

**STAFF DETERMINATION FOR THE APPLICATION TO CONSTRUCT UNDER THE  
NONATTAINMENT AND PREVENTION OF SIGNIFICANT DETERIORATION REGULATIONS  
FOR THE MODIFICATION OF THE #7 ELECTRIC ARC  
FURNACE, A NEW LADLE METALLURGICAL FACILITY AND TWO  
NEW LADLE DRYER/PREHEATERS AT  
REPUBLIC ENGINEERED PRODUCTS, INC. - CANTON PLANT  
STARK COUNTY, OHIO  
PTI NO. 15-01591**

The Clean Air Act and regulations promulgated thereunder require that major air pollution sources undergoing construction or modification comply with all applicable Prevention of Significant Deterioration (PSD) provisions and nonattainment area New Source Review requirements. The federal PSD rules govern emission increases in attainment areas for major sources, which are sources with the potential to emit 250 tons per year or more of any pollutant regulated under the Clean Air Act, or 100 tons per year or more if the source is included in one of 28 source categories. In nonattainment areas, the definition of major source is one having at least 100 tons per year potential emissions. A major modification is one resulting in a contemporaneous increase in emissions which exceeds the significance level of one or more pollutants. Any changes in actual emissions within a five-year period are considered to be contemporaneous. In addition, Ohio now has incorporated the PSD and NSR requirements by rule under OAC 3745-31.

Both PSD and nonattainment rules require that certain analyses be performed before a facility can obtain a permit authorizing construction of a new source or major modification to a major source. The principal requirements of the PSD regulations are:

- 1) Best Available Control Technology (BACT) review - A detailed engineering review must be performed to ensure that BACT is being installed for the pollutants for which the new source is a major source.
- 2) Ambient Air Quality Review - An analysis must be completed to ensure the continued maintenance of the National Ambient Air Quality Standards (NAAQS) and that any increases in ambient air pollutant concentrations do not exceed the incremental values set pursuant to the Clean Air Act.

For nonattainment areas, the requirements are:

- 1) Lowest Achievable Emissions Rate (LAER) - New major sources must install controls that represent the lowest emission levels (highest control efficiency) that has been achieved in practice.
- 2) The emissions from the new major source must be offset by a reduction of existing emissions of the same pollutant by at least the same amount, and a demonstration must be made that the resulting air quality shows a net air quality benefit. This is more completely described in the Emission Offset Interpretative Ruling as found in Appendix S of 40 CFR Part 51.
- 3) The facility must certify that all major sources owned or operated in the state by the same entity are either in compliance with the existing State Implementation Plan (SIP) or are on an approved schedule resulting in full compliance with the SIP.

For rural ozone nonattainment areas, the requirements are:

- 1) LAER - New major sources must install controls that represent the lowest emissions levels (highest control efficiency) that has been achieved in practice.
- 2) The facility must certify that all major sources owned or operated in the state by the same entity are either in compliance with the existing SIP or are on an approved schedule resulting in full compliance with the SIP.

Finally, New Source Performance Standards (NSPS), SIP emission standards and public participation requirements must be followed in all cases.

### **Site Description**

The Republic Engineered Products, Inc. (Republic) is located in Canton, Stark County, Ohio. This area is classified as an attainment for the following criteria pollutants: total suspended particulates, particulate matter less than 10 microns, sulfur dioxide and carbon monoxide and nonattainment for ozone (nitrogen oxides and volatile organic compounds) and particulate matter less than 2.5 microns.

### **Facility Description**

Republic manufactures steel billets from recycled metal scrap at this facility. Republic generally uses scrap selection procedures to produce molten metal in its electric arc furnace (EAF) with a specific sulfur content based upon the customer requirements. Republic produces special bar quality steels, which can include steels with typical sulfur contents of about 0.04 percent to high-sulfur steels with sulfur contents as high as 0.30 percent.

Republic proposes to modify its existing steelmaking operations. The project, referred as the Melt Shop Flexibility Project (Project), will take place at the Canton Plant. The proposed modifications involves changes to the existing # 7 electric arc furnace (EAF), a new ladle metallurgical facility (LMF) and two new ladle dryer/preheaters. The purpose of these modifications is to increase the overall productivity of steelmaking operations and improve the long-term viability of the Canton Plant. The project involves the following new and modified emissions units:

**No. 7 Electric Arc Furnace (EAF)** – The proposed modification will make improvements to existing No. 7 EAF to increase its maximum short-term and annual steel production. No. 7 EAF is a 220-ton furnace with a current maximum steel output of 85 tons per hour (tph). The project will make a number of improvements to No. 7 EAF to increase its maximum short-term steelmaking capacity to 183 tph and its annual production to 1,284,800 tons per year (tpy). The furnace modifications and operating practice changes will be numerous. Significant changes include, but are not limited to a major overhaul of the power supply system; i.e., a larger electric transformer, current conducting arms, a pulpit automation system, and hydraulic regulation. Further, new JetBOx burners, the functional equivalent of oxyfuel burners and oxygen/carbon injection lances, will be installed, the carbon delivery system improved, and improvements made to the scrap stockhouse.

**No. 2 Ladle Metallurgy Facility (LMF)** – The project will install a new ladle metallurgy facility (LMF) in No. 4 Melt Shop to support the increased steel production from No. 7 EAF and provide backup flexibility for the existing Cast-Roll LMF. Processes occurring at the No. 2 LMF will depend upon the desired metallurgy of the molten metal prior to casting and may include alloy addition, electrode heating, and argon stirring with porous plugs and/or lances. No. 2 LMF will have a heat size of 220 tons and will be strategically located and capable of processing molten metal from either No. 7 EAF

or No. 9 EAF. No. 2 LMF will be capable of producing 7,500 heats per year or 1,650,000 tons per year of metal. No. 2 LMF will be designed and installed with a capture hood (roof) that will be ducted to the existing No. 4 Melt Shop Baghouse.

**Two Ladle Dryer/Preheaters** – This project will also install two new ladle dryer/preheaters in the existing No. 3 Melt Shop building. The ladle dryer/preheaters will be natural gas-fired units each rated at 14.6 MMBtu/hr heat input.

**New Source Review (NSR)/PSD Applicability**

The facility uses an EAF that generates PE, for which an emission standard applies, and is therefore, considered an "affected facility" subject to 40 CFR, Part 60, Subpart AAa, "Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 7, 1983". This rule has an emission standard of 0.0052 grains/dry standard cubic foot and opacity limits of 3% for the baghouse, 6% for the melt shop and 10% for the dust handling system.

Republic is currently classified as a PSD "major" stationary source because it is one of the 28 source categories (Iron and Steel Mills) with potential PM, CO, and NOx emissions exceeding 100 tons per year in an attainment/nonattainment area. Republic is located in Stark County which is classified as an attainment for the following criteria pollutants: total suspended particulates, particulate matter less than 10 microns, sulfur dioxide and carbon monoxide and nonattainment for ozone (nitrogen oxides and volatile organic compounds).

Stark County is also designated as nonattainment with the NAAQS for PM<sub>2.5</sub>. In adherence with U.S. EPA's interim guidance regarding new source review for sources of PM<sub>2.5</sub> emissions, projected PM<sub>10</sub> emissions are to be used as a surrogate for PM<sub>2.5</sub> emissions. Thus, because the Project is a major modification for PM<sub>10</sub> it is a major modification for PM<sub>2.5</sub>. ; therefore, a major modification involving PM<sub>2.5</sub> is subject to LAER review, again using PM<sub>10</sub> as its surrogate.

This project will generate criteria pollutant emissions of particulate, VOC, NO<sub>x</sub>, CO, and SO<sub>2</sub>. A PSD or LAER analysis is required for any increase in emissions of a pollutant exceeding the threshold emissions level, or the significance levels.

Table 1 shows the contemporaneous increases and decreases in emissions (from the netting analysis) from the project:

**Table 1**

<b>Pollutant</b>	<b>Contemporaneous Increases/Decreases (Netting)</b>	<b>PSD Significance Level</b>
<b>CO</b>	<b>+450.7</b>	<b>100</b>
<b>NOx</b>	<b>+123.6</b>	<b>40</b>
<b>SO<sub>2</sub></b>	<b>+202.1</b>	<b>40</b>
<b>VOC</b>	<b>+43.0</b>	<b>40</b>
<b>PM</b>	<b>+97.0*</b>	<b>25</b>
<b>PM<sub>10</sub><sup>f</sup></b>	<b>+75.1*</b>	<b>15</b>
<b>PM<sub>10</sub><sup>t</sup></b>	<b>+267.3</b>	
<b>Pb<sup>a</sup></b>	<b>+0.15</b>	<b>0.6</b>

\* A combined allowable emission rate for PM, PM<sub>10</sub> and lead for the No. 4 Melt Shop Baghouse emission point that includes # 7 EAF and # 2 LMF, and existing # 9 EAF and miscellaneous sources.

f= filterable

t= total (filterable plus condensible)

Based upon the above information, a PSD review is required for PM<sub>10</sub>, CO and SO<sub>2</sub> and LAER requirements are triggered for PM<sub>10</sub>/PM<sub>2.5</sub>, NO<sub>x</sub> and VOC.

In theory the requirements of LAER are as stringent or more stringent than those of BACT. Therefore, the analysis of PM<sub>10</sub> emission limitations and control technologies focuses primarily on satisfying LAER.

### **Control Technology Review [LAER and BACT]**

As part of the application for any source regulated under the PSD requirements, an analysis must be conducted that demonstrates that Lowest Achievable Emissions Rate (LAER) or Best Available Control Technology (BACT) will be employed by the source. Republic is subject to PSD regulations which mandate a case-by-case LAER/BACT analysis be performed for PSD triggering pollutants. The application used a "top-down" approach to determine the latest demonstrated control techniques and select an appropriate control.

The basic steps to be followed are:

Identify all available potential control options;

Eliminate technically infeasible options;

Rank remaining technologies by control effectiveness;

Evaluate the feasible controls by performance and cost analysis; and

Select the most effective control based on energy, environmental and economic impacts (generally, the feasible technology that is also considered to be cost effective).

The main sources proposed are:

No. 7 Electric Arc Furnace (EAF);

No. 2 Ladle Metallurgy Facility (LMF); and

Two Ladle Dryer/Preheaters.

### **Lowest Achievable Emissions Rate (LAER) Review**

Recently, this area was redesignated as nonattainment for ozone, meaning that significant increases of VOC and NO<sub>x</sub> are reviewed under the nonattainment NSR, Offset provisions. This project will have increases of VOC and NO<sub>x</sub> that exceed the 40 tons/year significant levels.

Also, Stark County is designated as nonattainment with the NAAQS for PM<sub>2.5</sub>; therefore, a major modification involving PM<sub>2.5</sub> is subject to LAER review, again using PM<sub>10</sub> as its surrogate.

LAER determinations are to be based upon the following:

The most stringent emissions limitation contained in any state implementation plan for the source category; or

The most stringent emissions limitation that is achieved in practice by the source category.

## **No. 7 Electric Arc Furnace (EAF)**

### **PM<sub>10</sub>/PM<sub>2.5</sub>**

Republic proposes that BACT/LAER for particulate (as filterable PM<sub>10</sub>) emissions from No. 7 EAF is the use of the most common and most efficient EAF shop air pollution control system and one that is already in place at the No. 4 Melt Shop. Particulate emissions from No. 7 EAF, along with No. 9 EAF and other melt shop activities, are currently captured by a combination direct evacuation control (DEC) and building evacuation system. Particulate emissions captured by this system are ducted and controlled by an existing thirty-compartment positive pressure baghouse; i.e., No. 4 Melt Shop Baghouse. The No. 4 Melt Shop Baghouse is designed for an inlet airflow rate of 2,700,000 actual cubic feet per minute (acfm). The baghouse is equipped with 9,000 filter bags with a total surface area of 967,905 ft<sup>2</sup> offering an air-to-cloth ratio of about 2.8:1.

The No. 4 Melt Shop Baghouse is designed for a minimum particulate removal efficiency of 99+ percent. The operation of a baghouse, or fabric filter, for particulate emission control is considered the most efficient technology available for EAFs; thus, according to step 3 of the top-down selection process it is not necessary to consider alternate particulate control measures in any depth in the remainder of this BACT/LAER analysis. Republic did not complete any further evaluation of other particulate control measures, such as mechanical collectors, scrubbers, and electrostatic precipitators, because of practical limitations and inherent operational or performance concerns each represented. This would suggest that Republic could end its BACT/LAER selection at step 1 of the top-down process. Further, Republic is unaware of any EAF or melt shop that operates any type of particulate control system other than either a positive or negative pressure baghouse.

Primary particulate capture during melting operations is accomplished by DEC located on the furnace roof. DEC technology is also commonly referred to as direct shell evacuation (DSE). The use of DEC technology (also referred to as the 4<sup>th</sup> hole) is generally required in the design of large, high melt rate furnaces where direct evacuation of furnace off-gases is necessary for efficient furnace operations. A DEC is considered more efficient in particulate emission capture than the common alternative side draft hood design. A full or partial furnace enclosure is also not considered a feasible capture option for operational reasons. Secondary particulate emissions from No. 7 EAF; i.e., those emissions that escape the DEC, are captured by a total building evacuation system and ducted to the No. 4 Melt Shop Baghouse.

Republic proposes that the combination DEC and melt shop building evacuation system and positive-pressure baghouse represent BACT for PM<sub>10</sub> emissions. Republic proposes an outlet grain loading from the No. 4 Melt Shop Baghouse of 0.0018 grains per dry standard cubic foot (gr/dscf) measured as total filterable particulate. Republic also proposes a baghouse outlet grain loading of 0.0014 gr/dscf measured as filterable PM<sub>10</sub>. The proposed particulate emission rate and resulting melt shop visible emission/opacity level from the No. 4 Melt Shop Baghouse monovents will far exceed performance standards required by 40 CFR 60 (NSPS) Subpart AA.

Republic completed a review of U.S. EPA's RACT, BACT, LAER Clearinghouse (RBLCL) current as of June 16, 2005. The proposed particulate emission limit is consistent with levels required for other recent permits issued for an EAF melt shop. The proposed grain loading for filterable PM<sub>10</sub> of 0.0014 gr/dscf is equal to the most stringent limit found in EAF and melt shop permits described in the RBLCL.

### ***Demonstration of LAER/BACT***

Republic is proposing the most efficient control technology and the most stringent emission limit for particulate emissions required of an EAF melt shop/baghouse installation.

### **NO<sub>x</sub>**

Republic proposes a NO<sub>x</sub> emission rate for No. 7 EAF of 36.7 lbs/hr. This hourly emission rate is

based on an uncontrolled NO<sub>x</sub> emission factor of 0.20 lb/ton of steel produced.

Republic will operate No. 7 EAF in an efficient manner and will employ low-NO<sub>x</sub>/oxyfuel burner technology and oxygen lances to provide supplemental energy during furnace heats. Republic's proposed NO<sub>x</sub> emission control scheme is consistent with the control method employed by most other U.S. EAF installations. Active, add-on NO<sub>x</sub> emission controls have not been installed on any U.S. EAF installation. According to an EPA report entitled Alternative Control Techniques Document – NO<sub>x</sub> Emission From Iron and Steel Mills (EPA-453/R-94-065, Sept. 1994), there is no information that NO<sub>x</sub> emission controls have been installed on an EAF or that suitable controls are even available. This position was reinforced by issuance, appeal and settlement of a PSD permit issued by the Indiana Department of Environmental Management (IDEM).

The RBLC review found references to a number of comparable U.S. EAF installations; none of which described demonstrated use of add-on NO<sub>x</sub> emission controls. NO<sub>x</sub> emissions from noted EAFs were based on proper furnace operation, the use of low-NO<sub>x</sub>/oxyfuel burners and oxygen lancing, but without the application of active or passive controls.

Republic evaluated available NO<sub>x</sub> emission control technologies. Available control technologies, which are used predominantly by electric utilities but may apply to EAFs, include:

- Combustion controls, including real time process optimization (RTPO);
- Selective catalytic reduction (SCR);
- Nonselective catalytic reduction (NSCR); and
- Selective noncatalytic reduction (SNCR).

Since NO<sub>x</sub> emissions are generated during melting, it is reasonable to assume that 100 percent of potential NO<sub>x</sub> emissions would be captured by the DEC. Therefore, analysis of available NO<sub>x</sub> control options would focus on this gas stream only, versus the entire No. 4 Melt Shop Baghouse gas stream.

