Construction Permit
Source Analysis & Technical Review

Company	**Ashoka Steel Mills LLC**	Permit Numbers	**169574 and PSDTX1608**
City	**Sulphur Springs**	Project Number	**343931**
County	**Hopkins**	Regulated Entity Number	**RN111530077**
Project Type	**Initial**	Customer Reference Number	**CN606035954**
Project Reviewer	**Alexander Au**	Received Date	**July 5, 2022**
Site Name	**Steel Mill**		

Project Overview

Ashoka Steel Mills, LLC (Ashoka) has submitted a permit application to authorize a steel mill in Sulphur Springs, Hopkins County.

Emission Summary

Air Contaminant	Proposed Allowable Emission Rates (tpy)
VOC	72.42
PM	70.84
PM_{10}	65.08
$PM_{2.5}$	55.57
NO_X	84.75
CO	812.91
SO_2	113.38
Pb	0.10

Compliance History Evaluation - 30 TAC Chapter 60 Rules

A compliance history report was reviewed on:	February 21, 2023
Site rating & classification:	N/A
Company rating & classification:	N/A
Has the permit changed on the basis of the compliance history or rating?	No
Did the Regional Office have any comments? If so, explain.	No

Public Notice Information

Requirement	Date
Legislator letters mailed	7/12/2022
Date 1st notice published	07/16/2022
Publication Name: *Sulphur Springs News*	
Pollutants: Carbon monoxide, hazardous air pollutants, nitrogen oxides, organic compounds, particulate matter including particulate matter with diameters of 10 microns or less and 2.5 microns or less, lead and sulfur dioxide.	
Date 1st notice Alternate Language published	N/A

Publication Name (Alternate Language): The applicant has represented that a diligent search was conducted for a newspaper or publication of general circulation in both the municipality and county in which the facility is located, and a newspaper or publication could not be found in the alternative language in which notice is required.	
1st public notice tearsheet(s) received	07/29/2022
1st public notice affidavit(s) received	07/29/2022
1st public notice certification of sign posting/application availability received	08/26/2022
SB709 Notification mailed	7/26/2022, 5/11/2023
Date 2nd notice published	5/20/2023
Publication Name: *Sulphur Springs News*	
Pollutants: Carbon monoxide, hazardous air pollutants, nitrogen oxides, organic compounds, particulate matter including particulate matter with diameters of 10 microns or less and 2.5 microns or less, lead and sulfur dioxide.	
Date 2nd notice published (Alternate Language)	N/A
Publication Name (Alternate Language): The applicant has represented that a diligent search was conducted for a newspaper or publication of general circulation in both the municipality and county in which the facility is located, and a newspaper or publication could not be found in the alternative language in which notice is required.	
2nd public notice tearsheet(s) received	5/25/2023
2nd public notice affidavit(s) received	5/25/2023
2nd public notice certification of sign posting/application availability received	6/20/2023

Public Interest

Number of comments received	0
Number of meeting requests received	0
Number of hearing requests received	0
Date meeting held	N/A
Date response to comments filed with OCC	N/A
Date of SOAH hearing	N/A

Federal Rules Applicability

Requirement	
Subject to NSPS?	**Yes**
Subparts **A, AAa** & III	
Subject to NESHAP?	**sNo**
Subparts &	
Subject to NESHAP (MACT) for source categories?	**Yes**
Subparts **A, YYYYY** & ZZZZ	
Nonattainment review applicability:	This facility will be located in Hopkins County, which has been designated as attainment or unclassified for all criteria pollutants or precursors. Therefore, nonattainment review is not applicable.
PSD review applicability:	This facility will be a named source located in Hopkins County, which has been designated as an attainment county for all criteria pollutants. The plant has a potential to emit (PTE) in excess of 100 tpy for both SO2 and CO and requires PSD permitting. PSD review applies to the following pollutants for which the PTE exceeds an acceptable significance threshold: CO, SO2 NOX, PM, PM10, PM2.5, VOC, Pb, and Fluoride (excluding HF).

