ATTACHMENT EU-1
Operation and Maintenance Plan for Melt Furnace Emissions Controls
Air Construction Permit Application (Application No. 5197-1)
Enkei America, Inc.
Jacksonville Aluminum Wheel Manufacturing Plant
(Facility ID No. 0310433)

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1.0 PURPOSE AND INTRODUCTION

Enkei America, Inc. (Enkei) has prepared this Operation & Maintenance (O&M) Plan, in order to satisfy the regulatory requirements found at Rule 62-296.700(6), Florida Administrative Code (FAC) as adopted by reference and Rule 2.1101, Jacksonville Environmental Protection Board (JEPB). The purpose of this O&M Plan is to demonstrate the compliance basis for the facility and for the proper operation of the melt furnaces, associated control devices, and ancillary equipment.

The O&M plan contains information on the:

- Melt Furnace and control device parameters to be monitored,
- Established operating levels and/or ranges for regulated equipment,
- Procedures for operation/maintenance of furnaces and control devices,
- Performance of work practices that will show compliance with permit terms,
- Corrective actions taken if/when operating parameters deviate from ranges,
- Manufacturer's recommended maintenance schedules for equipment,
- Documentation of work practices and pollution prevention measures
- Documentation/Logs kept for the charge rate established by the permit.

This O&M Plan will be incorporated by reference into the facility air operation permit after review by the City of Jacksonville during review of the application to renew the facility air operation permit application. If the facility substantively revises a work practice or operating procedure, this Plan must be modified accordingly and re-submitted to the City for approval.

2.0 SOURCE DESCRIPTION

Enkei manufactures aluminum automobile wheels at the Jacksonville Plant. The manufacturing process involves aluminum melting (new ingots and recycled metal), die cast molding, mechanical shaping and forming, and machining of the aluminum wheels. The facility includes two Melt Furnaces (F1 and F2) for melting clean aluminum (new ingot & off-specification wheels) and one Chip Melter for melting recycled chips from the mechanical wet forming operations (i.e., sawing, drilling, and machining). These furnaces feed into the casting and heat-treating lines and then into the supporting machining and finishing operations. The melting, spinning, and heat-treating solution furnaces are fired with natural gas. A co-located business, Technical Painting of Jacksonville, Inc. (TPJ), occupies the southernmost building and paints the wheels produced by Enkei as a separate operation that is closely coordinated with Enkei. TPJ operates as a separate business operation and its emissions are authorized under a separate air operation permit (No. 0310606-001-AO.

Based upon emissions data from stack tests completed in 2000 and 2007 on the furnace bag houses, the facility is a minor source of particulate matter. However, the facility is located within the area of influence for the Duval County air quality maintenance area for particulate matter and is thus subject to the Reasonably Achievable Control Technology (RACT) requirements found at Rule 62-296.700 and 712, FAC. The facility also emits combustion-related pollutants [i.e., carbon monoxide (CO), nitrogen oxides (NOx), sulfur dioxide (SO2), particulate matter (PM), volatile organic compounds (VOC), and total hazardous air pollutants (THAP)] at rates well below Florida permitting thresholds. Several insignificant emission sources are present at the facility that are exempt from permitting based on their estimated emission rates, including the following:

1) Metal (water) quench activities;
2) Mechanical wet-forming operations (sawing, drilling, machining, grinding, etc.);
3) Natural-gas fired combustion equipment, including:
   - two spinning furnaces (0.120 mm Btu/hour each),
   - two solution furnaces (0.715 mm Btu/hour each), and
   - two aging furnaces (0.536 mm Btu/hour each);
4) Abrasive blasting cabinet operations;
5) Cooling tower operation; and
6) Natural gas fired emergency generators (two 70 horsepower units).