### *Combustion Controls*

Republic currently operates oxygen lances on No. 7 EAF to provide additional energy to the scrap melting cycle via the foamy slag process. Other combustion control technologies, such as low excess air (LEA), overfire air (OFA), burners out of service (BOOS), and flue gas recirculation (FGR), are applicable to conventional fuel combustion devices but do not represent technically feasible NO<sub>x</sub> control options for an EAF. The proposed oxyfuel burners and existing oxygen lances promote more uniform scrap melting, reduced tap-to-tap times, lower total energy consumption, and generally a more consistent and efficient EAF heat cycle.

Factors that contribute to NO<sub>x</sub> formation in an EAF are: ionization of nitrogen as the electric arc passes through ambient air and infiltration of ambient air into the EAF's high temperature atmosphere creating thermal-NO<sub>x</sub> (i.e., the formation of NO<sub>x</sub> from nitrogen and oxygen present in air that is exposed to elevated temperatures). Furnace operators and designers strive to minimize ambient air filtration into the EAF because it leads to longer tap-to-tap times, increased heat losses, increased electrode consumption and increased off-gas system requirements. Openings between the furnace shell and roof, around the electrodes and the slag door are minimized to accomplish this design objective. However, a balance in furnace pressure and open space minimization must be achieved in order to allow efficient direct (4<sup>th</sup>-hole) furnace evacuation. Efforts to minimize ambient air infiltration help minimize both thermal-NO<sub>x</sub> and ionization of nitrogen.

The use of oxyfuel burners and oxygen lances reduce NO<sub>x</sub> emissions by direct and indirect means. The use of oxyfuel burners directly avoids the use of standard natural gas burners and their resulting fuel-NO<sub>x</sub> generation. Oxyfuel burners reduce overall NO<sub>x</sub> emissions indirectly by producing a more efficient EAF heat with lowered overall energy demand and reduced tap-to-tap times. Also because

of the high draft required to evacuate particulate matter from the EAF, the oxyfuel gases and oxygen from the lances indirectly supplant ambient air drafted into the furnace. The oxygen lance is also used for the foamy slag stage of the melt cycle. The foamy slag practice produces a thick layer of slag, which covers the electric arc. This feature protects the furnace sidewalls, promotes better heat transfer from the arc to the molten bath and inhibits NO<sub>x</sub> generation from ionization because the arc is buried in the slag layer.

EPA has suggested the development of a NO<sub>x</sub> control measure referred to as Real Time Process Optimization (RTPO). RTPO would seek to control NO<sub>x</sub> formation in real-time by utilizing data immediately available from process sensors for DEC temperature, offgas flow and composition in order to make adjustments automatically to an EAF while in operation. Republic has taken advantage of all available means to optimize furnace operation in terms of efficiency, productivity and energy demand.

Following modifications proposed by this application, the No. 7 EAF cycle will be optimized to produce molten steel in an energy efficient and timely manner. This is done, in part, by aiding the scrap melting cycle with chemical energy in the form of oxyfuel burners, in the refining cycle with oxygen lances and the foamy slag practice, and regulating the arc length for optimum heat transfer. The oxyfuel burners and arcs are utilized according to specific profiles based on charge materials, the phase of the melting or refining cycle, and other factors.

In this very hot (>2,900°F) and turbulent furnace environment, it is not practical or feasible to control operating parameters which may adversely affect the EAF's efficiency and productivity, and may increase overall NO<sub>x</sub> emissions per heat due to a significantly longer heat time. At the air gap in the DEC, dilution air is drawn into the water-cooled duct for off gas cooling, and due to post-combustion of CO to CO<sub>2</sub> some thermal-NO<sub>x</sub> may be created. The primary functions of the DEC air gap are to cool the off gas stream in order to protect the integrity of the ductwork and baghouse from extreme temperatures, and to allow efficient combustion of EAF CO emissions. In the case of No. 7 EAF, the DEC air gap and exhaust duct damper have been set to prevent temperature damage to the water-cooled duct and downstream equipment.

It would appear counter-productive to seek to process control the reactions in the off gas ductwork at the risk of damaging the ductwork itself and the Melt Shop baghouse, and increasing CO emissions. Further, there are no references to RTPO being used to control EAF NO<sub>x</sub> emissions in the RBLC.

### *Selective Catalytic Reduction (SCR)*

In an SCR system, ammonia (NH<sub>3</sub>) is injected into the exhaust gas stream upstream of a noble metal catalyst bed. The NH<sub>3</sub> reacts with the NO<sub>x</sub> in the gas stream on the surface of the catalyst to form molecular nitrogen and water. The optimal reaction temperature for the SCR catalyst is 500 to 1,100°F. Properly designed and operated and efficient SCR systems require a very stable gas stream with regard to flow rate, temperature, and NO<sub>x</sub> concentrations. Other parameters that can affect the performance of the SCR unit's catalyst are poisoning due to the presence of trace metals or other chemicals in the gas stream and fouling/plugging due to particulate emissions coating the catalyst. The batch-wise operation of an EAF inherently results in highly unstable conditions for these parameters. During typical scrap melt cycles, the EAF DEC exhaust gases can range from 300 to 3,000°F. In addition, this temperature variability adversely affects the stability of air flow volume and NO<sub>x</sub> generation. Further, the SCR catalyst bed could not resist elevated DEC exhaust gas temperatures and would also be clogged, blinded or poisoned by the particulate in the dirty DEC exhaust gases. The instability of DEC gas flow, temperature, and NO<sub>x</sub> concentration, and potential catalysts fouling make SCR technically infeasible.

### *Nonselective Catalytic Reduction (NSCR)*

NSCR is post-combustion NO<sub>x</sub> emission control process applicable primarily to fuel-combustion devices (e.g., boilers, process heaters). The NSCR process uses a catalyst to reduce steady-state NO<sub>x</sub>, carbon monoxide (CO) and unburned hydrocarbons produced from fuel combustion at or very near stoichiometric conditions. NSCR systems are technically infeasible for an EAF. An EAF is not a fuel combustion device in the strictest sense and is unstable with respect to NO<sub>x</sub>, CO, and HC concentrations in the DEC gas stream as well as combustion air (i.e., the DEC exhaust stream) temperature and flow rate.

### *Selective Noncatalytic Reduction (SNCR)*

SNCR is considered an infeasible NO<sub>x</sub> control technology for an EAF operation for basically the same reasons that SCR was deemed not feasible. The inability to maintain stable DEC exhaust gas conditions and NO<sub>x</sub> concentrations would prevent the system from maintaining the proper reagent (ammonia or stabilized urea) addition rate. This could result in significant ammonia slip at lower temperatures or increased NO<sub>x</sub> formation at elevated DEC exhaust gas temperatures.

### *Demonstration of LAER*

Republic proposes that the LAER determination for increased NO<sub>x</sub> emissions from No. 7 EAF reflect proper and efficient furnace operation without the use of active, add-on air pollution equipment. The proposed use of oxyfuel burner technology and oxygen lances to optimize furnace melting cycles is consistent with recent EAF installations noted by the RBLC listings. Additionally, the use of oxygen lances and the foamy slag practice optimize the furnace melting cycles.

Republic proposes to establish a NO<sub>x</sub> emission rate following the technological application of LAER equal to an uncontrolled factor of 0.35 lb/ton of steel produced.

## **VOC**

Republic proposes an hourly VOC emission rate for No. 7 EAF of 18.33 lbs/hr. This hourly emission rate is based on an uncontrolled VOC emission factor of 0.1 lb/ton of steel produced. The proposed VOC emission factor reflects the true VOC emission potential of No. 7 EAF during normal furnace operations, including operation of the DEC gap, and the continued implementation of a scrap management plan. Republic does not propose to install any form of air pollution control on this particular source or for the entire No. 4 Melt Shop Baghouse airflow stream.

The following technologies are generally available for VOC emission control. Each option is a combustion-based technique. As discussed below, with the exception of DEC systems, these combustion technologies have severe limitations or collateral environmental concerns if applied to an EAF and are not considered feasible or practical for application to No. 7 EAF. It is important to note that Republic currently operates its No. 7 EAF with a DEC design system in place; thus, any of the other VOC emission control alternatives listed below would be in addition to the existing No. 7 EAF DEC controls and scrap management plan.

- DEC controls/Scrap Management – proposed as LAER
- Post-combustion reaction chamber/thermal incineration

- Catalytic oxidation/incineration
- Oxygen injection

### *DEC Controls/Scrap Management*

According to industry literature, the predominant source of VOC emissions from EAF operations is due to volatilization of oils and paints, and other organic material carried in the furnace scrap charge. Emissions are also caused to a much lesser extent from consumption of the carbon electrodes and carbon-bearing materials added to the charge. During scrap melting, a portion of the VOC is combusted in the furnace or downstream of the DEC gap. Combustion is accomplished by the oxidation of VOC by the high temperature and oxygen present at the DEC gap. The addition of oxy-fuel burners to No. 7 EAF will increase combustion of VOC from residual oils in the scrap charge.

Republic completed a comprehensive review of the current RBLC. Each RBLC listing for EAF VOC emissions describes the requirement to implement some type of scrap management plan. The purpose of such a plan is to minimize the purchase of scrap material that is excessively oily or includes other combustible organic materials; e.g., paints, grease, plastics, etc., and minimizing its charge to the EAF. The concept of a scrap management plan is analogous to the BACT/LAER principle of using "inherently lower-emitting material". Charging scrap with a lower organic material content will result in the decreased volatilization in the EAF and subsequently lower VOC emissions. Republic currently implements a comprehensive scrap management plan through its Consumable Materials Standard Operating Practices (SOPs). These SOPs restrict the purchase of scrap that is excessively oily or is coated with combustible material, and reject scrap for charging to the EAFs that is not free of excessive dirt, oil, grease, and other organic materials.

Republic proposes that LAER is driven by the fact that EAF operations cannot be manipulated in such a manner to increase VOC emission reduction. Republic further suggests that VOC emission reduction achieved, through VOC emission combustion in the furnace itself, and in the DEC gap and water-cooled ductwork, is inherent to the physical design of No. 7 EAF. The resulting VOC emission rate is simply a function of the EAF design. Because of the inherent inability to operate and effectively control VOC emissions within an EAF to meet an arbitrarily low and stringent VOC emission limit, other than through a scrap management plan, Republic proposes LAER as a VOC emission rate based on a VOC emission factor of 0.1 lb/ton of steel demonstrated in the No. 4 Melt Shop.

### *Post-Combustion Reaction Chamber/Thermal Oxidation*

Post-combustion reaction chambers and other forms of thermal oxidation systems (duct burners, thermal incinerators) are proven VOC emission control options in other industries, but have not been applied to an EAF melt shop. These types of systems oxidize VOC at high combustion temperatures (1,200-1,400°F) and residence times.

In the case of Republic, there are two locations to possibly install a thermal oxidation system: at the inlet and the outlet of the No. 4 Melt Shop Baghouse. The baghouse inlet location would represent higher gas stream temperatures that would lessen the demand for auxiliary fuel. However, this location is not technically feasible and would be unacceptable due to the elevated particulate loading that would be experienced. The excessive particulate loading on the inlet side of the baghouse would likely result in frequent fouling of the auxiliary fuel burners and cause the overall thermal oxidation system to malfunction and be unreliable.

To avoid burner fouling issues a thermal oxidation system would have to be installed downstream of the No. 4 Melt Shop baghouse. It would be structurally difficult to collect the exhaust from the six baghouse monovents into a duct to introduce the gas stream into a thermal oxidation system. However, assuming this could be done, a thermal oxidation system would be required to raise 2.7 million acfm at 125°F to 1,200-1,400°F to effectively oxidize any remaining VOC (and CO).

Notwithstanding the mechanical difficulty in constructing a system to handle 2.7 million acfm, the auxiliary fuel (natural gas) required to achieve this temperature rise makes the use of a thermal oxidation system infeasible from a technical and practical sense. If a thermal oxidation system without heat recovery were installed and operated, a combustion source with a maximum heat input rating of 4,440 MMBtu/hr would have to be installed. The auxiliary fuel (natural gas) required to operate a non-heat recovery thermal oxidation system would be approximately 38.89 billion ft<sup>3</sup>/yr. If a thermal oxidation system with a nominal 70 percent recuperative (shell and tube) heat recovery system were installed and operated, a combustion source with a maximum heat input rating of 1,623 MMBtu/hr would have to be installed. The auxiliary fuel required to operate a recuperative heat recovery thermal oxidation system would be approximately 14.22 billion ft<sup>3</sup>/yr. The auxiliary fuel requirement for either thermal oxidation system carries an unacceptably large energy demand. The use of a thermal oxidation system would fail review owing to its adverse energy impact.

In addition, combustion of these inordinate amounts of auxiliary fuel would cause a substantial increase in NO<sub>x</sub> emissions. The collateral increases in NO<sub>x</sub> emissions due solely to natural gas combustion in such a control device of approximately 2,722 tpy for a non-heat recovery system and 995 tpy for a recuperative system are environmentally unsound and cannot be viewed as an acceptable result of potential VOC control given that NO<sub>x</sub> in an O<sub>3</sub>-precursor and Stark County is designated Nonattainment for O<sub>3</sub>.

### *Catalytic Oxidation/Incineration*

Catalytic oxidation is similar to thermal oxidation described above, except that these systems operate at a lower combustion temperature range. Catalytic oxidation systems use a noble metal catalyst bed to help promote oxidation and reduce the need for auxiliary fuel. The minimum operating temperature range for a catalytic oxidation system is 600-800°F.

In the case of Republic, there are two locations to possibly install a catalytic oxidizer: at the inlet and the outlet of the No. 4 Melt Shop Baghouse. The baghouse inlet location is not technically feasible and unacceptable due to the elevated particulate loading that would be experienced. Similar to the situation described for CO oxidation catalyst systems, the high particulate loading would quickly poison and deactivate a catalytic oxidizer rendering it ineffective.

To avoid certain catalyst poisoning issues, a catalytic oxidizer would have to be installed downstream of the No. 4 Melt Shop baghouse. Even with this sequential orientation, the total filterable particulate outlet grain loading (0.0018 gr/dscf) and mass emissions (37.7 lbs/hr) would still potentially affect the life and VOC oxidation efficiency of the catalyst. It would be structurally difficult to collect the exhaust from the six baghouse monovalents into a duct to introduce the gas stream into a catalytic oxidizer. However, assuming this could be done and that the baghouse outlet particulate emissions would not deactivate the catalyst, a catalytic oxidizer would be required to raise 2.70 million acfm at 125°F to 800°F to effectively oxidize any remaining VOC (and CO).

Notwithstanding the mechanical difficulty in constructing a system to handle 2.7 million acfm, the auxiliary fuel (natural gas) required to achieve this temperature rise makes the use of a catalytic oxidizer infeasible from a technical and practical sense. If a catalytic oxidation system without heat recovery were installed and operated, a combustion source with a maximum heat input rating of 2,312 MMBtu/hr would have to be installed. The auxiliary fuel (natural gas) required to operate a non-heat recovery catalytic oxidation system would be approximately 20.25 billion ft<sup>3</sup>/yr. If a catalytic oxidation system with a nominal 70 percent recuperative (shell and tube) heat recovery system were installed and operated, a combustion source with a maximum heat input rating of 849 MMBtu/hr would have to be installed. The auxiliary fuel required to operate a recuperative heat recovery catalytic oxidation system would be approximately 7.44 billion ft<sup>3</sup>/yr. The auxiliary fuel requirement for either catalytic oxidation system carries an unacceptably large energy demand. The use of a catalytic oxidation system would fail review owing to its adverse energy impact.

In addition, combustion of these inordinate amounts of auxiliary fuel would cause a substantial increase in NO<sub>x</sub> emissions. The collateral increases in NO<sub>x</sub> emissions due solely to natural gas combustion in such a control device of approximately 1,418 tpy for a non-heat recovery system and

521 tpy for a recuperative system are environmentally unsound and cannot be viewed as an acceptable result of potential VOC control given that NO<sub>x</sub> in an O<sub>3</sub>-precursor and Stark County is designated Nonattainment for O<sub>3</sub>.

### *Oxygen Injection*

Oxygen injection appears to be an emerging technology but has been unproven to date. The concept with this type of system is to inject additional oxygen at the top of the furnace at the inlet to the DEC to increase the oxidation of VOC. Republic could not locate any available information that indicates the level of control an oxygen injection system could achieve. Ohio EPA has indicated in several recent VOC BACT reviews that oxygen injection at the DEC would not provide any significant increase in VOC oxidation. Oxygen and oxyfuel injection into the furnace is a common practice to increase the heat input to the charge; however, Republic is not aware of any domestic EAF where an oxygen injection system located at the DEC has been installed and demonstrated.

Because it is unproven and not commercially available, Republic does not consider the use of oxygen injection at the DEC a viable VOC emission control option.

