Preliminary Determination Summary
Optimus Steel LLC
Permit Numbers 2448 and PSDTX1560

I. Applicant

Optimus Steel LLC
PO BOX 3869
Beaumont, TX 77704-3869

II. Project Location

100 Old Highway 90 W
Vidor, Orange County, TX 77662

III. Project Description

Optimus Steel LLC (Optimus) operates a steel production mill in Vidor and intends to replace the electric arc furnace transformer with a larger unit (120 MVA from 76 MVA), correspondingly decreasing batch turnaround (tap-to-tap) times and increasing annual production capacity of the melt shop operations to 1,000,000 tons of cast steel. Added to the existing capability of bringing in purchased steel billets as raw materials, the total annual permit production will be 1,200,000 tons of finished steel products.

IV. Emissions

Total emissions to be authorized under the new PSD permit are summarized below.

Air Contaminant	Proposed Allowable Emission Rates (tpy)
PM	139.97
PM_{10}	105.48
$PM_{2.5}$	115.01
VOC	168.63
NO_x	520.38
CO	1782.52
SO_2	179.73
Pb	0.79

V. Federal Applicability

Orange County is classified as attainment or unclassified for all criteria air pollutants, so Nonattainment review does not apply.

Project increases of Nitrogen Oxides (NO_x), Carbon Monoxide (CO), and Sulfur Dioxide (SO_2) are in excess of the amount required for the site to be classified as a major emitting facility (40, 100, 100, and 40 tons per year [tpy], respectively) so PSD review applies for NO_x, CO, and SO_2. Project increases of all other pollutants are below the respective major source thresholds, so PSD review is not applicable for any other pollutants.

Pollutant	Project Increase (tpy) [1]	PSD Netting Trigger (tpy)	Netting Required Y/N	Netting Result (tpy)	PSD Triggered Y/N
VOC [2]	65.52	40	Y	31.30	N
NOx [2, 3]	188.51	100	Y	130.84	Y
SO_2 [3]	69.99	40	Y	51.42	Y
CO	692.70	100	Y	506.69	Y
PM [4]	13.98	25	N	N/A	N
PM_{10} [4]	19.62	15	Y	9.83	N
$PM_{2.5}$ [4]	18.35	10	Y	8.11	N
Pb	0.12	10	N	N/A	N
CO_2e [5]	77,746	75,000	Y	55,427	N

1 Project Increases: Comparison of Baseline Actual to PTE (or Projected Actual) Increases only.

2 Ozone precursor. Either pollutant precursor can trigger BACT and impacts analysis, as applicable.

3 $PM_{2.5}$ precursor. Not used to trigger $PM_{2.5}$ BACT/LAER or impacts analysis at this time.

4 Total PM was evaluated on filterable, while PM10 and PM2.5 were evaluated for condensable and filterable emissions. PM_{10} emissions are used only if $PM_{2.5}$ emissions cannot be quantified or estimated. ($PM_{2.5}$ Implementation Plan).

5 PSD applicability for Greenhouse Gases (GHG) evaluated following the June 24, 2014, EPA memorandum "*Next Steps and Preliminary Views on the Application of Clean Air Act Permitting Programs to Greenhouse Gases Following the Supreme Court's Decision in* Utility Air Regulatory Group v. Environmental Protection Agency."

VI. Control Technology Review

The facilities subject to control technology review for emissions of NO_x, CO, and SO_2 are the following: scrap metal (raw material) handling, the electric arc furnace (EAF), ladle refining furnace (LRF), melt shop, and casting, all of which are increasing throughput. Maintenance, startup and shutdown (MSS) activities performed on new and modified facilities are also included in the review.

- Scrap steel used as raw material for the mill is in large pieces. Sulfur is minimized by work practices and material inspections. Scrap selection is also regulated under MACT YYYYY which requires a pollution prevention system to minimize any chlorinated plastics and free organic liquids, including draining any used oil filters and removal of batteries or other lead-containing components.

- The EAF is a significant source of NO_x, CO, and SO_2. Products of combustion are minimized by the use of natural gas fuel and good combustion practices. NO_x emissions are represented to meet 0.58 lb NO_x/ton of steel billet production, based on site test data. The RBLC retrieval shows EAF NO_x ranging from 0.16 to 0.9 lb NO_x/ton steel. CO emissions will be controlled by good combustion and operating practices along with natural gas fuel.