3.0 CONTROL DEVICES

Each of the three melting furnaces operated by the facility (i.e., two melt furnaces and one chip melter) include an off-gas collection system consisting of hooding, ductwork, and evacuation fans to draw impacted head space air from the furnaces through separate control devices. The control device design specifications and other descriptive data are presented as follows:

Table 1 – Control Device Descriptions

Device Characteristic	Melt Furnace F1	Melt Furnace F2	Chip Melter
Manufacturer	Donaldson Torit	Donaldson Torit	DeVansco
Model	Model 376RFW10	Model 232RFW10	DV-2410
Type	Fabric Filter - Low Temperature (< 180 °F)	Fabric Filter - High Temperature (> 250 °F)	Wet Scrubber - High Efficiency (95.0-99.9%)

Device Characteristic	Melt Furnace F1	Melt Furnace F2	Chip Melter
Design flow rate	16,200 cfm	12,100 cfm	10,000 cfm 430 gpm
Control Efficiency	99+ %	99+ %	95+ %
Pressure drop	1 - 6 inches wc	1 - 6 inches wc	24 inches wc
Scrubbing liquor	N/A	N/A	Water

cfm = cubic feet per minute gpm = gallons per minute wc = water column

4.0 FACILITY COMPLIANCE REQUIREMENTS

Enkei has accepted various air permit-imposed operating and particulate matter emission limits for the melting furnaces to reflect the maximum operating parameters desired or achievable by the Jacksonville Plant. The key operating and emission limits included in the facility permit are as follows:

Table 2 – Key Facility Operating and Emission Limits

Operating Parameter	Melt Furnace F1	Melt Furnace F2	Chip Melter
Operating hours (hours/year)	8,760	8,760	8,760
Maximum process rate (pounds/hour feed)	≤ 2,200	≤ 2,200	≤ 704
Maximum heat input (MMBtu/hour natural gas)	≤ 3.81	≤ 3.81	≤ 1.20
Volumetric flow rate (cubic feet/minute (nominal))	16,200	12,100	10,000
Visible emissions (% opacity)	≤ 5%	≤ 5%	≤ 5%
Particulate matter emissions (grains/dry standard cubic feet)	0.03 (4.16 lbs/hr)	0.03 (3.11 lbs/hr)	0.03 (2.57 lbs/hr)

5.0 MONITORING PROCEDURES

Enkei has prepared and implemented this written O&M Plan for the furnace process operations and control equipment to ensure that the melting furnaces are operated within the established operating limits and the particulate matter emissions remain below the required facility limits. The operating and documentation procedures established by this O&M Plan will satisfy the permit requirements and provide a compliance basis for the facility.

5.1 Monitoring Procedures – Furnaces

The facility will keep records of the amount of aluminum charged to the three furnaces on an hourly basis to provide a compliance basis for the monitoring parameters. The ingot charged to the Melt Furnaces are of known weight; therefore, the operators will keep a log of the number of ingots placed into the furnace melt chambers. Additional charges to the furnaces include molten aluminum from the Chip Melter and runaround off-specification cast wheels. These charge amounts are also part of the charge logs kept by the Plant. Each time materials enter the furnace, the time is recorded so that the

hourly charge rate can be calculated to verify compliance with the allowable charge rate limits. This process will also result in the logging of daily operation hours for the furnaces.

The facility will read and log the furnace gas meters on a daily basis so the associated natural gas consumption volumes can be calculated and recorded. Published gas heating values are obtained from the commercial gas supplier and the natural gas volumes consumed in each furnace are multiplied by these heating values and then divided by the logged furnace operating hours for that day to determine the hourly heat input rate for comparison to the allowable heat input rates.

Enkei maintains appropriate log forms for documentation of the recorded charge and fuel consumption rates as part of the overall quality management system implemented at this facility. These log forms include procedures for the calculation of the attendant monitoring parameters and support ongoing comparison of the parameters against the permit limits. Separate forms are completed for each furnace and are maintained by the furnace operators.

5.2 Monitoring Procedures – Furnace Baghouses

Standardized work charts have been developed for the proper operation of the furnace baghouses. The baghouse forms used are as recommended by the equipment manufacturer are standard in the industry. In addition, periodic monitoring of the physical condition of the dust collector will allow timely repair or replace of any damaged components, thus minimizing downtime and maintaining optimum system performance. General and specific operational checks as recommended by the unit manufacturer include the following:

General

1. Periodically check the positive displacement pump components and replace filters as required to maintain blower pressure rating. Check rotation of cleaning arms.
2. Monitor pressure drop across filters. Abnormal changes in pressure drop may indicate a change in operating conditions and possibly a fault that needs to be corrected.
3. Monitor exhaust for visible emissions. Any indication of visible emissions must be investigated and rectified as soon as possible to avoid a violation of the emission limit. Furnace operations may need to be suspended until the cause for the visible emissions is addressed.
4. Monitor the dust disposal receptacle and arrange for proper disposal of the collected dust.