### *Demonstration of LAER*

Republic proposes that the LAER determination for increased VOC emissions reflect the implementation of an effective scrap management plan, and proper and efficient furnace operation with a properly designed and operated DEC control and without the use of active, add-on air pollution equipment.

Republic proposes LAER to be an hourly VOC emission rate based on an uncontrolled VOC emission factor of 0.1 lb/ton of steel produced.

## **No. 2 Ladle Metallurgy Facility (LMF)**

### **PM<sub>10</sub>/PM<sub>2.5</sub>**

No. 2 LMF will be installed within the No. 4 Melt Shop. Primary particulate emissions caused by LMF activities will be captured by a hood and ducted to the No. 4 Melt Shop Baghouse. Secondary particulate emissions from No. 2 LMF; i.e., those emissions that may escape the hood, will be captured by a total building evacuation system and also ducted to the No. 4 Melt Shop Baghouse.

Republic proposes that the combination of dedicated primary particulate capture hooding and the melt shop building evacuation system and positive-pressure baghouse represent BACT and LAER for PM<sub>10</sub>/PM<sub>2.5</sub> emissions for the No. 2 LMF. The proposed equipment arrangement for the No. 2 LMF (i.e., installation within the EAF melt shop and being ducted to and controlled by a common baghouse) is believed to be consistent with most new LMF installations. Republic proposes an outlet grain loading from the No. 4 Melt Shop Baghouse of 0.0014 gr/dscf measured as filterable PM<sub>10</sub> only.

### *Demonstration of LAER/BACT*

Republic completed a review of the RBLC. The proposed particulate emission limit for the No. 2 LMF is consistent with levels required for other recent permits issued for an EAF melt shop. The proposed filterable PM<sub>10</sub> grain loading of 0.0014 gr/dscf is equal to the most stringent limit found in the RBLC for an LMF.

## **NO<sub>x</sub>**

Republic proposes a NO<sub>x</sub> emission rate for No. 2 LMF of 3.9 lbs/hr based on an uncontrolled NO<sub>x</sub> emission factor of 0.0132 lb/ton of steel produced.

Republic proposes that BACT for No. 2 LMF NO<sub>x</sub> emissions is normal source operation without the use of add-on air pollution equipment. This determination is consistent with the fact that add-on NO<sub>x</sub> controls have not been required on any U.S. LMF or EAF melt shop installation to date.

Republic completed a review of the RBLC. Republic's review of the current RBLC found that the proposed NO<sub>x</sub> emission factor is more stringent than the most stringent NO<sub>x</sub> emission factor found in the RBLC and achieved in practice.

#### *Demonstration of LAER/BACT*

Republic's proposed NO<sub>x</sub> emission rate for the No. 2 LMF is based on an emission factor of 0.0132 lb/ton of steel produced. This proposed NO<sub>x</sub> emission factor is more stringent than the most stringent NO<sub>x</sub> emission factor found in the RBLC and achieved in practice.

#### **VOC**

Republic proposes a VOC emission rate for No. 2 LMF of 0.8 lb/hr based on an uncontrolled VOC emission factor of 0.0036 lb/ton of steel produced.

Republic proposes that BACT for No. 2 LMF VOC emissions is normal source operation without the use of add-on air pollution equipment. This determination is consistent with the fact that add-on VOC controls have not been required on any U.S. LMF or EAF melt shop installation to date.

Republic completed a review of the RBLC and found that their proposed installation of No. 2 LMF without add-on VOC controls is consistent with the RBLC.

#### *Demonstration of LAER*

Republic's proposed VOC emission rate for the No. 2 LMF (based on a conservative uncontrolled emission factor of 0.0036 lb/ton of steel produced) is more stringent than the most restrictive VOC emission factor found in the RBLC.

#### **Ladle Dryer/Preheaters**

##### **PM<sub>10</sub>/PM<sub>2.5</sub>**

Potential PM<sub>10</sub> emissions from the proposed ladle dryer/preheaters are due solely to natural gas combustion, and are estimated to be 1.93 tpy. An emission factor of 7.6 pounds per million cubic feet (7.6 lbs/10<sup>6</sup> ft<sup>3</sup>) of natural gas burned (equal to a nominal rate of 0.0076 lb/MMBtu heat input) was used to estimate PM<sub>10</sub> emissions.

Republic does not propose to install any form of air pollution control equipment on this source. Because of the negligible emissions involved, the use of add-on air pollution control technologies is not commonly considered as part of a BACT/LAER analysis for sources where insignificant PM<sub>10</sub> emissions are due to natural gas combustion only. Republic is unaware of any integrated or mini-mills that employ add-on control technology to control negligible PM<sub>10</sub> emissions from natural

gas combustion.

### *Demonstration of LAER/BACT*

Republic proposes that BACT/LAER for ladle dryer/preheater PM<sub>10</sub>/PM<sub>2.5</sub> emissions is proper natural gas burner design and good combustion practices and the use of no add-on air pollution equipment directly associated with the source.

### **NO<sub>x</sub>**

Potential NO<sub>x</sub> emissions from the proposed ladle dryer/preheaters are due solely to natural gas combustion, and are estimated to be 25.4 tpy. Republic proposes to install low-NO<sub>x</sub> burner technology on each ladle dryer/preheater. The proposed natural gas burners will have a design NO<sub>x</sub> emission rate of 0.10 lb/MMBtu heat input. Republic does not propose to install any other form of air pollution control equipment on this source. Because of the type of equipment and negligible emissions involved, the use of add-on air pollution control technologies is not commonly considered as part of a LAER analysis for sources where insignificant NO<sub>x</sub> emissions are due to natural gas combustion only. Republic is unaware of any integrated or mini-mills that employ add-on control technology to control negligible NO<sub>x</sub> emissions from natural gas combustion.

The technical feasibility of ultra low-NO<sub>x</sub> burner technology that offers a NO<sub>x</sub> emission rate less than 0.10 lb/MMBtu was investigated. The use of this technology is limited to combustion equipment that has a sealed combustion chamber, such as a boiler or furnace. Ultra low-NO<sub>x</sub> burners are applicable to a closed chamber that allows for staged combustion and a high degree of combustion gas recirculation. These physical design characteristics are not provided by equipment such as a ladle dryer/preheater where combustion occurs in the ambient environment at the fuel lance tip.

Republic completed a review of the RBLC and found that their proposed NO<sub>x</sub> emission rate is equivalent to the most stringent limit found in the current RBLC.

### *Demonstration of LAER*

Republic proposes that LAER for ladle dryer NO<sub>x</sub> emissions is an emission rate of 0.10 lb/MMBtu heat input based on proper low-NO<sub>x</sub> burner design and good natural gas combustion practices, and the use of no add-on air pollution equipment directly associated with the source.

### **VOC**

Potential VOC emissions from the proposed ladle dryer/preheaters are due solely to natural gas combustion, and are estimated to be 1.40 tpy. An emission factor of 5.5 lbs/10<sup>6</sup> ft<sup>3</sup> of natural gas burned (equal to a nominal rate of 0.0055 lb/MMBtu heat input) was used to estimate VOC emissions.

Republic does not propose to install any form of air pollution control equipment on this source. Because of the negligible emissions involved, the use of add-on air pollution control technologies is not commonly considered as part of a BACT or LAER analysis for sources where insignificant VOC

emissions are due to natural gas combustion only. Republic is unaware of any integrated or mini-mills that employ add-on control technology to control negligible VOC emissions from natural gas combustion.

The RBLC listings were reviewed to identify any entries pertaining to VOC emissions from natural gas combustion by a ladle dryer. The current RBLC contains no entries for VOC emissions for a ladle dryer or similar natural gas combustion source.

### *Demonstration of LAER*

Republic proposes that LAER for ladle dryer/preheater VOC emissions is an emission rate of 0.055 lb/10<sup>6</sup> ft<sup>3</sup> of natural gas burned based on proper burner design and good combustion practices, and the use of no add-on air pollution equipment directly associated with the source.

## **Best Available Control Technology (BACT) Review**

### **No. 7 Electric Arc Furnace (EAF)**

#### **SO<sub>2</sub>**

Republic proposes an SO<sub>2</sub> emission rate for No. 7 EAF of 12.83 lbs/hr based on an uncontrolled SO<sub>2</sub> emission factor of 0.07 lb/ton of steel produced.

Two general methods are available for controlling SO<sub>2</sub> emissions; charge substitution and flue gas desulfurization (FGD).

#### *Charge Substitution*

In general, SO<sub>2</sub> emissions are directly related to the amount of sulfur charged to the EAF in the scrap metal and other materials added. Republic produces what is termed special bar quality steels, which can include steels with typical sulfur contents of about 0.04 percent to high-sulfur steels with sulfur contents as high as 0.30 percent.

Charge substitution is not a practical or feasible option for No. 7 EAF. Republic must retain the operational flexibility to use the charge matrix needed in order to produce the specification, grade and quality of steels required by its customers. The charge matrix may be called upon to produce high sulfur containing steels. The concept of charge substitution and the requirement to use scrap with lower sulfur content would effectively prohibit Republic from producing its full range of steels for its customers. Charge substitution and the resulting elimination of high sulfur steel production by No. 7 EAF are not considered technically feasible option.

#### *Flue Gas Desulfurization*

Flue gas desulfurization (FGD) or add-on SO<sub>2</sub> control systems are most commonly used to control SO<sub>2</sub> emissions from coal and oil-fired utility and industrial boilers, waste incinerators, kilns, petroleum refinery sources, and H<sub>2</sub>SO<sub>4</sub> manufacturing operations. An FGD system of any kind has not been required to date for any EAF or melt shop gas stream. There are three general types of

FGD systems:

- Wet scrubbing,
- Spray dry absorption, and
- Dry sorbent injection.

Traditional FGD processes use a calcium or sodium-based alkaline reagent that is injected into the gas stream within a reactor or spray tower or directly in the exhaust duct. The SO<sub>2</sub> is absorbed, neutralized, or oxidized by the alkaline reagent to solid sulfite and sulfate particles that must be removed by downstream particulate control equipment.

FGD systems (wet scrubbing, spray dryer absorption, and dry sorbent injection) are generally used on gas streams with SO<sub>2</sub> concentrations in excess of 250 to 500 ppm. The use of SO<sub>2</sub> emission control systems on gas streams containing less than this concentration is not technically feasible.

The maximum SO<sub>2</sub> concentration in the combined No. 4 Melt Shop gas stream is expected to be less than 3 ppmv. Add-on SO<sub>2</sub> control systems will typically not represent a technical feasible control alternative at this low SO<sub>2</sub> concentration.

This position was further supported in a February 2005 PSD BACT Evaluation issued by the Indiana Department of Environmental Management, Office of Air Quality, for a proposed melt shop expansion at the Steel Dynamics Inc. (SDI) Whitley County mill. According to IDEM:

"Adsorption and absorption control technologies have not been designed to control exhaust gas stream [sic] from an EAF with (SO<sub>2</sub>) concentrations of less than or equal to 5 ppm because:

Although several different absorption and adsorption processes exist which may use different chemical reactions for removal, they all must have the same basic operating properties, which are sufficient contact between SO<sub>2</sub> and scrubbing agent, sufficient residence time and the necessary equilibrium in the exhaust.

For an exhaust with a concentration of 5 ppm or less and 1.3 million cubic feet per minute exhaust (in the case of SDI), an unreasonable amount of reagent would be necessary to provide sufficient contact between the SO<sub>2</sub> and reagent, and even if absorbed or adsorbed in the tower, almost certainly the proper equilibrium would not exist to maintain the reduction."

As stated above the No. 4 Melt Shop Baghouse gas stream will predictably contain less than 3 ppmv SO<sub>2</sub> under maximum, worse-case operating conditions. This SO<sub>2</sub> concentration is two orders of magnitude less than the concentration generally recognized as the lower range of effective SO<sub>2</sub> reduction (~250 ppmv). It is reasonable to expect that a DSI system would not achieve any measurable SO<sub>2</sub> removal. Republic is concerned that the amount of dry sorbent needed to achieve any real reduction in SO<sub>2</sub> concentrations would be excessive, and that any reductions may not be able to be measured. This concept, when coupled with serious issues of adverse environmental impact associated with the application of DSI, would argue against further reasonable consideration of DSI.

The conceptual operation of a DSI system also raises two significant and adverse environmental concerns. The injection of a significant amount of sorbent (in the form of a fine powder) into the inlet gas stream will increase the uncontrolled particulate emission burden on the baghouse. As described above, Republic has proposed very stringent filterable PM and PM<sub>10</sub> grain loadings and mass emission rates. Republic is concerned that if it is required to install and operate a DSI system, with no assurance of its technical feasibility or SO<sub>2</sub> removal effectiveness, the resulting effect on the No. 4 Melt Shop Baghouse will diminish its ability to comply with the proposed particulate limits. Because Stark County is designated nonattainment for PM<sub>2.5</sub>, it is arguable that particulate is the more critical pollutant to control. The operation of a DSI system for SO<sub>2</sub> control would oppose that intent given its effect of increasing collateral baghouse particulate emissions.

A second concern caused by DSI system operation is the resulting substantial increase in hazardous waste generation. EAF dust is defined by State and Federal rules as a listed hazardous waste (waste code K061). A DSI system will add to the baghouse catch and EAF dust (K061) generation and disposal rate. Republic contends that it is unreasonable to support installation and operation of a DSI system that will be ineffective for its intended purpose but will have this adverse environmental impact.

Republic proposes that BACT for No. 7 EAF SO<sub>2</sub> emissions is normal furnace operation without the use of add-on air pollution equipment. This determination is consistent with the fact that add-on SO<sub>2</sub> controls have not been required on any U.S EAF installation to date. BACT will be normal furnace operation due to the operational limitations of each possible add-on control method at the low gas stream SO<sub>2</sub> concentrations expected and the fact that add-on SO<sub>2</sub> controls have not been installed on any U.S. EAF or LMF to date. The step-wise review of available add-on control options therefore fails at step 2 of the top-down process. The proposed installation of the EAF and LMF without the use of add-on SO<sub>2</sub> control technology is also consistent with all EAF installations described in the RBLC.

Republic completed a review of the current RBLC listings for EAF installations to make a comparison of SO<sub>2</sub> emission limits. Republic found no RBLC entry that proposed an SO<sub>2</sub> emission rate for an EAF using an uncontrolled factor less than or more stringent than 0.07 lb/ton of steel produced.

#### *Demonstration of BACT*

Republic's proposed SO<sub>2</sub> emission factor for No. 7 EAF (based on an uncontrolled emission factor of 0.07 lb/ton of steel produced) is more stringent than the emission factor found in the RBLC.

## **CO**

Republic proposes a CO emission rate for No. 7 EAF of 367 lbs/hr based on an uncontrolled CO emission factor of 2.0 lbs/ton of steel produced. Republic does not propose to install any form of conventional air pollution control systems on this particular source or for the entire No. 4 Melt Shop Baghouse airflow stream. However, as discussed below the furnace design and DEC elbow and duct design act similar to a conventional thermal oxidizer and operate as a CO emission oxidizer. The other CO control technologies were eliminated from further evaluation as impractical and technically infeasible control options given the high melt shop exhaust gas flow and other considerations.

EAF CO emissions are a product of the steel melting cycle and from the addition of carbon-bearing agents added to the heat. Uncontrolled CO emissions generated during the charging, melting, slagging, and tapping phases of an EAF heat cycle are reported in EPA's AP-42 document at 18 lbs/ton. This emission factor represents a truly uncontrolled EAF without modern DEC and canopy hood technology. The actual emission factor proposed by Republic (2.0 lbs/ton steel) is a reasonable estimate of "controlled" emissions assuming that the DEC system will capture and combust nearly 90 percent of the total amount of CO that is generated to carbon dioxide (CO<sub>2</sub>) via the inherent furnace design.

The following technologies are generally available for CO emission control. Each option excluding process modifications is a combustion-based technique. As discussed below, with the exception of DEC systems, these combustion technologies have severe limitations or collateral environmental concerns if applied to an EAF and are not considered feasible or practical for application to No. 7 EAF. It is important to note that Republic currently operates its No. 7 EAF with a DEC design system in place; thus, any of the other CO emission control alternatives listed below would be in addition to the existing No. 7 EAF DEC controls.

- Process modification
- DEC controls
- Flares
- CO oxidation catalysts
- Post-combustion reaction chamber/thermal incineration

- Catalytic oxidation/incineration
- Oxygen injection

### *Process Modification*

CO emissions are caused by the oxidation of carbon added to the furnace in the charge matrix. In addition, Republic will inject carbon into the hot metal as part of the foamy slag process it employs within its melt shop. Republic operates No. 7 EAF, along with No. 9 EAF, to produce special bar quality steels, including high-carbon grade steel. The use of conventional furnace technology is critical in order for Republic to produce its higher carbon steel products. Also critical to the production of high-quality steels is the continue use of specific charge matrices that have been developed. The option of process modification to reduce CO emissions; i.e., reducing the amount of carbon charged to the furnace or used in the foamy slag process, will jeopardize the quality of steel produced and cannot be considered a feasible alternative.