  The company represents an emission factor of 3.275 lb CO/ ton steel based on site test data. The RBLC includes a range of 2.0 – 4.8 lb CO/ ton steel. The scrap management program minimizes materials which may contain sulfur compounds. Sulfur is also limited by the use of natural gas as a fuel. The company represents 0.216 lb SO_2/ton steel based on site testing and is well within the range of the RBLC retrieval range of 0.07 – 1.76 lb SO2/ton steel.

- The Ladel Refining Furnace (LRF) are where additives and alloys are added to the steel bath. The LRF is a significant source of NO_x, CO, and SO_2. Products of combustion are minimized by the use of natural gas fuel and good combustion practices. NO_x emissions were represented as 0.015 lb NO_x/ton of steel billet production based on site-specific testing. Per the RBLC retrieval, equivalent operations NO_x ranges from 0.0158 to 0.548 lb NO_x/ton steel. CO emissions will be controlled by good combustion and operating practices along with natural gas fuel. The company represents an emission factor of 0.13 lb CO/ ton steel which is within the wide variation of values from the RBLC retrieval (0.02 - 2.0 lb CO/ ton steel with an average of 0.73 lb/ton). SO_2 emissions are minimized by the diligence of the scrap management program, which minimizes materials which may contain sulfur compounds. Sulfur is also limited by the use of natural gas as a fuel. The company represents 0.14 lb SO_2/ton steel. This value is well within the range of the RBLC retrieval range of 0.2 – 1.41 lb SO_2/ton steel.

- The Melt Shop uncontrolled emission factors for CO, NO_x, and SO_2 are calculated assuming 99% capture for the direct evacuation system during melting operations and 97.5% capture for the overhead canopy during charging and tapping.

The proposed level of control is consistent with, or more stringent than controls required during recent PSD reviews for similar facility types, as reflected in results of a search of the RACT/BACT/LAER Clearinghouse (RBLC) database.

VII. Air Quality Analysis

The air quality analysis (AQA) is acceptable for all review types and pollutants. The results are summarized below. Additional details can be found in the ADMT Memo dated October 21, 2019, Groupwise Document No. 622301.

The applicant evaluated two vertical exhaust configurations for the Electric Arc Furnace (EAF) Baghouse (EPN 2A). The first configuration option consists of two stacks while the second option consists of only one stack. The results associated with the proposed option with the highest predicted concentrations are reported in the tables below.

A. De Minimis Analysis

A De Minimis analysis was initially conducted to determine if a full impacts analysis would be required. The De Minimis analysis modeling results indicate that NO_2 and SO_2 exceed the respective de minimis concentrations and require a full impacts analysis. The De Minimis analysis modeling results for CO indicate that the project is below the respective de minimis concentrations and no further analysis is required.

Table 1. Modeling Results for PSD De Minimis Analysis in Micrograms Per Cubic Meter (µg/m³)

Pollutant	Averaging Time	GLCmax (µg/m³)	De Minimis (µg/m³)
SO_2	1-hr	58	7.8
SO_2	3-hr	47	25
SO_2	24-hr	18	5
SO_2	Annual	2	1
NO_2	1-hr	69	7.5
NO_2	Annual	3	1
CO	1-hr	252	2000
CO	8-hr	121	500

Table 2. Modeling Results for Ozone PSD De Minimis Analysis in Parts per Billion (ppb)

Pollutant	Averaging Time	GLCmax (ppb)	De Minimis (ppb)
O_3	8-hr	0.4	1

The applicant performed an O_3 analysis as part of the PSD AQA. The applicant evaluated project emissions of O_3 precursor emissions (NO_x and VOC). For the project NO_x and VOC emissions, the applicant provided an analysis based on a Tier 1 demonstration approach consistent with the EPA's Guideline on Air Quality Models. When the estimates of ozone concentrations from the project emissions are added together, the results are less than the De Minimis level.

B. Air Quality Monitoring

The De Minimis analysis modeling results indicate that 24-hr SO_2 exceeds the respective monitoring significance level and requires the gathering of ambient monitoring information.

The De Minimis analysis modeling results indicate that CO and NO_2 are below their respective monitoring significance level.

Table 3. Modeling Results for PSD Monitoring Significance Levels

Pollutant	Averaging Time	GLCmax (µg/m^3)	Significance (µg/m^3)
SO_2	24-hr	18	13
NO_2	Annual	3	14
CO	8-hr	121	575

The applicant evaluated ambient SO_2 monitoring data to satisfy the requirements for the pre-application air quality analysis.