Weekly

5. Check that pressure drop is within normal operational range (from 1 to 6 inches water column).
6. Check for proper air pressure at the reservoir (7.5 pounds per square inch gauge).
7. Check for proper lubricant level in positive displacement blower.
8. Record the differential pressures across the baghouses weekly.
9. Conduct visual inspection of the baghouse filters weekly per the manufacturer's recommendations and replace filters as necessary.

Quarterly

10. Check condition of the clean-air plenum. If dust accumulation is present, check filter bags for wear, tears or loose seals. Replace as necessary.

11. Check solenoid and diaphragm valve operation.
12. Check door seals and replace as necessary. Check cleaning arm drive chain and positive displacement blower belt tension.
13. Check positive-displacement blower and gear reducer oil levels. Add oil through breather mounting holes or other oil fill locations. Reference the blower owner's manual for proper lubricant.
14. Check the rotating arm manifold drive gear reducer oil level. Add oil through breather mounting holes or other oil fill locations. The gear reducer is filled with synthetic oil. See reducer manual for recommended lubrication type and quantity. When checking or replacing the oil, make sure to check both housings of the double reduction reducer. Each housing has its own vent, fill and drain plug

Annually

15. Complete detailed inspect of the emission collection, capture, and transport systems per the manufacturer's recommendations.

Enkei maintains appropriate log forms to document the completion of and findings from the various baghouse inspections as part of the overall quality management system implemented at this Plant. Separate forms are completed for each baghouse and are maintained by the furnace operator. Maintenance driven by the inspection findings, as well as preventative maintenance, is completed in accordance with the manufacturer's recommendations and is usually completed by an outside vendor qualified to service similar fabric filter control devices.

5.3 Monitoring Procedures – Chip Melter Scrubber

The DeVansco unit is designed to operate effectively with minimal operator intervention. However, a proactive program of periodic monitoring of the unit by operations or maintenance personnel will serve to minimize unscheduled or nuisance shutdowns due to operating problems. Two items of instrumentation are available to monitor the performance of the DeVansco unit, including:

1. The exhaust fan ammeter measuring the values and characteristics of the electrical current draw on the fan motor, and
2. The manometer measures the air pressure losses through the unit and the pressure remaining for cleaning.

In addition, periodic monitoring of the physical condition of the scrubber will allow timely repair or replace of any damaged components, thus minimizing downtime and maintaining optimum system performance. General and specific operational checks as recommended by the unit manufacturer include the following:

Daily

1. Inspect the general condition of the unit to note anything unusual in its condition or operation, such as physical damage to the equipment or inlet or outlet ductwork or water leakage.
2. Check and document the pressure drop across the scrubber. Abnormal changes in pressure drop may indicate a change in operating conditions and possibly a fault that needs to be corrected.

3. Conduct observations of the stack and areas adjacent to the stack to determine if droplet re-entrainment is occurring from an improperly operating mist eliminator. Indicator signs include fallout of solid-containing droplets, discoloration of the stack and adjacent surfaces, or a mud lip around the stack.
4. Observe the fan and recirculation pump operation including unusual noise (i.e., excessively loud or a rolling drone sound), vibration (e.g., the feel of more energetic vibration when touching the scrubber housing), or bearings running hot.

Weekly

5. Carefully observe the condition of the venturi section of the unit. Make note of the venturi gap in inches and the condition of the transparent access/inspection doors.
6. Verify that the moisture eliminators are correctly oriented (i.e., pointing towards the venture).
7. Observe the presence of solids build-up on the moisture eliminators and venturi or shed plate. Anything more than a light build-up of solid indicates that cleaning is required.
8. Check liquid pressure gauges on supply headers to the scrubber to monitor for problems such as nozzle pluggage, header pluggage, and nozzle erosion. Pluggage problems are indicated by higher than normal pressures and erosion problems are indicated by less than normal pressures.
9. Observe the water level in the recirculation tank to confirm that it is approximately 4 inches below the tank top when the unit is shutdown.

Quarterly

10. Observe the water recirculation system carefully to note if the overall water volume appears normal, reduced, or erratic. Observe whether the water distribution across the venturi is normal, obstructed, or has void(s) in the flow pattern.
11. Inspect water surface in the recirculation tank to identify if the observed turbulence is normal or if the water surface appears foamy or oily. Normal turbulence may carry water up to and into lower set of moisture eliminators, but not into the upper set of moisture eliminators.
12. Observe the scraper conveyor operation including air leaks at the conveyor outlet (indicating low tank water level), erratic conveyor chain motion erratic, unusual noise, or visible wear or missing parts on the conveyor.
13. Conduct a walk-around inspection of the entire system to search for leaks.