### *DEC Controls*

No. 7 EAF CO emission control afforded by the existing furnace design is standard within the industry for furnaces with DEC emission capture systems, also referred to as direct shell evacuation or DSE. In such furnaces, CO combustion will occur within the furnace itself (intended in order to recover the heat/energy value for steelmaking) with the remaining CO captured by the DEC and combusted (oxidized) to CO<sub>2</sub> at the air gap between the DEC elbow and DEC duct. The DEC gap allows ambient air, containing CO combustion-supporting oxygen, to mix with the furnace off-gases. Ambient oxygen is mixed with the furnace off-gases at temperatures above the auto-ignition temperature for CO. Any CO remaining after the DEC gap is effectively combusted because the gases continue to mix and oxidize in the water-cooled DEC ductwork.

Republic is undertaking several design and operational improvements that will enhance control of CO to levels that will represent BACT for No. 7 EAF operations. Beneficial design features include improved DEC gap control and water-cooled DEC duct system. DEC gap control will result in efficient infiltration of air into the DEC ductwork for CO combustion. Robust design of the water-cooled ductwork will promote adequate and steady temperature in the DEC ductwork for good combustion. The level of CO emission reduction can be derived based on comparison of CO emission factors – uncontrolled open style EAF, 18 lbs CO per ton of steel produced (AP-42); DEC controlled EAF, 2.0 lbs/ton (Republic proposed for No. 7 EAF). Republic's existing DEC system with the design improvements described above represents a 90 percent reduction in the level of CO emissions expected from an open style EAF without a DEC or DSE system in place.

### *Flares*

Flares or flaring is a form of thermal oxidation commonly used in the petrochemical industry, steel industry, and to control landfill gas releases. In these cases flares are operated on relatively small air gas streams that bear some reasonable heating value. Flares are used in the steel industry to control excess blast furnace or coke oven gas, or to control CO emissions from vacuum tank degassers. Flares can be effectively used when the gas stream contains 300 Btu/scf heat content; auxiliary fuel is required for combustion below that level. The heat content of the combined No. 4 Melt Shop gas stream is less than 1 Btu/scf.

In the case of Republic, a flare would have to be installed downstream of the No. 4 Melt Shop baghouse. It would be structurally difficult to collect the exhaust from the six baghouse monovalents into a duct to introduce gas stream into a flare. However, assuming this could be done, a flare would be required to raise 2.70 million acfm at 125°F to over 1,300°F to effectively oxidize any remaining CO. Notwithstanding to mechanical difficulty in constructing a flare to handle 2.7 million acfm, the auxiliary fuel (natural gas) required to achieve this temperature makes the use of a flare infeasible from a technical and practical sense. In addition, combustion of an inordinate amount of auxiliary fuel will cause a substantial increase in NO<sub>x</sub> emissions. The collateral increase in NO<sub>x</sub> emissions cannot be viewed as an acceptable result of potential CO control given that NO<sub>x</sub> is an O<sub>3</sub>-precursor

and Stark County is designated Nonattainment for O<sub>3</sub>.

### *CO Oxidation Catalysts*

CO oxidation catalysts are commonly used in combustion turbine and reciprocating internal combustion engine (RICE) applications. These systems rely solely on the gas stream temperature and catalyst surface to oxidize the CO to CO<sub>2</sub>; thus, there is no auxiliary fuel input requirement. As described in several BACT reviews, the optimal operating temperature range for an oxidation catalyst is 850°F to 1,100°F, and according to the MACT standard for RICE, the minimum effective operating temperature for a CO catalyst is 450°F. This operating temperature range would require Republic to install the oxidation catalyst in the ductwork well ahead of the melt shop baghouse inlet. At this required location, the uncontrolled particulate loading from the EAF and canopy collection would be excessive and coat the catalyst. The high particulate loading would quickly poison and deactivate the catalyst by masking and plugging. CO oxidation catalyst systems are most applicable to gas streams that are relatively free of particulate. CO oxidation catalyst systems are not technically feasible for EAF applications.

### *Post-Combustion Reaction Chamber/Thermal Oxidation*

Post-combustion reaction chambers and other forms of thermal oxidation systems (duct burners, thermal incinerators) are proven CO emission control options in other industries, but have not been applied to an EAF melt shop. These types of systems oxidize CO to CO<sub>2</sub> at high combustion temperatures (1,200-1,400°F) and residence times.

In the case of Republic, there are two locations to possibly install a thermal oxidation system: at the inlet and the outlet of the No. 4 Melt Shop Baghouse. The baghouse inlet location would represent higher gas stream temperatures that would lessen the demand for auxiliary fuel. However, this location is not technically feasible and would be unacceptable due to the elevated particulate loading that would be experienced. The excessive particulate loading on the inlet side of the baghouse would likely result in frequent fouling of the auxiliary fuel burners and cause the overall thermal oxidation system to malfunction and be unreliable. Republic is aware of one EAF installation (Tuscaloosa Steel) that attempted to operate a post-combustion reaction chamber ahead of their baghouse to supplement their DEC system in order to meet a 2.0 lbs/ton CO emission factor. Tuscaloosa Steel subsequently removed the oxyfuel burners due to excessive burner fouling and maintenance requirements.

To avoid burner fouling issues a thermal oxidation system would have to be installed downstream of the No. 4 Melt Shop baghouse. It would be structurally difficult to collect the exhaust from the six baghouse monovalents into a duct to introduce the gas stream into a thermal oxidation system. However, assuming this could be done, a thermal oxidation system would be required to raise 2.70 million acfm at 125°F to 1,200-1,400°F to effectively oxidize any remaining CO (and VOC).

Notwithstanding the mechanical difficulty in constructing a system to handle 2.7 million acfm, the auxiliary fuel (natural gas) required to achieve this temperature rise makes the use of a thermal oxidation system infeasible from a technical and practical sense. If a thermal oxidation system without heat recovery were installed and operated, a combustion source with a maximum heat input rating of 4,440 MMBtu/hr would have to be installed. The auxiliary fuel (natural gas) required to operate a non-heat recovery thermal oxidation system would be approximately 38.89 billion ft<sup>3</sup>/yr. If a thermal oxidation system with a nominal 70 percent recuperative (shell and tube) heat recovery system were installed and operated, a combustion source with a maximum heat input rating of 1,623 MMBtu/hr would have to be installed. The auxiliary fuel required to operate a recuperative heat recovery thermal oxidation system would be approximately 14.22 billion ft<sup>3</sup>/yr. The auxiliary fuel requirement for either thermal oxidation system carries an unacceptably large energy demand. The use of a thermal oxidation system would fail review owing to its adverse energy impact.

In addition, combustion of these inordinate amounts of auxiliary fuel would cause a substantial increase in NO<sub>x</sub> emissions. The collateral increases in NO<sub>x</sub> emissions due solely to natural gas

combustion in such a control device of approximately 2,722 tpy for a non-heat recovery system and 995 tpy for a recuperative system are environmentally unsound and cannot be viewed as an acceptable result of potential CO control given that NO<sub>x</sub> in an O<sub>3</sub>-precursor and Stark County is designated Nonattainment for O<sub>3</sub>.

### *Catalytic Oxidation/Incineration*

Catalytic oxidation is similar to thermal oxidation described above, except that these systems operate at a lower combustion temperature range. Catalytic oxidation systems use a noble metal catalyst bed to help promote oxidation and reduce the need for auxiliary fuel. The minimum operating temperature range for a catalytic oxidation system is 600-800°F.

In the case of Republic, there are two locations to possibly install a catalytic oxidizer: at the inlet and the outlet of the No. 4 Melt Shop Baghouse. The baghouse inlet location is not technically feasible and unacceptable due to the elevated particulate loading that would be experienced. Similar to the situation described above for CO oxidation catalyst systems, the high particulate loading would quickly poison and deactivate a catalytic oxidizer rendering it ineffective.

To avoid certain catalyst poisoning issues, a catalytic oxidizer would have to be installed downstream of the No. 4 Melt Shop baghouse. Even with this sequential orientation, the total filterable particulate outlet grain loading (0.0018 gr/dscf) and mass emissions (37.7 lbs/hr) would still potentially affect the life and CO oxidation efficiency of the catalyst. It would be structurally difficult to collect the exhaust from the six baghouse monovents into a duct to introduce the gas stream into a catalytic oxidizer. However, assuming this could be done and that the baghouse outlet particulate emissions would not deactivate the catalyst, a catalytic oxidizer would be required to raise 2.70 million acfm at 125°F to 800°F to effectively oxidize any remaining CO (and VOC). Notwithstanding the mechanical difficulty in constructing a system to handle 2.7 million acfm, the auxiliary fuel (natural gas) required to achieve this temperature rise makes the use of a catalytic oxidizer infeasible from a technical and practical sense. If a catalytic oxidation system without heat recovery were installed and operated, a combustion source with a maximum heat input rating of 2,312 MMBtu/hr would have to be installed. The auxiliary fuel (natural gas) required to operate a non-heat recovery catalytic oxidation system would be approximately 20.25 billion ft<sup>3</sup>/yr. If a catalytic oxidation system with a nominal 70 percent recuperative (shell and tube) heat recovery system were installed and operated, a combustion source with a maximum heat input rating of 849 MMBtu/hr would have to be installed. The auxiliary fuel required to operate a recuperative heat recovery catalytic oxidation system would be approximately 7.44 billion ft<sup>3</sup>/yr. The auxiliary fuel requirement for either catalytic oxidation system carries an unacceptably large energy demand. The use of a catalytic oxidation system would fail review owing to its adverse energy impact.

In addition, combustion of these inordinate amounts of auxiliary fuel would cause a substantial increase in NO<sub>x</sub> emissions. The collateral increases in NO<sub>x</sub> emissions due solely to natural gas combustion in such a control device of approximately 1,418 tpy for a non-heat recovery system and 521 tpy for a recuperative system are environmentally unsound and cannot be viewed as an acceptable result of potential CO control given that NO<sub>x</sub> in an O<sub>3</sub>-precursor and Stark County is designated Nonattainment for O<sub>3</sub>.

### *Oxygen Injection*

Oxygen injection appears to be an emerging technology but has been unproven to date. The concept with this type of system is to inject additional oxygen at the top of the furnace at the inlet to the DEC to increase the oxidation of CO to CO<sub>2</sub>. Republic could not locate any available information that indicates the level of control an oxygen injection system could achieve. Ohio EPA has indicated in several recent CO BACT reviews that oxygen injection at the DEC would not provide any

significant increase in CO oxidation. Oxygen and oxyfuel injection into the furnace is a common practice to increase the heat input to the charge; however, Republic is not aware of any domestic EAF where an oxygen injection system located at the DEC has been installed and demonstrated.

Because it is unproven and not commercially available, Republic does not consider the use of oxygen injection at the DEC a viable CO emission control option.

Republic's review of the current RBLC found a BACT for CO emissions was generally comprised of the same technology proposed by Republic; i.e., CO emission combustion via DEC gap control and water-cooled exhaust gas ductwork.

#### *Demonstration of BACT*

Republic's design and operation of equipment to effect CO emission combustion via DEC gap control and water-cooled exhaust gas ductwork is consistent with and is as stringent as all other EAF installations found in the RBLC. Republic proposes that BACT for No. 7 EAF CO emissions is an emission factor of 2.0 lbs/ton of steel produced.

### **No. 2 LMF**

#### **SO<sub>2</sub>**

Republic proposes an SO<sub>2</sub> emission rate for No. 2 LMF of 39.7 lbs/hr based on an uncontrolled SO<sub>2</sub> emission factor of 0.18 lb/ton of steel produced. The source of SO<sub>2</sub> emissions from an LMF are generally attributable to the sulfur content of the raw materials added at the LMF and residual sulfur carried over in the molten metal from the EAF. The typical BACT measure of charge substitution (using lower-sulfur bearing materials) is not a practical or feasible option when in fact Republic may have to add sulfur wire alloy at No. 2 LMF in order to make a customer or steel grade sulfur content specification. As was discussed above, the use of add-on SO<sub>2</sub> emission control for the No. 4 Melt Shop Baghouse airflow stream is not technically feasible.

Republic proposes that BACT for No. 2 LMF SO<sub>2</sub> emissions is normal source operation without the use of add-on air pollution equipment. This determination is consistent with the fact that add-on SO<sub>2</sub> controls have not been required on any U.S. LMF or EAF melt shop installation to date.

Republic completed a review of the RBLC and found that their proposed installation of No. 2 LMF without add-on SO<sub>2</sub> controls is consistent with the RBLC.

#### *Demonstration of LAER/BACT*

Republic's proposed SO<sub>2</sub> emission rate for No. 2 LMF (based on an uncontrolled emission factor of 0.18 lb/ton of steel produced) is more stringent than the emission factor found in the RBLC.

#### **CO**

Republic proposes a CO emission rate for No. 2 LMF of 4.2 lbs/hr based on an uncontrolled CO emission factor of 0.019 lb/ton of steel produced.

Republic proposes that BACT for No. 2 LMF CO emissions is normal source operation without the use of add-on air pollution equipment. This determination is consistent with the fact that add-on CO controls have not been required on any U.S. LMF or EAF melt shop installation to date. Republic's proposed installation of No. 2 LMF without add-on CO controls is also consistent with the RBLC.

#### *Demonstration of LAER/BACT*

Republic's proposed CO emission rate for the No. 2 LMF (based on a conservative uncontrolled

emission factor of 0.019 lb/ton of steel produced) is more stringent than the most restrictive CO emission factor found in the RBLC.

## **Ladle Dryer/Preheaters**

### **SO<sub>2</sub>**

Potential SO<sub>2</sub> emissions from the proposed ladle dryer/preheaters are due solely to natural gas combustion, and are estimated to be 0.15 tpy.

Republic does not propose to install any form of air pollution control equipment on this source. Because of the negligible emissions involved, the use of add-on air pollution control technologies is not commonly considered as part of a BACT analysis for sources where insignificant SO<sub>2</sub> emissions are due to natural gas combustion only. Republic is unaware of any integrated or mini-mills that employ add-on control technology to control negligible SO<sub>2</sub> emissions from natural gas combustion.

#### *Demonstration of LAER/BACT*

Republic proposes that BACT for ladle dryer SO<sub>2</sub> emissions is proper natural gas burner design and good combustion practices and the use of no add-on air pollution equipment directly associated with the source.

### **CO**

Potential CO emissions from the proposed ladle dryer/preheaters are due solely to natural gas combustion, and are estimated to be 21.3 tpy. An emission factor of 84 lbs/10<sup>6</sup> ft<sup>3</sup> of natural gas burned (equal to a nominal rate of 0.084 lb/MMBtu heat input) was used to estimate CO emissions. The selection and use of this CO emission factor reflects the proposed use of low-NO<sub>x</sub> burner technology for the ladle dryer/preheaters.

Republic does not propose to install any form of air pollution control equipment on this source. Because of the negligible emissions involved, the use of add-on air pollution control technologies is not commonly considered as part of a BACT analysis for sources where insignificant CO emissions are due to natural gas combustion only. Republic is unaware and the RBLC makes no reference of any integrated or mini-mills that employ add-on control technology to control negligible CO emissions from natural gas combustion.

#### *Demonstration of LAER/BACT*

Republic proposes that BACT for ladle dryer CO emissions is proper natural gas burner design and good combustion practices and the use of no add-on air pollution equipment directly associated with the source.

## SUMMARY OF BACT/LAER DETERMINATIONS

The following summarizes the BACT and LAER determinations that Republic proposes for the Melt Shop Flexibility Project.