Title V Applicability - 30 TAC Chapter 122 Rules

Requirement
Title V applicability: The site will be subject to Title V and will be required to obtain a Title V operating permit.
Periodic Monitoring (PM) applicability: The permit contains periodic monitoring requirements in the form of daily and quarterly opacity and visible emissions observations, periodic recordkeeping, as well as the CAM requirements identified below. Continuous Emission Monitoring Systems (CEMS) are also required for the EAF Baghouse (NO_x, CO, and SO_2). Daily pressure drop readings are required for the EAF Baghouse (EPN FTP-1) and the Caster Vent Baghouse (EPN CASTVENT).
Compliance Assurance Monitoring (CAM) applicability: The permit contains CAM requirements for the EAF (EPN FTP-1) and Caster Vent Baghouse (EPN CASTVENT) in the form of daily visible emissions determinations and pressure drop monitoring in accordance with the requirements specified in 40 CFR § 64.7(c).

Process Description

The Steel Mill will be comprised of a Fumes Treatment Plant (FTP), Eddy Current Sensor (ECS), Scrapyard, Scrap Handling and drop points, Electric Arc Furnace, Ladle Furnace, Continuous Casting Machine, Water Treatment Plant, Induction Heater, Rolling Mill, and Finished Product Storage. The Fume Treatment Plant (FTP) manufactured by Danieli will be utilized for emissions abatement at the plant. The FTP is able to capture and treat the primary fumes from the furnace roof and the secondary fumes from the canopy hood on the building roof over the furnace shell, as well as the ladle furnace fumes and those from material handling systems. The use of ultra-NOx burners in the reheating furnace further results in negligible emissions of nitrogen oxides.

Scrap material will be received at the facility by way of rail and stored in the scrapyard. Scrap metal will be obtained from various commercial dealers within the United States. It is expected that these metals are pure iron with naturally occurring additives such as dirt and rust. A conservate lead content of 0.1% has been used in the emissions calculations.

Material from the scrapyard will be separated with an Eddy Current Sensor (ECS) and then transferred to the Electric Arc Furnace (EAF) to be liquified. Fumes from the process are routed to the FTP. From the EAF, liquid steel is then sent to the Ladle Furnace (LF) to prepare the material for processing into billets at the Continuous Casting Machine (CCM). Billets of steel are then routed to the induction heater, rolling mill, and finally to the finished product storage area.

Emissions will be generated from scrap handling, heating processes that generate fumes, and heating processes that utilize combustion.

In the proposed ASM mill, scrap metal will be transported into the facility to be used as feedstock for the Melt Shop. In the Melt Shop, ferrous metal will be fed into the Electric Arc Furnace (EAF). Steelmaking is accomplished using electrical energy, with a melting temperature within the EAF of approximately 3,000°F. Furnace off-gases, also at 3,000°F, will be captured by the Fume Treatment Plant (FTP) system and used to pre-heat the scrap being brought to the furnace.

Additionally, a large canopy hood at roof level over the furnace will collect EAF emissions not captured by the FTP system as well as emissions from small incidental sources in the Melt Shop. All off-gases, either from the scrap pre-heating or the canopy hood, will be directed to a large fabric filtration baghouse before being released to the atmosphere. During the melting process, other raw materials will be added to the EAF to remove impurities from the steel. Once the molten steel reaches the desired conditions, it will be transferred to a large refractory-lined vessel known as a ladle, which will be transported to the Ladle Metallurgy Station (LMS).

At the LMS, the steel within the ladle will be subjected to additional heating by electrical energy to maintain its molten state and will be further refined by injection of raw materials. Once the molten steel reaches the desired temperature and chemistry, the ladle will be transported to a continuous caster, where the steel will be poured into a refractory-lined surge vessel called a tundish and subsequently into a water-cooled mold.

