

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ENGINEERING AND COMPLIANCE

APPLICATION PROCESSING AND CALCULATION

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PERMIT TO CONSTRUCT to PERMIT TO OPERATE

(FACILITY ID# 14495)

Applicant Name: VISTA METALS CORPORATION

Mailing Address: 13425 Whittram Ave.
Fontana, CA 92335

Equipment Location: 13425 Whittram Ave.
Fontana, CA 92335

EQUIPMENT DESCRIPTIONS:

APPLICATION NO. 530841

D94: FURNACE A, ALUMINUM MELTING, THORPE TECHNOLOGIES, NATURAL GAS, 16 MMBTU/HR, WITH TWO BLOOM 1150+100 ULTRA LOW NOX REGENERATIVE BURNERS, 15.2 MMBTU/HR TOTAL, AND A 0.8 MMBTU/HR AUXILIARY BURNER.

APPLICATION NO. 530842

D95: FURNACE B, ALUMINUM MELTING, THORPE TECHNOLOGIES, NATURAL GAS, 16 MMBTU/HR, WITH TWO BLOOM 1150+100 ULTRA LOW NOX REGENERATIVE BURNERS, 15.2 MMBTU/HR TOTAL, AND A 0.8 MMBTU/HR AUXILIARY BURNER.

APPLICATION NO. 516522

D96: FURNACE, HOMOGENIZING, THORPE TECHNOLOGIES, NATURAL GAS, 12.4 MMBTU/HR, WITH TWO 4.9 MMBTU/HR WINNOX MODEL WX0400 BURNERS, AND TWO 1.3 MMBTU/HR WINNOX MODEL WX0100 BURNERS.

PERMIT CONDITIONS: (SEE TITLE V PERMIT)

BACKGROUND:

Vista Metals Corporation submitted A/N's 530841 and 530842 on December 22, 2011, for change of condition to increase throughput limit for two identical aluminum melting furnaces (D94 and D95). The Permit to Construct was issued on June 19,

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2012. Vista Metals Corporation had to acquire 3 lbs/day of PM10 ERC's and they were used on June 19, 2012 once this Permit to Construct was approved.

Vista Metals submitted A/N 516522 on December 3, 2010 for a new homogenizing furnace (D96). The Permit to Construct was issued on October 27, 2011.

PROCESS DESCRIPTION:

Vista Metals' operation consists of melting primary aluminum alloys and scrap aluminum and casting into billets and ingots. After the casting process, the billets are directed into the homogenizing furnace for heat treatment.

The company is operating six metal melting furnaces. When these furnaces are filled with melted aluminum, charging is stopped and a sample is drawn for quality assurance purposes. The aluminum furnaces (D94, D95) are operated by tilting the furnace and pouring out the molten metal into the casting pit. The advantage of the tilting design of the proposed furnace includes safety of not having to open and close the tap holes. Also, the quality of the molten metal is higher because of the less turbulence in pouring. These furnaces are equipped with electromagnetic pumps to improve temperature and alloy uniformity and to promote more efficient melting by the stirring action in the bath.

There are two separate combustion systems in these furnaces; 1) the Bloom Ultra Low NOx regenerative system, which is used to heat the furnaces with a maximum instantaneous capacity of 15.2 MMBtu/hr, and 2) the 0.8 MMBtu/hr auxiliary burner to keep the aluminum from freezing in the pump.

The regenerative burners provide the most efficient energy usage and lowest greenhouse gas emissions per unit work. These burners operate in pairs where, at any given time, one burner is firing while the other is exhausting the combustion products from the furnace and recovering energy to its regenerator. The burners switch roles every 30 to 90 seconds when the exhausting burner's regenerator has reached its capacity of recovered energy. During the firing cycle, the stored energy in the regenerator is used to preheat the combustion air going to the firing burners.

The maximum instantaneous firing rate of the regenerative burners is 15.2 MMBtu/hr, but the average firing rate over any period of time is 14.4 MMBtu/hr because there is a 2 to 5 seconds when neither of the burners are firing as the burners switch roles from firing to exhausting.

The furnace melts between 12,000 and 15,000 lb/hr depending on the type of charge. For a 60,000 lb charge, melting takes 4-5 hrs with the burners at high fire, which builds the

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temperature up from 1600°F to 2000°F. The electromagnetic pump circulates the metal during the second half of the cycle.

The homogenizing furnace (D96) maintains a constant temperature during the setting process to maintain uniformity of physical properties throughout the billets. The maximum firing rate of the homogenizing furnace is 12.4 MMbtu/hr. Furnaces D94-D96 are categorized as Large Sources as required by RECLAIM.

PERMIT CONDITIONS: (SEE TITLE V/RECLAIM PERMIT)

EMISSION CALCULATIONS

A/N's 516520, 516521 Two Aluminum Melting Furnaces (D94,95)

D94 and D95 were source tested on June 26, 2012. The source test reports were found conditionally acceptable by the District Source Test Engineer. The furnaces were tested for total PM and not PM10. We will assume PM10 = PM, therefore calculations will be biased high. The furnace D94 was found to have a total particulate matter emission factor of 0.026 lbs/ton. The furnace D95 was found to have a total particulate matter emission factor of 0.020 lbs/ton. On November 30, 2012, the facility requested to increase the throughput since the actual emissions were lower than the estimated emissions. Since the throughput condition is a combined limit, the PM10 emission factor of 0.026 lbs/ton will be used to determine emissions from the proposed throughput.