No. 7 EAF	PM <sub>10</sub>	0.0018 gr/dscf (as filterable particulate) 0.0014 gr/dscf (as filterable PM <sub>10</sub> ) 0.0048 gr/dscf (as total PM <sub>10</sub> , including CPM) 3 pct. opacity from melt shop baghouse 6 pct. opacity from melt shop building
	SO <sub>2</sub>	12.83 lbs/hr – based on 0.07 lb/ton of steel
	NO <sub>x</sub>	36.7 lbs/hr – based on 0.2 lb/ton of steel
	CO	367 lbs/hr – based on 2.0 lbs/ton of steel
	VOC	18.33 lbs/hr – based on 0.1 lb/ton of steel
No. 2 LMF	PM <sub>10</sub>	See limits for No. 7 EAF
	SO <sub>2</sub>	39.6 lbs/hr – based on 0.18 lb/ton of steel
	NO <sub>x</sub>	2.90 lbs/hr – based on 0.0132 lb/ton of steel
	CO	4.22 lbs/hr – based on 0.0192 lb/ton of steel
	VOC	0.80 lb/hr – based on 0.0036 lb/ton of steel
Ladle Dryers	PM <sub>10</sub>	0.0076 lb/MMBtu heat input
	SO <sub>2</sub>	0.0006 lb/MMBtu heat input
	NO <sub>x</sub>	0.10 lb/MMBtu heat input
	CO	0.084 lb/MMBtu heat input
	VOC	0.0055 lb/MMBtu heat input

## Compliance Certification

Republic has indicated that their major stationary sources in Ohio are in compliance.

## Emissions Offsets

Republic is required to provide emissions offsets for VOC and NO<sub>x</sub>, at a ratio of greater than one-to-one (a 1.1 to 1.0 value has been applied), as part of the nonattainment review requirements. The following shutdowns are specified in the application, and will be federally enforceable permit requirements.

Pollutant	Allowable Emissions Increase (tons/yr)	Offsets Available (tons/yr)	Required Offsets (tons/yr)
VOC	43	69.79	47.3
NO <sub>x</sub>	123.6	291.77	135.96
PM <sub>10</sub> /PM <sub>2.5</sub>	320.4	See Note	See Note

Note: In accordance with OAC rule 3745-31-27(A), Republic has agreed to identify, acquire, and make all PM<sub>10</sub>/PM<sub>2.5</sub> offsets federally enforceable by the start-up date.

## **Net Air Quality Benefit**

The requirement to provide a net air quality benefit has been met by this project for NO<sub>x</sub> and VOC. In accordance with OAC rule 3745-31-22 (A)(4), compliance with the requirements of (A)(1) - (3) and OAC rule 3745-31-25 is sufficient.

## **Ambient Air Quality Monitoring Requirements**

The Republic facility to be modified is located in AQCR 174. The area is attainment for NO<sub>2</sub>, SO<sub>2</sub>, Pb, PM<sub>10</sub> and CO. It is nonattainment for 8-hour ozone and PM 2.5. U.S. EPA regulations require the determination of baseline air quality in the vicinity of the proposed project. This is normally accomplished using representative air quality monitoring data. Air quality monitoring can be utilized to demonstrate that the project will have less than a threshold impact. This threshold impact is identified as the PSD monitoring de minimus level. If the projected impact from the proposed project exceeds this level, ambient data must be collected or existing representative data must be identified.

Republic has conducted ambient air quality modeling to determine the potential impact due to the proposed modification. The following are the projected impacts:

<u>Pollutant</u>	<u>Averaging Period</u>	<u>Predicted Concentration</u>	<u>Monitoring De minimus Concentration</u>
PM <sub>10</sub>	24-hour	18 ug/m <sup>3</sup>	10 ug/m <sup>3</sup>
SO <sub>2</sub>	24-hour	49 ug/m <sup>3</sup>	13 ug/m <sup>3</sup>
NO <sub>x</sub>	24-hour	6 ug/m <sup>3</sup>	14 ug/m <sup>3</sup>
CO	8-hour	807 ug/m <sup>3</sup>	532 ug/m <sup>3</sup>
Pb	Quarter	0.0063 ug/m <sup>3</sup>	0.1 ug/m <sup>3</sup>

Predicted impacts exceed the monitoring threshold for PM<sub>10</sub>, SO<sub>2</sub>, CO. However, Ohio EPA has identified existing ambient data which it judged to be representative of the current air quality within the impact area of Republic. Therefore, Republic would not be required to conduct pre-construction monitoring.

## **Modeling**

Air quality dispersion was conducted to assess the effect of this modification on the national ambient air quality standards (NAAQS) and PSD increments. AERMOD (version 04079) was used in the regulatory default, urban mode. Five years of meteorological data (Akron/Pittsburgh, 1988-1992) were used. Building downwash was incorporated into the AERMOD estimates using the PRIME algorithm.

Predicted impacts of CO, NO<sub>2</sub>, SO<sub>2</sub> and PM<sub>10</sub> were above their corresponding PSD significant impact increments. Additional modeling for compliance with both the NAAQS and PSD increments was required (Ohio All for CO).

Initial model results for PM<sub>10</sub> were recalculated to account for PM<sub>10</sub> condensibles and to accurately reflect the PSD increment consumption as calculated from the original baseline.

## **Increment**

All areas surrounding the Republic facility are Class II PSD areas. It is the Ohio EPA policy that no individual project consumes more than 50% of the available PSD increment. For CO and Pb, projects are constrained to no more than 25% of the NAAQS. The following is the summary of the

impact of increment consuming sources:

<u>Pollutant</u>	<u>Averaging Period</u>	<u>Predicted Concentration</u>	<u>PSD Increment Concentration</u>
PM10	24-hour	16.6 ug/m3	30 ug/m3
	Annual	3.3 ug/m3	17 ug/m3
SO2	3-hour	74.9ug/m3	512 ug/m3
	24-hour	35.3 ug/m3	91 ug/m3
	Annual	5.0 ug/m3	20 ug/m3
NOx	Annual	6.3 ug/m3	25 ug/m3
CO	1-hour	1422 ug/m3	10000 ug/m3*
	8-hour	807 ug/m3	2500 ug/m3*
Pb	Quarter	0.0063 ug/m3	0.375 ug/m3*

\* 25% of the NAAQS, Ohio Acceptable Incremental Impact

### **NAAQS**

Existing sources at the facility, existing sources above the PSD significant rates within the Republic significant impact area (SIA) and sources greater than 100 tons/year outside of the SIA are modeled to determine the combined impact of existing significant sources. A background value is added to account for minor sources not explicitly included in the modeling.

<u>Pollutant</u>	<u>Averaging Period</u>	<u>Predicted Concentration</u>	<u>NAAQS Concentration</u>	<u>Concentration With Background</u>
PM10	24-hour	100.1 ug/m3	150 ug/m3	146.1 ug/m3*
	Annual	24.0ug/m3	50 ug/m3	47.3 ug/m3
SO2	3-hour	491 ug/m3	1300 ug/m3	721.6 ug/m3
	24-hour	242 ug/m3	365 ug/m3	325.8 ug/m3
	Annual	43.5 ug/m3	80 ug/m3	62.9 ug/m3
NOx	Annual	35.4 ug/m3	100 ug/m3	68.3 ug/m3
CO	1-hour	2449 ug/m3	40000 ug/m3	8616 ug/m3
	8-hour	1335 ug/m3	10000 ug/m3	3847 ug/m3

\* Peak PM10 concentrations are due to localized impact near/on a landfill

### **Secondary Impact Analysis**

Republic has demonstrated that the predicted pollutant concentrations throughout the study area are below the secondary NAAQS thresholds. The secondary NAAQS are designed to limit the amount of pollutants in the ambient air to levels below those which could have an adverse impact on human welfare, soils and vegetation. The modeling analyses demonstrate that no significant impacts on human welfare, soils or vegetation will occur from the proposed modification.

### **Conclusions**

Based upon our review of the Permit to Install application for the proposed modifications and its supporting documentation, the Ohio EPA staff have determined that the proposed modification will comply with all applicable State and Federal air pollution control regulations. In particular, Republic

has successfully satisfied both the PSD increment consumption/NAAQS analysis and the BACT/LAER analysis requirements of the PSD regulations. Consequently, the Ohio EPA staff recommends that a Permit to Install be issued to Republic Engineered Products.



State of Ohio Environmental Protection Agency

**RE: DRAFT PERMIT TO INSTALL  
STARK COUNTY**

**CERTIFIED MAIL**

Street Address:

Lazarus Gov. Center TELE: (614) 644-3020 FAX: (614) 644-2329

Mailing Address:

Lazarus Gov.  
Center

**Application No:** 15-01591  
**Fac ID:** 1576050694

**DATE:** 7/7/2005

Republic Engineered Products Inc.  
Pat Monnot  
2633 Eighth St NW  
Canton, OH 44701

You are hereby notified that the Ohio Environmental Protection Agency has made a draft action recommending that the Director issue a Permit to Install for the air contaminant source(s) [emissions unit(s)] shown on the enclosed draft permit. This draft action is not an authorization to begin construction or modification of your emissions unit(s). The purpose of this draft is to solicit public comments on the proposed installation. A public notice concerning the draft permit will appear in the Ohio EPA Weekly Review and the newspaper in the county where the facility will be located. Public comments will be accepted by the field office within 30 days of the date of publication in the newspaper. Any comments you have on the draft permit should be directed to the appropriate field office within the comment period. A copy of your comments should also be mailed to Robert Hodanbosi, Division of Air Pollution Control, Ohio EPA, P.O. Box 1049, Columbus, OH, 43266-0149.

A Permit to Install may be issued in proposed or final form based on the draft action, any written public comments received within 30 days of the public notice, or record of a public meeting if one is held. You will be notified in writing of a scheduled public meeting. Upon issuance of a final Permit to Install a fee of **\$6600** will be due. Please do not submit any payment now.

The Ohio EPA is urging companies to investigate pollution prevention and energy conservation. Not only will this reduce pollution and energy consumption, but it can also save you money. If you would like to learn ways you can save money while protecting the environment, please contact our Office of Pollution Prevention at (614) 644-3469. If you have any questions about this draft permit, please contact the field office where you submitted your application, or Mike Ahern, Field Operations & Permit Section at (614) 644-3631.

Sincerely,

Michael W. Ahern, Manager  
Permit Issuance and Data Management Section  
Division of Air Pollution Control

cc: USEPA

Canton LAA

WV

PA

Stark Metro Area Council of Govt's

**PUBLIC NOTICE    PUBLIC HEARING  
OHIO ENVIRONMENTAL PROTECTION AGENCY  
ISSUANCE OF DRAFT PERMIT TO INSTALL  
SUBJECT TO NONATTAINMENT NEW SOURCE REVIEW AND  
PREVENTION OF SIGNIFICANT DETERIORATION REVIEW  
TO REPUBLIC ENGINEERED PRODUCTS**

Public notice is hereby given that the Ohio Environmental Protection Agency (EPA) has issued, on July 7, 2005, draft actions of Permit-to-Install (PTI) application number 15-01591 to Republic Engineered Products, Canton, Ohio. The draft permit proposes to allow the modifications to the # 7 electric arc furnace and installation of a new ladle metallurgical facility and two new ladle dryer/preheaters at the facility located at 2633 Eighth Street, NE, Canton, Ohio, 44704.

The purpose of this notice is (1) to provide interested parties with the opportunity to submit comments concerning the draft permit, and (2) to announce the date, time and location of a possible public hearing concerning the draft permit. A public hearing will only be held if the Director determines that a request for a hearing has been received during the initial comment period and if there is sufficient public interest to hold a hearing.

This project, if approved, will result in permit allowable emissions for the new sources as defined in the following table. Because this project also includes the shutdown of existing sources, net reductions in criteria pollutants are expected. Decreases in emissions of volatile organic compounds (VOC), nitrogen oxides (NOx), and PM<sub>10</sub> (as a surrogate for PM<sub>2.5</sub>) that offset and exceed the amount of the new source emissions, are required as part of this permit. The proposed allowable criteria pollutant air emission rates for the new sources and the net increase or decrease associated with this project are as follows:

Pollutant	Permit Allowable (Tons/Year)	Shutdown Decreases (Tons/Year)	Project Net Increases (Decreases) (Tons/Year)
VOC	58.1	84.89	(26.79)
NOx	173.1	341.27	(168.17)
*PM	119.7	*	119.7
**PM <sub>10</sub> /PM <sub>2.5</sub>	320.4	321.0	(0.6)
*CO	1199.2	748.4	450.7
*SO <sub>2</sub>	202.1	*	202.1

\* Offsets are not required for these pollutants.

\*\* Republic has not yet identified all of the necessary offsets. In accordance with OAC rule 3745-31-27(A), Republic has agreed to identify, acquire, and make all PM<sub>10</sub>/PM<sub>2.5</sub> offsets federally enforceable by the start-up date.

This facility is subject to the applicable provisions of the Non Attainment New Source Review (NNSR) and the Prevention of Significant Deterioration (PSD) regulations as detailed in Ohio Administrative Code (OAC) rules 3745-31-10 through 31-27.

U.S. EPA allows sources to consume no more than the maximum available ambient PSD increments for each PSD pollutant. Proposed new sources also can not cause or significantly contribute to violations of the national ambient air quality standard (NAAQS). Ohio EPA allows PSD sources to consume no more than one half the available increment, with some exceptions. This facility has demonstrated that the NO<sub>2</sub> and SO<sub>2</sub> impacts from the source is less than one half the available increment. The PM<sub>10</sub> impact of this source is above one half of the increment, but the aerial extent is localized. CO and Pb impacts were within Ohio Acceptable Incremental Impacts. This facility has demonstrated that the impact from the new source and other nearby PSD sources is protective of the

PSD increments and does not cause or significantly contribute to violations of the NAAQS. Based on these analyses, the project complies with both the federal and state modeling requirements for NO<sub>2</sub>, SO<sub>2</sub>, Pb, CO and PM<sub>10</sub>.

Written requests for a public hearing must be received by the close of the business day on Monday, August 8, 2005. Written comments on the draft permit must be received by the close of business Friday, August 12. Comments received after this date will not be considered to be a part of the official record. Written comments may be submitted at the hearing (if it is held) or sent to: Pat Petrella, Canton City Health Department, 420 Market Avenue North, Canton, Ohio 44702.

If the Director determines that there is not sufficient public interest to warrant holding a hearing, then no public hearing will be held. If the director determines that there is sufficient public interest to warrant holding a hearing, then a public hearing on the draft air permit will be held on Thursday, August 11, 2005, at the at Canton City Hall, Council Chambers, 218 Cleveland Avenue S.W., Canton, Ohio 44702. The public information session will commence at 6:30 p.m. and the hearing will follow immediately to accept comments on the draft permit. A presiding officer will be present and may limit oral testimony to ensure that all parties are heard.

If the hearing is held, all interested persons are entitled to attend or be represented and give written or oral comments on the draft permit at the hearing.

Interested parties can log onto the Ohio EPA web page at [www.epa.state.oh.us/dapc/](http://www.epa.state.oh.us/dapc/) under ""Featured Topics"" toward the bottom of the web page on Tuesday, August 9 after 1:00 p.m. or contact Pat Petrella at (330) 489-3385 to determine if the hearing has been canceled.

Copies of the draft permit application and technical support information may be reviewed and/or copies made by first calling to make an appointment at the Canton City Health Department, located at the above address, telephone number (330) 489-3385.

STATE OF OHIO ENVIRONMENTAL PROTECTION AGENCY

Permit To Install  
Terms and Conditions

Issue Date: To be entered upon final issuance  
Effective Date: To be entered upon final issuance

DRAFT PERMIT TO INSTALL 15-01591

Application Number: 15-01591  
Facility ID: 1576050694  
Permit Fee: **To be entered upon final issuance**  
Name of Facility: Republic Engineered Products Inc.  
Person to Contact: Pat Monnot  
Address: 2633 Eighth St NW  
Canton, OH 44701

Location of proposed air contaminant source(s) [emissions unit(s)]:

**2633 Eighth St NE  
Canton, Ohio**

Description of proposed emissions unit(s):

**Chapter 31 modification of No. 4 melt shop furnaces and addition of two new ladle preheaters and a new LMF designated No. 2 LMF.**

The above named entity is hereby granted a Permit to Install for the above described emissions unit(s) pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this permit does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the above described emissions unit(s) of environmental pollutants will operate in compliance with applicable State and Federal laws and regulations, and does not constitute expressed or implied assurance that if constructed or modified in accordance with those plans and specifications, the above described emissions unit(s) of pollutants will be granted the necessary permits to operate (air) or NPDES permits as applicable.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency

Director

Republic Engineered Products Inc.