As the steel passes through the mold in the caster, it will be cooled and formed into a continuous square cross section-shaped strand. After casting, the continuous steel strand will be rolled to the desired shape, i.e., structural rebar, in a rolling mill. After rolling, the steel will be cooled, bundled, and stored. To produce some structural material such as angles and channels, the rebar will be unbundled and passed through a straightener roller process. The finished products will be shipped off-site by truck as needed for use by customers.

A low-density mixture of impurities called slag will be formed in the EAF and LMS during the melting and refining processes. The slag generated in these processes will be transferred to a processing area, where it will be air cooled, processed, and transported off-site by truck for sale to customers.

Project Scope

This project is an initial permit application. All parts of the process as described in the “Process Description” section, as well as all special conditions and emissions as represented on the MAERT will be authorized upon issuance of this permit.

Best Available Control Technology

The PSD BACT requirement applies to each new and modified emission unit for which there are emissions increases of pollutants subject to PSD review. The proposed project is subject to PSD permitting for CO, NO_x, SO_2, PM, PM_{10}, $PM_{2.5}$, VOC, Pb, and fluoride excluding HF. The company used the Federal top-down BACT Analysis.

The five steps in a top-down BACT evaluation can be summarized as follows:
Step 1. Identify all possible control technologies;
Step 2. Eliminate technically infeasible options;
Step 3. Rank the technically feasible control technologies based upon emission reduction potential;
Step 4. Evaluate ranked controls based on energy, environmental, and/or economic considerations; and
Step 5. Select BACT.

Ashoka performed a RACT/BACT/LAER Clearinghouse (RBLC) database search for similar processes to their proposed facility. Unless otherwise specified, the emission factors and proposed controls below are compared to Commercial Metals Company (CMC) Steel facilities in Mesa, Arizona and Durant, Oklahoma, as they were found to be facilities that shared the most similar processes and utilize the same technology from Danieli.

Source Name	EPN	Best Available Control Technology Description
Electric Arc Furnace: Baghouse Control	FTP-1	$\underline{NO_X}$: Ashoka proposes an EAF BACT limit of 0.30 lb NO_x/ton steel each on a 30-day rolling average. This is consistent with the range of emission limits identified in the RBLC database search for the most similar processes to the proposed Ashoka facility. CO: Ashoka proposes an EAF limit of 4.00 lb CO/ton steel for each stack. This is consistent with the range of emission limits identified in the RBLC database search for similar facilities. $\underline{SO_2}$: Ashoka proposes a limit of 0.60 lb SO_2/ton steel each stack. This is consistent with the range of emission limits identified in the RBLC database search. $\underline{PM/PM_{10}/PM_{2.5}}$: Ashoka proposes use of a fabric filter baghouse (as this represents the best control option available and the industry standard) as BACT for the EAFs in combination with the following baghouse exhaust stack limits applicable to each EAF/LMS baghouse stack. The limits meet TCEQ Tier I BACT. • Total PM (filterable) – 0.0024 gr/dscf • PM_{10} (total) – 0.0024 gr/dscf • $PM_{2.5}$ (total) – 0.0024 gr/dscf Daily visible emissions observations will be performed on the baghouse stacks, and the baghouses will include bag leak detection systems. In addition, the company will be required to either maintain a monitoring device that allows the pressure in the free space inside the EAF to be monitored, according to 40 CFR § 60.274a(f), or conduct daily melt shop opacity observations when the furnace is operating in the meltdown and refining period. VOC: Ashoka proposes to utilize a scrap management program and an EAF BACT limit 0.30 lb VOC/ton steel. This is consistent with the range of emission limits identified in the RBLC database search. Fluoride: Ashoka proposes to use direct evacuation control and a roof canopy hood exhausted to baghouse and an emission limit of 0.059 lb/ton as BACT for fluoride emissions from the proposed EAFs. The proposed emission limit will be consistent with the range identified in the RBLC. Pb: Ashoka proposes to use direct evacuation control and roof canopy hood exhausted to the EAF/LMS baghouse and an emission limit of 0.0005 lb/ton as