Annually

14. Complete detailed internal inspect of the scrubber per the manufacturer's recommendations. This inspection will specifically check the unit for signs of:
    - corrosion and erosion
    - solids accumulation in mist eliminators
    - plugged or eroded spray nozzles

Enkei maintains appropriate log forms to document the completion of and findings from the various scrubber inspections as part of the overall quality management system implemented at this Plant. Maintenance driven by the inspection findings, as well as preventative maintenance, is completed in accordance with the manufacturer's recommendations and is usually completed by an outside vendor qualified to service similar wet scrubber control devices.

5.4 *Monitoring Procedures – Monitoring Devices*

Enkei is not required to install any specific continuous monitoring devices pursuant to either the operating permit or applicable regulations. The facility documents the process operations and natural gas usage as discussed above in order to provide a compliance basis. The continued operation of the control measures within ranges of specified indicators of performance such as process parameters (charge rate) and recording the natural gas consumption are designed to provide a reasonable assurance of compliance with applicable requirements.

6.0 CORRECTIVE ACTION FOR EMISSION UNIT DEVIATIONS

The following corrective actions shall be taken when the melt furnaces, baghouses, or wet scrubber operating parameters deviate from the values or ranges established:

1. Determine and record the cause of the deviation or excursion,
2. Record the time of the deviation or excursion began and ended;
3. Record the corrective actions taken;
4. Record the time corrective action was initiated; and
5. Record the time/date corrective action was performed.

In the event that the melt furnaces, baghouses, or wet scrubber operating parameters deviate from the value or range established Enkei will implement the corrective actions indicated below. Operating personnel will mark the appropriate operational or inspection logs with any deviations that are recorded.

Table 3 - Corrective Actions

Parameter	Acceptable Range	Corrective Actions Taken
Natural Gas Combustion	Furnace heat inputs shall not exceed: - 3.81 MMBtu/hour – Melt Furnaces - 1.2 MMBtu/hour – Chip Melter (Exceedance of the values is unlikely as these are the design rating for the furnace burners.)	Make changes in production schedule to reduce natural gas usage rates below the acceptable limit. Report exceedances of the permit limit to the City of Jacksonville within 30 days.
Aluminum Charge	Aluminum charge rates shall not exceed: - 2,200 lbs/hour – Melt Furnaces - 704 lbs/hour – Chip Melter	Make changes in production schedule to reduce charge rates below the acceptable limit. Report exceedance from permit requirements to City of Jacksonville within 30 days.

Parameter	Acceptable Range	Corrective Actions Taken
Stack Opacity	Opacity shall not exceed 5 percent (5%) using EPA Reference Method 9.	Visible emissions observed during routine inspections may indicate an operational problem with the baghouse and will be investigated and rectified quickly. Correct operational problem with melting furnace or shut down if problem is not correctable. Report Method 9 exceedances of the permit requirements to City of Jacksonville.
Baghouse	Differential pressure across the filter bags should normally be between 1 and 6 inches water column (wc).	Initiate inspection procedures to identify operational issues resulting in differential pressures that exceed 6 inches wc. Properly maintain equipment and replace filter media as appropriate.
Scrubber	Differential pressure across the scrubber should normally be between 20 and 24 inches wc.	Initiate inspection procedures to identify operational issues resulting in differential pressures outside the normal range.

The facility is committed to take timely corrective action during periods of excursion where the indicators are out of range or a monitored abnormal condition is determined to exist. A corrective action may include an investigation of the reason for the excursion, evaluation of the situation and necessary follow-up action to return operation within the indicator range. An excursion does not necessarily indicate a violation of an applicable requirement. If the corrective action measures fail to return the indicators to the appropriate range, the facility will report the excursion to the City of Jacksonville.

7.0 DOCUMENTATION OF WORK PRACTICES/POLLUTION PREVENTION

Enkei will document the work practices and pollution prevention measures implemented to achieve compliance with the applicable emission limits established for each process and control device as specified in this site specific O&M Plan. All documentation will be maintained on site for a period of five (5) years and provided to the City of Jacksonville as requested.