Facility ID: 157605069

PTI Application: 15-01591

Issued: To be entered upon final issuance

Part I - GENERAL TERMS AND CONDITIONS

**A. State and Federally Enforceable Permit-To-Install General Terms and Conditions**

**1. Monitoring and Related Recordkeeping and Reporting Requirements**

- a. Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall maintain records that include the following, where applicable, for any required monitoring under this permit:
  - i. The date, place (as defined in the permit), and time of sampling or measurements.
  - ii. The date(s) analyses were performed.
  - iii. The company or entity that performed the analyses.
  - iv. The analytical techniques or methods used.
  - v. The results of such analyses.
  - vi. The operating conditions existing at the time of sampling or measurement.
- b. Each record of any monitoring data, testing data, and support information required pursuant to this permit shall be retained for a period of five years from the date the record was created. Support information shall include, but not be limited to, all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Such records may be maintained in computerized form.
- c. Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall submit required reports in the following manner:
  - i. Reports of any required monitoring and/or recordkeeping of federally enforceable information shall be submitted to the appropriate Ohio EPA District Office or local air agency.
  - ii. Quarterly written reports of (i) any deviations from federally enforceable emission limitations, operational restrictions, and control device operating parameter limitations, excluding deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06, that have been detected by the testing, monitoring and recordkeeping requirements specified in this permit, (ii) the probable cause of such deviations, and (iii) any corrective actions or preventive measures taken, shall be made to the appropriate Ohio EPA District Office or local air agency. The written reports shall be submitted (i.e., postmarked) quarterly, by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. See B.8 below if no deviations occurred during the quarter.
  - iii. Written reports, which identify any deviations from the federally enforceable monitoring, recordkeeping, and reporting requirements

Republic Engineered Products Inc.

Facility ID: 157605069

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contained in this permit shall be submitted (i.e., postmarked) to the appropriate Ohio EPA District Office or local air agency every six months, by January 31 and July 31 of each year for the previous six calendar months. If no deviations occurred during a six-month period, the permittee shall submit a semi-annual report, which states that no deviations occurred during that period.

- iv. If this permit is for an emissions unit located at a Title V facility, then each written report shall be signed by a responsible official certifying that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.
- d. The permittee shall report actual emissions pursuant to OAC Chapter 3745-78 for the purpose of collecting Air Pollution Control Fees.

## 2. Scheduled Maintenance/Malfunction Reporting

Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of OAC rule 3745-15-06. The malfunction, i.e., upset, of any emissions units or any associated air pollution control system(s) shall be reported to the appropriate Ohio EPA District Office or local air agency in accordance with paragraph (B) of OAC rule 3745-15-06. (The definition of an upset condition shall be the same as that used in OAC rule 3745-15-06(B)(1) for a malfunction.) The verbal and written reports shall be submitted pursuant to OAC rule 3745-15-06.

Except as provided in that rule, any scheduled maintenance or malfunction necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emission unit(s) that is (are) served by such control system(s).

## 3. Risk Management Plans

If the permittee is required to develop and register a risk management plan pursuant to section 112(r) of the Clean Air Act, as amended, 42 U.S.C. 7401 et seq. ("Act"), the permittee shall comply with the requirement to register such a plan.

## 4. Title IV Provisions

If the permittee is subject to the requirements of 40 CFR Part 72 concerning acid rain, the permittee shall ensure that any affected emissions unit complies with those requirements. Emissions exceeding any allowances that are lawfully held under Title IV of the Act, or any regulations adopted thereunder, are prohibited.

## 5. Severability Clause

A determination that any term or condition of this permit is invalid shall not invalidate the force or effect of any other term or condition thereof, except to the extent that any other term or condition depends in whole or in part for its operation or implementation upon the term or condition declared invalid.

## 6. General Requirements

- a. The permittee must comply with all terms and conditions of this permit. Any

**Republic Engineered Products Inc.**

**Facility ID: 157605069**

**PTI Application: 15-01591**

**Issued: To be entered upon final issuance**

noncompliance with the federally enforceable terms and conditions of this permit constitutes a violation of the Act, and is grounds for enforcement action or for permit revocation, revocation and re-issuance, or modification

- b. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the federally enforceable terms and conditions of this permit.
- c. This permit may be modified, revoked, or revoked and reissued, for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or revocation, or of a notification of planned changes or anticipated noncompliance does not stay any term and condition of this permit.
- d. This permit does not convey any property rights of any sort, or any exclusive privilege.
- e. The permittee shall furnish to the Director of the Ohio EPA, or an authorized representative of the Director, upon receipt of a written request and within a reasonable time, any information that may be requested to determine whether cause exists for modifying or revoking this permit or to determine compliance with this permit. Upon request, the permittee shall also furnish to the Director or an authorized representative of the Director, copies of records required to be kept by this permit. For information claimed to be confidential in the submittal to the Director, if the Administrator of the U.S. EPA requests such information, the permittee may furnish such records directly to the Administrator along with a claim of confidentiality.

## **7. Fees**

The permittee shall pay fees to the Director of the Ohio EPA in accordance with ORC section 3745.11 and OAC Chapter 3745-78. The permittee shall pay all applicable permit-to-install fees within 30 days after the issuance of any permit-to-install. The permittee shall pay all applicable permit-to-operate fees within thirty days of the issuance of the invoice.

## **8. Federal and State Enforceability**

Only those terms and conditions designated in this permit as federally enforceable, that are required under the Act, or any its applicable requirements, including relevant provisions designed to limit the potential to emit of a source, are enforceable by the Administrator of the U.S. EPA and the State and by citizens (to the extent allowed by section 304 of the Act) under the Act. All other terms and conditions of this permit shall not be federally enforceable and shall be enforceable under State law only.

## **9. Compliance Requirements**

- a. Any document (including reports) required to be submitted and required by a

Republic Engineered Products Inc.

Facility ID: 157605069

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federally applicable requirement in this permit shall include a certification by a responsible official that, based on information and belief formed after reasonable inquiry, the statements in the document are true, accurate, and complete.

- b. Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the Director of the Ohio EPA or an authorized representative of the Director to:
  - i. At reasonable times, enter upon the permittee's premises where a source is located or the emissions-related activity is conducted, or where records must be kept under the conditions of this permit.
  - ii. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit, subject to the protection from disclosure to the public of confidential information consistent with ORC section 3704.08.
  - iii. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit.
  - iv. As authorized by the Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit and applicable requirements.
- c. The permittee shall submit progress reports to the appropriate Ohio EPA District Office or local air agency concerning any schedule of compliance for meeting an applicable requirement. Progress reports shall be submitted semiannually, or more frequently if specified in the applicable requirement or by the Director of the Ohio EPA. Progress reports shall contain the following:
  - i. Dates for achieving the activities, milestones, or compliance required in any schedule of compliance, and dates when such activities, milestones, or compliance were achieved.
  - ii. An explanation of why any dates in any schedule of compliance were not or will not be met, and any preventive or corrective measures adopted.

## 10. Permit-To-Operate Application

- a. If the permittee is required to apply for a Title V permit pursuant to OAC Chapter 3745-77, the permittee shall submit a complete Title V permit application or a complete Title V permit modification application within twelve (12) months after commencing operation of the emissions units covered by this permit. However, if the proposed new or modified source(s) would be prohibited by the terms and conditions of an existing Title V permit, a Title V permit modification must be obtained before the operation of such new or modified source(s) pursuant to OAC rule 3745-77-04(D) and OAC rule 3745-77-08(C)(3)(d).
- b. If the permittee is required to apply for permit(s) pursuant to OAC Chapter 3745-35, the source(s) identified in this permit is (are) permitted to operate for a period of up to one year from the date the source(s) commenced operation.

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Permission to operate is granted only if the facility complies with all requirements contained in this permit and all applicable air pollution laws, regulations, and policies. Pursuant to OAC Chapter 3745-35, the permittee shall submit a complete operating permit application within ninety (90) days after commencing operation of the source(s) covered by this permit.

**11. Best Available Technology**

As specified in OAC Rule 3745-31-05, all new sources must employ Best Available Technology (BAT). Compliance with the terms and conditions of this permit will fulfill this requirement.

**12. Air Pollution Nuisance**

The air contaminants emitted by the emissions units covered by this permit shall not cause a public nuisance, in violation of OAC rule 3745-15-07.

**13. Permit-To-Install**

A permit-to-install must be obtained pursuant to OAC Chapter 3745-31 prior to "installation" of "any air contaminant source" as defined in OAC rule 3745-31-01, or "modification", as defined in OAC rule 3745-31-01, of any emissions unit included in this permit.

**B. State Only Enforceable Permit-To-Install General Terms and Conditions**

**1. Compliance Requirements**

The emissions unit(s) identified in this Permit shall remain in full compliance with all applicable State laws and regulations and the terms and conditions of this permit.

**2. Reporting Requirements**

The permittee shall submit required reports in the following manner:

- a. Reports of any required monitoring and/or recordkeeping of state-only enforceable information shall be submitted to the appropriate Ohio EPA District Office or local air agency.
- b. Except as otherwise may be provided in the terms and conditions for a specific emissions unit, quarterly written reports of (a) any deviations (excursions) from state-only required emission limitations, operational restrictions, and control device operating parameter limitations that have been detected by the testing, monitoring, and recordkeeping requirements specified in this permit, (b) the probable cause of such deviations, and (c) any corrective actions or preventive measures which have been or will be taken, shall be submitted to the appropriate Ohio EPA District Office or local air agency. If no deviations

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occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted (i.e., postmarked) quarterly, by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. (These quarterly reports shall exclude deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06.)

### **3. Permit Transfers**

Any transferee of this permit shall assume the responsibilities of the prior permit holder. The appropriate Ohio EPA District Office or local air agency must be notified in writing of any transfer of this permit.

### **4. Authorization To Install or Modify**

If applicable, authorization to install or modify any new or existing emissions unit included in this permit shall terminate within eighteen months of the effective date of the permit if the owner or operator has not undertaken a continuing program of installation or modification or has not entered into a binding contractual obligation to undertake and complete within a reasonable time a continuing program of installation or modification. This deadline may be extended by up to 12 months if application is made to the Director within a reasonable time before the termination date and the party shows good cause for any such extension.

### **5. Construction of New Sources(s)**

This permit does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. This permit does not constitute expressed or implied assurance that the proposed facility has been constructed in accordance with the application and terms and conditions of this permit. The action of beginning and/or completing construction prior to obtaining the Director's approval constitutes a violation of OAC rule 3745-31-02. Furthermore, issuance of this permit does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. Issuance of this permit is not to be construed as a waiver of any rights that the Ohio Environmental Protection Agency (or other persons) may have against the applicant for starting construction prior to the effective date of the permit. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed facilities cannot meet the requirements of this permit or cannot meet applicable standards.

### **6. Public Disclosure**

The facility is hereby notified that this permit, and all agency records concerning the operation of this permitted source, are subject to public disclosure in accordance with OAC rule 3745-49-03.

### **7. Construction Compliance Certification**

If applicable, the applicant shall provide Ohio EPA with a written certification (see enclosed form if applicable) that the facility has been constructed in accordance with the permit-to-install application and the terms and conditions of the permit-to-install. The certification shall be provided to Ohio EPA upon completion of construction but prior to startup of the source.

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**8. Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations (See Section A of This Permit)**

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly (i.e., postmarked), by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

**C. Permit-To-Install Summary of Allowable Emissions**

The following information summarizes the total allowable emissions, by pollutant, based on the individual allowable emissions of each air contaminant source identified in this permit.

SUMMARY	
TOTAL PERMIT TO INSTALL ALLOWABLE EMISSIONS	
(for informational purposes only)	
<u>Pollutant</u>	<u>Tons Per Year</u>
PM	119.7
PM-10(filterable)	90.4
PM-10(total)	320.4
Pb	0.12
SO <sub>2</sub>	193.0
NO <sub>x</sub>	173.1
VOC	58.1
CO	1199.2

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**Part II - FACILITY SPECIFIC TERMS AND CONDITIONS**

A. State and Federally Enforceable Permit To Install Facility Specific Terms and Conditions

As a result of the installation of emission units P160 thru P162 and the major modifications to EAF No. 7 (emission unit P905) which results in an increase in steel production from 85 tons per hour to 183.3 tons per hour of steel at the REP's Canton Ohio Eighth Street facility, the permittee shall:

1. Obtain 123.6 tpy NO<sub>x</sub>, 43.0 tpy VOC, and 267.3 tpy PM<sub>10</sub> (as a surrogate for PM<sub>2.5</sub>) of emission offsets in accordance with the requirements specified in OAC rule 3745-31-21(A), OAC rule 3745-31-22(A)(3), and OAC rule 3745-31-24 thru OAC rule 3745-31-27 in order to offset the resulting significant net increase in VOC and NO<sub>x</sub> emissions from the MSF project. The offset ratio shall be greater than 1.0 to 1.0 in accordance with OAC rule 3745-31-26(A) since the non-attainment area is designated as Basic.
  - a. Off setting of the net excess emissions generated by this project shall be the result of the permanent shutdown of VOC and/or NO<sub>x</sub> sources or reduction in VOC and/or NO<sub>x</sub> emissions as specified in the table below:

A	B	C	D	E	F	G
Company Name, Address, Contact Person & Phone # Providing Offsets	Emissions Unit ID No. & Description	TPY NO <sub>x</sub> Offset Credit	TPY VOC Offset Credit	TPY of NO <sub>x</sub> Offset Emissions Remaining	TPY of VOC Offset Emissions Remaining	Reason for Offset Emission Credits
<i>Republic Engineered Products, Inc. 2633 Eighth St., NE, Canton, OH 44704  Patrick Monnot 330.438.5418</i>	<i>Melt Shop Flexibility Project</i>	+123.6	+43.0	123.6	43.0	<i>Credits Needed</i>
	(P008-P011, P013-P016) Blooming Mill Soaking Pits	-50.84	-1.64	72.76	41.36	Permanent shutdown 8/27/99; 1997-98 avg. emissions from FER
	(F007) Old Vertical Caster	-5.60	—	67.16	41.36	Permanent shutdown 12/95; 1994-95 avg. emissions from FER

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Republic Engineered Products, Inc. 401 Rose Avenue Massillon, OH 44647  Ken Cleaver 330.837.7111	(P006) Coil Selas Furnace	-0.70	-0.03	66.46	41.33	Permanent shutdown; last operated 1995; 1993 & 1995 avg. emissions from FER (1994 cannot be located)
	(P013) Plant 2 Coil Pickling	-2.26	—	64.20	41.33	Permanent shutdown; last operated 1995; 1993 & 1995 avg. emissions from FER (1994 cannot be located)
	(P014) Plant 2 Bar Pickling	-0.50	—	59.54	42.47	Permanent shutdown; last operated 1998/99; 1996-97 avg. emissions from FER
Republic Engineered Products, Inc. 1807 East 28 <sup>th</sup> St., Lorain, OH 44055  Jay Lawniczak 440.277.3088	(P075) Slow Cool Furnace No. 1N	-2.37	-0.02	63.7	41.33	Permanent shutdown; last operated 11/02; 2000-01 avg. emissions from FER
	(P076) Slow Cool Furnace No. 2S	-2.67	-0.02	58.66	41.29	Permanent shutdown; last operated 11/02; 2000-01 avg. emissions from FER
	(P077) Slow Cool Furnace No. 6	-0.36	-0.01	58.30	41.28	Permanent shutdown; last operated 8/02; 2000-01 avg. emissions from FER

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	(P014-P016) Rust Pit Nos. 9, 10, 11	-5.1	-0.21	53.20	41.07	Permanent shutdown; last operated 1995; actual emissions used from 1995 FER (1994 emissions data not available)
	(P006-P013) AMCO Pit Nos. 1-8	-102.85	-0.45	(49.65 excess)	40.62	Permanent shutdown; last operated 1996; 1995-96 avg. emissions from FER (1994 emissions data not available)
	(P017-P018) Swindell Pit Nos. 12/13, 14/15	-118.52	-0.41	(168.17 excess)	40.21	Permanent shutdown; last operated 1997; 1995-96 avg. emissions from FER
World Kitchen 359 State Avenue NW Massillon, OH 44647  Lauren Kisling Canton Fitzgerald 212.829.5460	See World Kitchens Letter to Canton LAA dated 09/02/04	—	-70.0	(168.17 excess)	(26.79 excess)	Permanent shutdown 9/04; 2002-03 avg. emissions per CAPC and World Kitchen; negotiations initiated for some or all

- b. Stark County is in non-attainment for PM<sub>2.5</sub> effective April 5, 2005. Even though the regulations implementing the Fine Particulate NAAQS (PM<sub>2.5</sub>) have not been finalized yet, US EPA has provided guidance specifying that for the purpose of obtaining offsets for PM<sub>2.5</sub>, Ohio EPA must use PM<sub>10</sub> emissions as a surrogate for PM<sub>2.5</sub>. Therefore, pursuant to this guidance, this project must also satisfy the offset requirements set forth in OAC rule 3745-31-26 for PM<sub>10</sub>. The offset ratio will be greater than 1.0 to 1.0 and must be in place by the start-up (identified, acquired and federally enforceable) date for the project. Off setting of the net excess PM<sub>10</sub> emissions generated by this project shall be the result of the permanent shutdown of PM<sub>10</sub> sources or reduction in PM<sub>10</sub> emissions as specified in the table below. The remaining offset PM<sub>10</sub> emissions shall be secured by the initial operating date of the modified sources.