		BACT for lead emission from the proposed EAFs. This is consistent with AP-42 Section 12.5.1 Steel Mini-mills and the range of emission limits identified in the RBLC database search.
Electric Arc Furnace Fugitives	MELTGEN	Emissions from the EAF are represented as having a capture efficiency greater than 99%. Emission factors will be consistent with the range of emission limits identified in Tier I BACT or the RBLC database search as described above. All uncaptured emissions will be emitted through this EPN.
Caster Vent Emissions	CASTVENT	Emissions from casting will be controlled by a baghouse with a maximum outlet grain loading of 0.0052 gr/dscf. The proposed controls meet Tier I BACT requirements.
Caster Spray Chamber	CASTSPRAY	Emissions from casting operations are represented as having a capture efficiency greater than 99%. Casting operations will meet Tier I BACT requirements as described above. All uncaptured emissions will be emitted through this EPN.
Rolling Mill	ROLLING	Steel rolling operations will be conducted inside a building, which will achieve a 70% reduction in emissions. This is consistent with Tier I BACT requirements.
Material Handling: Drop Point	SCRAPLOAD	Water sprays/moisture control will be used to achieve a 70% reduction in emissions, which is consistent with Tier I BACT requirements.
Storage: Stockpile	SLAGSTOCK	Water sprays will be used to control stockpiles and achieve a minimum 70% emissions reduction. This is consistent with Tier I BACT requirements.
Dryers, Heaters, and Furnaces < 40 MMBtu/hr	LADLEDRYER, TUNDDRYER, TUNDHEAT, LADLEHEAT, CCMEXIT	Ashoka proposes the following emission limits for the ladle and tundish dryers, which are equal to AP-42 emission factors for small gas-fired heaters: $\underline{NO_X}$: 0.10 lb/MMBtu CO: 0.084 lb/MMBtu $\underline{SO_2}$: 0.0006 lb/MMBtu $\underline{PM/PM_{10}/PM_{2.5}}$: 0.0019 lb/MMBtu VOC: Ashoka proposes a VOC emission limit of 0.0019 lb/MMBTU. This is consistent with the range of emission limits identified in the RBLC database search. The use of AP-42 emission factors is consistent with the lowest emission limits identified in the RBLC database with small gas-fired heaters, dryers, and furnaces for steel mills.
Emergency Diesel Engine	ENG-1	The emergency engine will meet the requirements of 40

		CFR Part 60, Subpart IIII. Ultra-low sulfur diesel fuel (less than 15 ppmw sulfur) will be fired, and the engine will be limited to less than 100 hours/year of non-emergency operation. This is consistent with Tier I BACT requirements.
Cooling Tower	COOLTOWER	VOC associated with the cooling tower will be monitored monthly with an air stripping system meeting the requirements of the TCEQ Sampling Procedures Manual, Appendix P. Cooling towers will be equipped with drift eliminators achieving a maximum of 0.0005% drift. This is consistent with or exceeds Tier I BACT requirements.

Permits Incorporation

No permits are to be incorporated as a result of this permit action.

Impacts Evaluation

Was modeling conducted? **Yes** Type of Modeling: **Aermod**

Is the site within 3,000 feet of any school? **No**

Additional site/land use information: Land use surrounding the site is primarily agricultural/unoccupied.

The air quality analysis is acceptable for all review types and pollutants. Detailed results may be found in the modeling audit dated May 5, 2023 (WCC Content ID 6540807). Based on the results of the modeling audit, emissions from the site for all pollutants except fluorine were below their relevant NAAQS standard or ESL. The exceedance of fluorine was sent to the Toxicology Division for review.

After conducting the health impacts analysis, the Toxicology Division approved the subject RFC on May 10, 2023 and does not anticipate any short- or long-term adverse health effects to occur among the general public as a result of exposure to the proposed emissions from this facility. As such, the emissions from the site would not be expected to be detrimental to human health and the environment.

	6/26/2023		6/26/2023
Project Reviewer Alexander Au	Date	Team Leader Joel Stanford	Date