable state and federal air pollution control regulations.

Permit Number	Description
206-0040-X012	(4) Virgin Aluminum and Scrap Wheel Melt Furnaces with Afterburners
206-0040-X013	Aluminum Processing Line (Metal Shredder, Centrifuge, Thermal Chip Dryer, and (4) Four Aluminum Chip Melt Furnaces with Afterburners)

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Date