A	B	C	E	G
<b>Company Name, Address, Contact Person &amp; Phone # Providing Offsets</b>	<b>Emissions Unit ID No. &amp; Description</b>	<b>TPY PM<sub>10</sub> Offset Credit</b>	<b>TPY of PM<sub>10</sub> Offset Emissions Remaining</b>	<b>Reason for Offset Emission Credits</b>

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<p>Republic Engineered Products, Inc. 2633 Eighth St., NE, Canton, OH 44704</p> <p>Patrick Monnot 330.438.5418</p>	<p>Melt Shop Flexibility Project</p>	+267.3	267.3	Credits Needed
	<p>(P008 - P011, P013 - P016) Blooming Mill Soaking Pits</p>	-1.8	265.5	Permanent shutdown 8/27/99; 1997-98 avg. emissions from FER
	<p>(F007) Old Vertical Caster</p>	-1.24	264.26	Permanent shutdown 12/95; 1994-95 avg. emissions from FER
<p>Republic Engineered Products, Inc. 401 Rose Avenue Massillon, OH 44647</p> <p>Ken Cleaver 330.837.7111</p>	<p>(P006) Coil Selas Furnace</p>	-0.02	264.24	Permanent shutdown; last operated 1995; 1993 & 1995 avg. emissions from FER (1994 cannot be located)
	<p>(P013) Plant 2 Coil Pickling</p>	-----	—	Permanent shutdown; last operated 1995; 1993 & 1995 avg. emissions from FER (1994 cannot be located)
	<p>(P014) Plant 2 Bar Pickling</p>	-----	—	Permanent shutdown; last operated 1998/99; 1996-97 avg. emissions from FER
	<p>(P016) waterbury Shot Blaster</p>	-11.13	253.11	Permanent shutdown; last operated 2000/01; 1999-2000 avg. emissions from FER.
	<p>(P010) # 1 Schumag Rotoblast</p>	-3.02	250.09	Permanent shutdown: last operated 1997; 1996 emissions from FER (blasting equipment emissions for 1995 and earlier were estimated using a different methodology that proved to be understating emissions by an order of magnitude)

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Republic Engineered Products Inc. 1807 East 28th St. Lorain, Ohio 44055  Jay Lawniczak 440.277.3088	(P014-P016) Rust Pit Nos. 9, 10, and 11	-0.12	249.97	Permanent Shutdown; last operated 1996; emissions based on actual fuel usage for 1995 multiplied by emissions factor of 7.6 lb/mmcf(AP-42 for 1998 for natural gas buring) (1994 emission data not available)
	(P006 - P013) AMCO Pit Nos. 1-8	-3.30	246.67	Permanent Shutdown; last operated 1996; emissions based on actual fuel usage for 1995 multiplied by emissions factor of 7.6 lb/mmcf(AP-42 for 1998 for natural gas buring) (1994 emission data not available)
	(P017-P018) Swindell Pit Nos. 12, 13, 14, and 15	-3.01	243.66	Permanent Shutdown; last operated 1997; 1995 and 1996 avg. emissions based on actual fuel usage for 1995 and 1996 multiplied by emissions factor of 7.6 lb/mmcf(AP-42 for 1998 for natural gas buring) (1994 emission data not available)
	(F009) teeming Unleaded	-6.02	237.64	Permanant Shutdown; last operated in 1996/1997; Lorain Vision 2000 application identified 13.43 tons PM and 6.02 tons PM <sub>10</sub> actual 1996 emissions
	(P023) Teeming Leaded	-3.7	233.94	Permanant Shutdown; last operated in 1996/1997; Lorain Vision 2000 application identified 8.11 tons PM and 3.7 tons PM <sub>10</sub> actual 1996 emissions
	(P059) CAB Station	-8.26	225.68	Permanant Shutdown; last operated in 1996/1997; Lorain Vision 2000 application identified 9.52 tons PM and 8.26 tons PM <sub>10</sub> actual 1996 emissions

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Republic Technologies International LLC 410 Oberlin Rd. SW Massillon, Ohio 44657  Ken Hazard 440.526.8303	(P082) 18 inch Mill Reheat Furnace	-28.75	196.93	Per telephone communication with Mr. Ken Hazard
Other External sources	TBD	196.93	0	

2. In accordance with OAC rule 3745-31-27(A), the permittee shall have identified, acquired, and made federally enforceable **all** offsets by the start-up date. The permittee shall notify the Canton LAA, in writing, of the official start-up date for emission units being modified and installed in accordance with the terms and conditions of this permit to install. As part of this notification, the permittee shall provide written verification, with documentation acceptable to the Canton LAA and OEPA, that those emission units providing emission credits have been either permanently shutdown or have reduced emissions by modifying existing permits or obtaining new permits which shall contain federally enforceable emission limitations and restrictions. The change in the federally enforceable emission limitations shall be at least equal to an amount of credits being claimed for that emission unit(s).
  
3. Provide written certification(s) that all existing major stationary sources owned or operated by the applicant (or any entity controlling, controlled by, or under common control with the applicant) in Ohio are in compliance with all applicable emission limitations and standards under the Clean Air Act( or are in compliance with an expeditious schedule which is federally enforceable or contained in a court decree) in accordance with OAC rule 3745-31-22(A)(2). The certification shall be signed by a responsible official. For the purpose of this permit, a "Responsible official" is the president, secretary, treasurer, or vice-president of each corporation owned or operated by the applicant (or any entity controlling, controlled by, or under common control with the applicant) that is in charge of the principal business function for that corporation, or any other person who performs similar policy or decision-making functions for each corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities.
  
4. In accordance with OAC rule 3745-31-22-(A)(4), the emission offsets discussed above must provide a positive net air quality benefit in the affected area pursuant to rule 3745-31-25 of the Administrative Code. The permittee shall demonstrate compliance with OAC rule 3745-31-22-(A)(4) by complying with the terms and conditions in OAC rule 3745-31-22-(A)(1) thru (A)(3) as specified in the terms and conditions of this PTI.

**B. State Only Enforceable Permit To Install Facility Specific Terms and Conditions**

None

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**Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)**

**A. State and Federally Enforceable Section**

**I. Applicable Emissions Limitations and/or Control Requirements**

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	
P160 - No. 2 Ladle Metallurgy Facility(LMF); Emissions from this emissions unit are controlled by the No. 4 Melt Shop bag house and evacuation system.	OAC rule 3745-31-05(A)(3)	
	OAC rule 3745-31-21 thru 27	OAC rule 3745-31-10 thru 20
		OAC rule 3745-17-08
		OAC rule 3745-17-11

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OAC rule 3745-17-07

OAC rule 3745-18-06

Applicable Emissions  
Limitations/Control Measures

The requirements of this rule also include compliance with the requirements of OAC rules 3745-31-10 thru 20 and 3745-31-21 thru 27.

2.9 lbs NOx/hour  
10.5 tons NOx/year

0.8 lbs VOC/hour  
3.0 tons VOC/year

See section A.I.2.b

The filterable PM<sub>10</sub> emissions rate from the control device serving this emissions unit shall not exceed 28.7 lbs PM<sub>10</sub> per hour and 125.6 tons PM-10 per year

The filterable PM<sub>10</sub> grain loading as measured at the discharge of the No. 4 baghouse servicing this emissions unit shall not exceed 0.0014 grains/dscf.

The total PM<sub>10</sub>/PM<sub>2.5</sub> emissions rate, which includes filterable and condensable PM<sub>10</sub> emissions, from the control device serving this emissions unit shall not exceed 100.6 lbs PM<sub>10</sub>/PM<sub>2.5</sub> per hour and 440.8 tons PM<sub>10</sub>/PM<sub>2.5</sub> per year

The total PM<sub>10</sub>/PM<sub>2.5</sub> grain loading, which includes filterable and condensable PM<sub>10</sub>, as measured at the discharge of the No. 4 baghouse servicing this emissions unit shall not exceed 0.0048 grains/dscf.

Also see section A.I.2.a.

The PM emissions rate from the control device serving this emissions unit shall not exceed 37.7 lbs PM per hour and 165.3

tons PM per year.

The filterable PM grain loading as measured at the discharge of the No. 4 baghouse servicing this emissions unit shall not exceed 0.0018 grains/dscf.

Also see section A.I.2.a.

39.6 lbs SO<sub>2</sub>/hour  
148.5 tons SO<sub>2</sub>/year

4.2 lbs CO/hour  
15.8 tons CO/year

Visible emissions from this emission unit shall not exceed 5 % opacity as a six-minute average measured from the No. 4 Melt Shop Baghouse when the LMF is operating ;

See section A.I.2.c

See section A.I.2.d  
See section A.I.2.d  
See section A.I.2.d  
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## 2. Additional Terms and Conditions

- a. The PM/PM<sub>10</sub> emissions from this emissions unit shall be collected and controlled by the No. 4 Melt Shop evacuation system and baghouse. This evacuation system is used to control PM/PM<sub>10</sub> emissions from emission units P907, P905, P106, P160, F009, and P068.
  - i. The visible emissions of fugitive dust from roof monitors(vents) and openings of the building housing the No. 4 Melt Shop, including doors, windows, etc., shall not exceed an average of six(6) percent opacity as a six-minute average, unless otherwise specified as in 40 CFR 60.11, exempting periods of startup, shutdown, and malfunction.
  - ii. Filterable PM stack emissions from the baghouse shall not exceed 0.0018 grains/dscf and the total PM<sub>10</sub>/PM<sub>2.5</sub> stack emissions(filterable and condensable) shall not exceed 0.0048 grains/dscf unless otherwise specified as in as in 40 CFR 60.11, exempting periods of startup, shutdown, and malfunction.
  - iii. The baghouse shall have a minimum control efficiency of 99 % for PM<sub>10</sub>/PM<sub>2.5</sub> emissions. The LMF capture system efficiency will be considered 100 % for all pollutants.
  - iv. In adherence with U.S. EPA's interim guidance regarding new source review for sources of PM<sub>2.5</sub> emissions, projected PM<sub>10</sub> emissions are to be used as a surrogate for PM<sub>2.5</sub> emissions. Therefore, compliance with PM<sub>10</sub> emission will suffice for compliance with PM<sub>2.5</sub>.
- b. The permittee shall employ the Lowest Achievable Emission Rate(LAER) specified in section A.I.1 and as defined in OAC rule 37445-31-01(OO) for NO<sub>x</sub>, PM<sub>10</sub>/PM<sub>2.5</sub> and VOC. LAER for this emission unit for VOC shall consist of maintaining good operating practices and compliance with the emission limitation specified in section A.I.1 for VOC based on an emission factor of 0.0036 lbs VOC/ton steel produced. LAER for NO<sub>x</sub> shall consist of maintaining good operating practices and complying with the emission limitation specified in section A.I.1 for NO<sub>x</sub> based on 0.0132 lbs NO<sub>x</sub> per ton steel produced . The lb/hr and tons/yr. emission limitations in section A.I.1 are based on these emission factors while at maximum production.
- c. The permittee shall employ the Best Available Control Technology(BACT) as defined in OAC rule 3745-31-01(M) for PM/PM<sub>10</sub>, Sulfur dioxides, and CO. BAT emission limitations are as stringent as BACT. BACT for this emission unit has been demonstrated to be the following:
  - i. For PM/PM-10, the use of the DEC capture and bag house control system servicing No. 4 melt shop(fourth hole evacuation system) and complying

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with a mass emission limitation and grain loading limitations as specified in section A.I.1.

- ii. For Sulfur dioxide, maintaining compliance with the emission limitation in section A.I.1 which is based on an emission factor of 0.18 lbs SO<sub>2</sub> per ton of steel produced.
  - iii. For Carbon Monoxide, maintaining compliance with the emission limitation in section A.I.1 which is based on an emission factor of 0.019 lbs CO/ton of steel produced.
- d. The emission limit specified by this rule is less stringent than the emission limit established pursuant to OAC rules 3745-31-10 thru 20.

## II. Operational Restrictions

1. The pressure drop across the bag house shall be maintained within the range of 4 to 14 inches of water, while the emission unit is in operation. The pressure drop shall not be considered outside the normal range when the pressure drop falls below the minimum point in the pressure drop differential range as the result of bag replacements.

The permittee shall establish the pressure drop range for bag house operation that will ensure ongoing compliance during the stack test conducted for this emission unit as specified in section A.V.2. The permittee may modify the pressure drop range based on data collected during the operation of the baghouse and contributing emission units with prior approval of the Canton LAA.

2. The permittee shall utilize good operating practices and adequately maintain this emission unit in order to maintain compliance with the terms and conditions of this permit.
3. The permittee shall produce no more than 1,650,000 tons of steel per year in this emission unit.

## III. Monitoring and/or Record keeping Requirements

1. The permittee shall perform weekly checks when the emissions unit is in operation during daylight hours and when the weather conditions allow, for any visible particulate emissions from any non-stack egress points from the building housing this emissions unit (e.g., windows, doors, roof monitors, etc.). This weekly check shall be performed at a time that is representative of the typical activity of the several operations housed within this building (regardless of whether this specific emission unit is in operation). The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall note the following in the operations log.
  - a. the color of the emissions;
  - b. whether the emissions are representative of the normal operations;
  - c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
  - d. the total duration of any visible fugitive particulate emission incident;
  - e. any corrective actions taken to minimize or eliminate the visible fugitive particulate emissions; and

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If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission incident under item (d) above or continue the weekly check until the incident has ended. The observer may indicate that the visible emission incident was continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

2. The permittee shall properly install, operate, and maintain equipment to monitor the pressure drop across the baghouse while the emissions unit is in operation. The monitoring equipment shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions, and O&M manuals and consistent with good engineering practices. The permittee shall record the pressure drop across the bag house on a weekly basis when emission unit P160 operates by itself.
3. The permittee shall maintain records of the total tons of steel produced annually.

#### **IV. Reporting Requirements**

1. The permittee shall submit quarterly deviation(excursion) reports identifying any periods of time during the previous quarter when observed visible emissions were in excess of the permitted limitation in sections A.I.1
2. The permittee shall submit deviation(excursion) reports that identify all periods of time when the emission unit is operating and the recorded pressure drop across the bag house was not within the allowable range specified in section A.I.1.

#### **V. Testing Requirements**

1. Compliance with the emission limitations of this permit shall be demonstrated by using the following methods and procedure:
  - a. Emission limitations:  
Visible fugitive emissions from the building housing this emissions unit shall not exceed an average of six(6) percent opacity as a six (6)-minute average, unless otherwise specified.

Applicable compliance method:

If required, visible emissions shall be determined using 40 CFR, Appendix A, US EPA

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- b. Emission limitation:  
The PM emissions rate from the control device serving this emissions unit shall not exceed 37.7 lbs PM per hour and 165.3 tons PM per year.

The filterable PM<sub>10</sub> emissions rate from the control device serving this emissions unit shall not exceed 28.7 lbs PM<sub>10</sub> per hour and 125.6 tons PM-10 per year

The total PM<sub>10</sub>/PM<sub>2.5</sub> emissions rate, which includes filterable and condensable PM<sub>10</sub> emissions, from the control device serving this emissions unit shall not exceed 100.6 lbs PM<sub>10</sub> per hour and 440.8 tons PM<sub>10</sub> per year

The filterable PM grain loading as measured at the discharge of the No. 4 baghouse servicing this emissions unit shall not exceed 0.0018 grains/dscf.

The filterable PM<sub>10</sub> grain loading as measured at the discharge of the No. 4 baghouse servicing this emissions unit shall not exceed 0.0014 grains/dscf.

The total PM<sub>10</sub> grain loading, which includes filterable and condensable PM<sub>10</sub>, as measured at the discharge of the No. 4 baghouse servicing this emissions unit shall not exceed 0.0048 grains/dscf.

The baghouse shall have a minimum control efficiency of 99 %.

Applicable compliance method:

In adherence with U.S. EPA's interim guidance regarding new source review for sources of PM<sub>2.5</sub> emissions, projected PM<sub>10</sub> emissions are to be used as a surrogate for PM<sub>2.5</sub> emissions. Therefore, compliance with PM<sub>10</sub> emission will suffice for compliance with PM<sub>2.5</sub>

The permittee shall demonstrate compliance with the hourly PM<sub>10</sub> mass emission rates and the baghouse control efficiency by the use of US EPA Methods 1 - 4 and 5, Appendix A, 40 CFR Part 60 or an approved alternative. The permittee shall demonstrate compliance with the total and filterable PM<sub>10</sub> emission limitations by the use of US EPA Methods 201 or 201A, Appendix A, 40 CFR Part 60 or an approved alternative and the use of US EPA Methods 202 (for condensables), Appendix A, 40 CFR Part 60 or an approved alternative. The annual emission rate of PM and PM-10 are calculated by multiplying the lbs pollutant/hr. by 8760 and dividing the result by 2000.