Proposed Throughput: 4,538 tons combined

Process PM emission factor = 0.026 lb/ton aluminum melted (June 26, 2012 Test)

Daily throughput for D94 and D95 = 4,538 tons/month/30 days
= 151.27 tons/day

Previous Calculation based on 2,950 tons/month:

= 98.3 ton/day x .04 lb/ton
= 3.93 lbs/day (Total D94 and D95), 1.97 lbs/day
each

New Calculation based on 4,538 tons/month

= 151.27 ton/day x .026 lb/ton

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= 3.93 lb/day (Total D94 and D95), 1.97 lbs/day each

No change in combustion emissions. There is a fuel limit bubble (Condition C1.24). Combustion emissions are accounted for in NSR under D60, D66, and D69.

A/N 516522 Homogenizing Furnace D96

There is no change to Furnace D96 emissions from the Permit to Construct evaluation. The source test was conducted for NO_x and CO on June 27, 2012. The source test passed. The facility has elected to keep a concentration limit of 50 ppm NO_x at 3% O₂.

RULES EVALUATION:

RULE 212: (c) (1): This section requires a public notice for all new or modified permit units that emit air contaminants located within 1000 feet from the outer boundary of a school.

The nearest school is approximately 1.3 miles (about 6800 ft) from the boundary of the facility, therefore, public notice is not required.

(c)(2): This section requires a public notice for all new or modified facilities having onsite emission increases exceeding any of the daily maximums specified in Rule 212(g).

The change of condition will result in an increase in PM₁₀ emissions, but is not expected to exceed the daily maximum thresholds. Public notice is not necessary.

(c)(3): This section requires a public notice for all new or modified permit unit with increases in emissions of toxic air contaminants listed in Table I of Rule 1401 resulting in MICR greater than 1E-6 per permit unit or greater than IOE-6 per facility.

The proposed project is expected to result in increased toxic pollutant emissions from metal melting but not greater than the MICR threshold, therefore, public notice is not required.

(g): Project emissions do not exceed daily max thresholds. Public Notice is not required.

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RULE 401: Visible emissions are not expected with proper operation of this equipment.

RULE 402: Nuisance is not expected if equipment is properly operated and maintained.

RULE 403: Fugitive dust is not expected if equipment is properly operated and maintained.

RULE 404: Compliance is expected if equipment is properly operated and maintained.

RULE 1303:

OFFSETS: For D94 and D95, the throughput was adjusted since the actual emissions were lower than the estimated emissions. The total emissions remain unchanged. No additional offsets are required. Below is the Permit to Construct Calculation for reference purposes.

(PRE VERSUS POST MODIFICATION)

The offset ratio for PM10 is 1.2 to 1.0.

Pre-Mod vs. Post-Mod

PM10 Emissions	Pre-Mod Each Furnace (lbs/day)	Post Mod Combined (lbs/day)	Increase (lbs/day)
Furnace D94	0.55	1.97 lbs	1.42
Furnace D95	0.55	1.97 lbs	1.42
Total (D94,D95)	1.10	3.94	2.84

PM10 Offsets required:

$$2.84 \text{ lbs/day} \times 1.2 = 3.408 \text{ lbs/day}$$

Facility authorized use of 3 lbs/day PM10.

BACT: The two melting furnaces (A/N's 516520 and 516521) carry Bloom burners ultra low NOx and are guaranteed to have NOx concentration of less than 60 ppmv at 3% O₂, which meets the BACT requirement of 60 ppmv. There

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is no BACT limit for CO. The homogenizing furnace (A/N 516522) uses the Winnox Burners (W0400 and W0100). These burners are guaranteed to have NOx concentration of less than 50 ppmv at 3% O₂, which meets the BACT requirement of 50 ppmv. There is no BACT limit for CO.

MODELING: Modeling for VOC is not required. CO is in attainment. Modeling for CO not required. According to Table A-1 in Rule 1303, allowable PM₁₀ limit is 5.2 lbs/hr and NOx is 0.86 lbs/hr for sources 10-20 MMBtu/hr. PM₁₀ emissions for new furnaces (D94,D95) is .098 lbs/hr and NOx emissions for furnace D96 is 0.75 lbs/hr. Modeling passes.

RULE 2005: There is no net increase in NOx. Additional NOx allocation is not needed under the RECLAIM Rule 2002. No offset is needed. In addition, I297.X condition only applies to the first year of operation. I297.X condition is not required.

REG XXX: EPA 45-Day review required since the change of condition for furnace D94 and 95 requesting a higher throughput is considered a "minor permit revision."

RULE 1401: No increase in combustion emissions. Natural gas combustion expected to be negligible. Increase in toxics from aluminum melting expected. Health Risk Screening passed. Tier 1 Screening passed for the Hazard Index Acute and Chronic. Tier 3 screening passed for cancer risk. Maximum Individual Cancer Risk is 2.74E-07 for residential and 5.34E-08 for commercial.

CONCLUSIONS AND RECOMMENDATIONS:

Based on the evaluation contained herein, the subject equipment will comply with all of the District's rules and regulations; therefore, I recommend a permit to operate for the equipment that was previously issued a permit to construct as described above.