Since the project has a net emissions increase of 100 tons per year (tpy) or more of volatile organic compounds or nitrogen oxides, the applicant evaluated ambient O_3 monitoring data to satisfy requirements in 40 CFR 52.21 (i)(5)(i)(f).

C. National Ambient Air Quality Standards (NAAQS) Analysis

The De Minimis analysis modeling results indicate that NO_2 and SO_2 exceed the respective de minimis concentration and require a full impacts analysis. The full NAAQS modeling results indicate the total predicted concentrations will not result in an exceedance of the NAAQS.

Table 4. Total Concentrations for PSD NAAQS (Concentrations > De Minimis)

Pollutant	Averaging Time	GLCmax (µg/m^3)	Background (µg/m^3)	Total Conc. = [Background + GLCmax] (µg/m^3)	Standard (µg/m^3)
SO_2	1-hr	192	Note background discussion below	192	196
SO_2	3-hr	165	62	227	1300
SO_2	24-hr	82	15	97	365
SO_2	Annual	11	1	12	80
NO_2	1-hr	140	42	182	188
NO_2	Annual	23	8	31	100

D. Increment Analysis

The De Minimis analysis modeling results indicate that 3-hr, 24-hr, and annual SO_2 and annual NO_2 exceed the respective de minimis concentrations and require a PSD increment analysis.

Table 5. Results for PSD Increment Analysis

Pollutant	Averaging Time	GLCmax (µg/m^3)	Increment (µg/m^3)
SO_2	3-hr	165	512
SO_2	24-hr	82	91
SO_2	Annual	11	20
NO_2	Annual	23	25

E. Additional Impacts Analysis

The applicant performed an Additional Impacts Analysis as part of the PSD AQA. The applicant conducted a growth analysis and determined that population will not significantly increase as a result of the proposed project. The applicant conducted a soils and vegetation analysis and determined that all evaluated criteria pollutant concentrations are below their respective secondary NAAQS. The applicant meets the Class II visibility analysis requirement by complying with the opacity requirements of 30 TAC Chapter 111. The Additional Impacts Analyses are reasonable and possible adverse impacts from this project are not expected.

The ADMT evaluated predicted concentrations from the proposed project to determine if emissions could adversely affect a Class I area. The nearest Class I area, Caney Creek Wilderness, is located approximately 480 kilometers (km) from the proposed site.

The predicted concentrations of NO_2 and SO_2 for all averaging times, are all less than de minimis levels at a distance of five km from the proposed sources in the direction of the Caney Creek Wilderness Class I area. The Caney Creek Wilderness Class I area is an additional 475 km from the location where the predicted concentrations of NO_2 and SO_2 for all averaging times are less than de minimis. Therefore, emissions from the proposed project are not expected to adversely affect the Caney Creek Wilderness Class I area.

F. Minor Source NSR and Air Toxics Review

Table 6. Site-wide Modeling Results for State Property Line

Pollutant	Averaging Time	GLCmax (µg/m^3)	Standard (µg/m^3)
SO_2	1-hr	183	817

G. Greenhouse Gases

EPA has stated that unlike the criteria pollutants for which EPA has historically issued PSD permits, there is no National Ambient Air Quality Standard (NAAQS) for GHGs, including no PSD increment. The global climate-change inducing effects of GHG emissions, according to the “Endangerment and Cause or Contribute Finding”, are far-reaching and multi-dimensional (75 FR 66497). Climate change modeling and evaluations of risks and impacts are typically conducted for changes in emissions that are orders of magnitude larger than the emissions from individual projects that might be analyzed in PSD permit reviews.

Quantifying the exact impacts attributable to a specific GHG source obtaining a permit in specific places and points would not be possible [EPA's PSD and Title V Permitting Guidance for GHGs at 48]. Thus, EPA has concluded in other GHG PSD permitting actions that it would not be meaningful to evaluate impacts of GHG emissions on a local community in the context of a single permit.

The TCEQ has determined that an air quality analysis would provide no meaningful data and has not required the applicant to perform one. As stated in the preamble to TCEQ's adoption of the GHG PSD program, the impacts review for individual air contaminants will continue to be addressed, as applicable, in the state's traditional minor and major NSR permits program per 30 TAC Chapter 116.

VIII. Conclusion

The applicant has demonstrated that the project meets all applicable rules, regulations and requirements of the Texas and Federal Clean Air Acts. This permit is recommended for issuance.