- c. Emission limitation:  
Visible emissions from the baghouse stack shall not exceed 5 % as a six(6) minute average when this emission unit is operating by itself.

Applicable compliance method:

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If required, visible emissions shall be determined using 40 CFR, Appendix A, US EPA Method 9.

d. Emission Limitation

39.6 lbs/hour of sulfur dioxide  
2.9 lbs/hour of NOx  
4.2 lbs/hour of CO  
0.8 lbs/hour of VOC

Applicable Compliance Method

If required, the permittee shall demonstrate compliance by the use the following US EPA Methods(found in 40 CFR Part 60, Appendix A) or an approved alternative:

Method 6 for SO2  
Method 10 for CO  
Method 25 or 25A for VOC  
Method 7 for NOx

e. Emissions Limitations:

148.5 tpy of SO2  
10.5 tpy of NOx  
15.8 tpy of CO  
3.0 tpy of VOC

Applicable Compliance Method:

The permittee shall demonstrate compliance with these tpy emission limitations by multiplying the total tons of steel produced per year by the following respective emission factors:

SO2: 0.18 lbs SO2/ton steel produced  
CO: 0.019 lbs CO/ton steel produced  
NOx: 0.0132 lbs NOx/ton steel produced  
VOC: 0.0036 lbs VOC/ton steel produced

2. The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:
  - a. the emission testing shall be conducted in accordance with the schedule of testing established in the company's Title V permit;
  - b. the test(s) shall be conducted while the emissions units P907, P905, P106,

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P160, and F009 are operating at or near its maximum capacity unless otherwise specified and approved by the Canton local air agency.

- c. Testing to demonstrate compliance with the PM/PM-10 mass emission and grain loading limitations shall be conducted at the bag house discharge utilizing US EPA Method 5(or an approved alternative), 40 CFR Part 60, Appendix A. Testing of the inlet PM/PM-10 loading shall be conducted to demonstrate compliance with the baghouse control efficiency limitation. The permittee shall demonstrate compliance with the mass emission limitations for NO<sub>x</sub>, VOC, SO<sub>2</sub>, and CO utilizing the following methods and shall be conducted at a location in the capture ductwork system for this emission unit which best represents these emissions from P160:
  - 1) For NO<sub>x</sub>: Method 7 or an acceptable USEPA approved modification.
  - 2) For VOC: Method 25 or an acceptable USEPA approved modification.
  - 3) For Sulfur dioxide: Method 6 or an acceptable USEPA approved modification.
  - 4) For Carbon monoxide: Method 8 or an acceptable USEPA approved modification.
- e. During the test method 9 visible emissions observations shall be conducted on the stack servicing this emissions unit. These readings shall be used to determine compliance with the opacity limitation in section A.2;
- f. the pressure drop across the baghouse, in inches of water, shall be recorded during the emissions test;
- g. the permittee shall determine compliance with the particulate matter(PM) standards as follows:
  - i. Method 5D shall be used for positive-pressure fabric filters to determine the particulate matter concentration and volumetric flow rate of the effluent gas. The sampling time and sample volume for each run shall be at least 4 hours and 4.50 dscm (160 DSCF) and, when a single EAF is sampled, the sampling time shall include an integral number of heats;
  - ii. Method 9 and the procedures of 40 CFR Part 60.11 shall be used to determine opacity;
  - iii. the test runs shall be conducted concurrently, unless inclement weather interferes;
- h. the permittee shall determine compliance with the filterable and condensible PM<sub>10</sub> emission rates and grain loadings by the use of US EPA Methods 201/201A(filterable PM<sub>10</sub>) and Method 202(condensible PM<sub>10</sub>), Appendix A, 40 CFR Part 60.
- i. during performance tests, the permittee shall not add gaseous diluents to the effluent gas stream after the fabric in any pressurized fabric filter collector unless the amount of dilution is separately determined and considered in the determination of emissions.

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- j. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Canton Local Air Agency. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Canton Local Air Agency's refusal to accept the results of the emission test(s).

Personnel from the Canton Local Air Agency shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the appropriate Canton Local Air Agency within 30 days following completion of the test(s);

**F. Miscellaneous Requirements**

None

Republic Engineered Products Inc.

Facility ID: 157605069

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Issued: To be entered upon final issuance

**B. State Only Enforceable Section**

**I. Applicable Emissions Limitations and/or Control Requirements**

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P160 - No. 2 Ladle Metallurgy Facility(LMF)	None	None

**2. Additional Terms and Conditions**

- 2.a None

**II. Operational Restrictions**

None

**III. Monitoring and/or Recordkeeping Requirements**

None

**IV. Reporting Requirements**

None

**V. Testing Requirements**

None

**VI. Miscellaneous Requirements**

None

**Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)**

**A. State and Federally Enforceable Section**

**I. Applicable Emissions Limitations and/or Control Requirements**

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P161 - Ladle Dryer/Preheater No. 3 is fired with natural gas and has a maximum rated heat input of 14.5 mmBtu/hr.	OAC rule 3745-31-05(A)(3)  OAC rules 3745-31-21 thru 27       OAC rules 3745-31-10 thru 20     OAC rule 3745-17-11 OAC rule 3745-17-07 OAC rule 3745-18-06	The requirements of this rule also include compliance with the requirements of OAC rules 3745-31-10 thru 20 and 3745-31-21 thru 27.  1.45 lbs NOx/hr. 6.4 tons NOx/yr.  0.08 lbs VOC/hr. 0.35 tons VOC/yr.  0.11 lbs PM/PM <sub>10</sub> /PM <sub>2.5</sub> per hour. 0.48 tons PM/PM <sub>10</sub> /PM <sub>2.5</sub> per year. See A.2.d and A.2.e.  1.22 lbs CO/hr. 5.33 tons CO/yr.  0.01 lbs SO <sub>2</sub> /hr. 0.04 tons SO <sub>2</sub> /yr.  See Section A.2.c See Section A.2.c See Section A.2.c

**2. Additional Terms and Conditions**

- 2.a The use of low NOx burners on this emission unit with a rating of 0.10 lb NOx / mmBtu or better constitutes BAT and LAER for this installation. The permittee shall use a burner which is designed to meet or exceed the NOx rating specified

above.

- 2.b** BACT for CO, and SO<sub>2</sub> and LAER for VOC emissions consists of employing best operational and engineering practices to minimize emissions such as maintaining good combustion practices during operation and burning only of natural gas as fuel with a sulfur content of less than 0.6 percent by weight.
- 2.c** The emission limit specified by this rule is less stringent than the emission limit established pursuant to OAC rules 3745-31-10 thru 20.
- 2.d** In adherence with U.S. EPA's interim guidance regarding new source review for sources of PM<sub>2.5</sub> emissions, projected PM<sub>10</sub> emissions are to be used as a surrogate for PM<sub>2.5</sub> emissions. Therefore, compliance with PM<sub>10</sub> emission will suffice for compliance with PM<sub>2.5</sub>.
- 2.e** BACT/LAER for PM/PM<sub>10</sub>/PM<sub>2.5</sub> emissions is proper natural gas burner design and good combustion practices and the use of no add-on air pollution equipment directly associated with the source.

## **II. Operational Restrictions**

- 1. This emissions unit shall burn only natural gas.
- 2. This emission unit shall be equipped with low NO<sub>x</sub> burners. The permittee shall install, operate and maintain the burners in accordance with manufacturer's recommendations, O&M manuals, instructions, and good engineering practices

## **III. Monitoring and/or Record keeping Requirements**

- 1. For each day during which the permittee burns a fuel other than natural gas, the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.

## **IV. Reporting Requirements**

- 1. The permittee shall submit deviation(excursion) reports that identify each day when a fuel other than natural gas was burned in this emissions unit.

## **V. Testing Requirements**

- 1. Compliance with the emissions limitations of this permit shall be demonstrated in accordance with the following methods and procedures:
  - a. Emission limitation:
    - 0.11 lbs PM/PM<sub>10</sub>/PM<sub>2.5</sub> per hour.
    - 0.48 tons PM/PM<sub>10</sub>/PM<sub>2.5</sub> per year.

Emissions Unit ID: P161

Applicable compliance method:

In adherence with U.S. EPA's interim guidance regarding new source review for sources of PM<sub>2.5</sub> emissions, projected PM<sub>10</sub> emissions are to be used as a surrogate for PM<sub>2.5</sub> emissions. Therefore, compliance with PM<sub>10</sub> emission will suffice for compliance with PM<sub>2.5</sub>.

The hourly and annual emissions limitations(PTE) were developed as follows:

The Ladle preheaters are rated at 14.5 dscf gas used per hour each. The emission factors used are from US EPA AP-42 for natural gas burning. All emissions are due to natural gas combustion.

Hourly mass emission rate limitation = (14.5 mmBtu/hr. x 1/(1000 Btu/scf) x 7.6 lb PM<sub>10</sub>/mmscf)

Annual mass emission rate limitation = 0.11 lbs PM<sub>10</sub> x 8760/2000 = 0.48 tpy

- b. Emission limitation:  
1.45 lbs NOx/hr.  
6.35 tons NOx/yr.

Applicable compliance method:

The hourly and annual emissions limitations were developed as follows:

The Ladle preheaters are rated at 14.5 mmBtu/hr. each. The emission factor(0.1 lbs NOx/mmBtu) used was provided by the manufacturer for low NOx burners to be used in the preheaters. All emissions are due to natural gas combustion.

Hourly mass emission rate limitation = 14.5 mmBtu/hr. x 1/(1000 Btu/scf) x 0.10 lbs NOx/mmBtu of natural gas

Annual mass emission rate limitation = 14.5 mmBtu/hr x 1/(1000 Btu/scf) x 0.10 lbs NOx/mmBtu of natural gas x 8760/2000

- c. Emission limitation:  
1.22 lbs CO /hr.  
5.33 tons CO/yr.

Applicable compliance method:

The hourly and annual emissions limitations were developed as follows:

The Ladle preheaters are rated at 14.5 mmBtu/hr. each. The emission factors used are from US EPA AP-42 for natural gas burning. All emissions are due to natural gas combustion.

Hourly mass emission rate limitation = 14.5 mmBtu/hr. x 1/(1000 Btu/scf) x 84 lbs CO/mmscf

Annual mass emission rate limitation = 14.5 mmBtu/hr x 1/(1000 Btu/scf) x 84

lbs CO/mmscf x 8760/2000

- d.** Emission limitation:  
0.01 lbs SO<sub>2</sub> /hr.  
0.04 tons SO<sub>2</sub>/yr.

Applicable compliance method:

The hourly and annual emissions limitations were developed as follows:

The Ladle preheaters are rated at 14.5 mmBtu/hr. each. The emission factors used are from US EPA AP-42 for natural gas burning. All emissions are due to natural gas combustion.

Hourly mass emission rate limitation = 14.5 mmBtu/hr. x 1/(1000 Btu/scf) x 0.6 lbs SO<sub>2</sub>/mmscf

Annual mass emission rate limitation = 14.5 mmBtu/hr x 1/(1000 Btu/scf) x 0.6 lbs SO<sub>2</sub>/mmscf x 8760/2000

- e.** Emission limitation:  
0.08 lbs VOC /hr.  
0.35 tons VOC/yr.

Applicable compliance method:

The hourly and annual emissions limitations were developed as follows:

The Ladle preheaters are rated at 14.5 mmBtu/hr. each. The emission factors used are from US EPA AP-42 for natural gas burning. All emissions are due to natural gas combustion.

Hourly mass emission rate limitation = 14.5 mmBtu/hr. x 1/(1000 Btu/scf) x 5.5 lbs VOC/mmscf

Annual mass emission rate limitation = 14.5 mmBtu/hr x 1/(1000 Btu/scf) x 5.5 lbs VOC/mmscf x 8760/2000

## **F. Miscellaneous Requirements**

None

**B. State Only Enforceable Section**

**I. Applicable Emissions Limitations and/or Control Requirements**

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P161 - Ladle Dryer/Preheater No. 3 is fired with natural gas and has a maximum rated heat input of 14.6 mmBtu/hr.	None	None

**2. Additional Terms and Conditions**

- 2.a None

**II. Operational Restrictions**

None

**III. Monitoring and/or Record keeping Requirements**

None

**IV. Reporting Requirements**

None

**V. Testing Requirements**

None

**VI. Miscellaneous Requirements**

None

**Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)**

**A. State and Federally Enforceable Section**

**I. Applicable Emissions Limitations and/or Control Requirements**

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P162 - Ladle Dryer/Preheater No. 4 is fired with natural gas and has a maximum rated heat input of 14.5 mmBtu/hr.	OAC rule 3745-31-05(A)(3)  OAC rules 3745-31-21 thru 27  OAC rules 3745-31-10 thru 20  OAC rule 3745-17-11 OAC rule 3745-17-07 OAC rule 3745-18-06	The requirements of this rule also include compliance with the requirements of OAC rules 3745-31-10 thru 20 and 3745-31-21 thru 27.  1.45 lbs NOx/hr. 6.4 tons NOx/yr.  0.08 lbs VOC/hr. 0.35 tons VOC/yr.  0.11 lbs PM/PM <sub>10</sub> /PM <sub>2.5</sub> per hour. 0.48 tons PM/PM <sub>10</sub> /PM <sub>2.5</sub> per year. See A.2.d and A.2.e.  1.22 lbs CO/hr. 5.33 tons CO/yr.  0.01 lbs SO <sub>2</sub> /hr. 0.04 tons SO <sub>2</sub> /yr.  See Section A.2.c See Section A.2.c See Section A.2.c

**2. Additional Terms and Conditions**

- 2.a The use of low NOx burners on this emission unit with a rating of 0.10 lb NOx / mmBtu or better constitutes BAT and LAER for this installation. The permittee shall use a burner which is designed to meet or exceed the NOx rating specified

above.

The permittee shall also employ LAER for PM-2.5. Regulations implementing the FineParticulate NAAQS( $PM_{2.5}$ ) have not been finalized yet. US EPA has provided guidance which specifies that permittees must use the PM10 regulatory program as a surrogate for  $PM_{2.5}$ . Therefore, pursuant to this guidance, this project must also satisfy the LAER requirements for  $PM_{10}$ .

- 2.b** BACT for CO and SO<sub>2</sub> and LAER for VOC emissions consists of employing best operational and engineering practices to minimize emissions such as maintaining good combustion practices during operation and the use of natural gas as fuel.
- 2.c** The emission limit specified by this rule is less stringent than the emission limit established pursuant to OAC rules 3745-31-10 thru 20.
- 2.d** In adherence with U.S. EPA's interim guidance regarding new source review for sources of  $PM_{2.5}$  emissions, projected  $PM_{10}$  emissions are to be used as a surrogate for  $PM_{2.5}$  emissions. Therefore, compliance with  $PM_{10}$  emission will suffice for compliance with  $PM_{2.5}$ .
- 2.e** BACT/LAER for  $PM/PM_{10}/PM_{2.5}$  emissions is proper natural gas burner design and good combustion practices and the use of no add-on air pollution equipment directly associated with the source.

## II. Operational Restrictions

1. This emissions unit shall burn only natural gas.
2. This emission unit shall be equipped with low NO<sub>x</sub> burners. The permittee shall install, operate and maintain the burners in accordance with manufacturer's recommendations, O&M manuals, instructions, and good engineering practices

## III. Monitoring and/or Record keeping Requirements

1. For each day during which the permittee burns a fuel other than natural gas, the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.

## IV. Reporting Requirements

1. The permittee shall submit deviation(excursion) reports that identify each day when a fuel other than natural gas was burned in this emissions unit.

## V. Testing Requirements

1. Compliance with the emissions limitations of this permit shall be demonstrated in accordance with the following methods and procedures:
  - a. Emission limitation:

Emissions Unit ID: P162

0.11 lbs PM/PM<sub>10</sub>/PM<sub>2.5</sub> per hour.  
0.48 tons PM/PM<sub>10</sub>/PM<sub>2.5</sub> per year.

Applicable compliance method:

In adherence with U.S. EPA's interim guidance regarding new source review for sources of PM<sub>2.5</sub> emissions, projected PM<sub>10</sub> emissions are to be used as a surrogate for PM<sub>2.5</sub> emissions. Therefore, compliance with PM<sub>10</sub> emission will suffice for compliance with PM<sub>2.5</sub>.

The hourly and annual emissions limitations(PTE) were developed as follows:

The Ladle preheaters are rated at 14.5 dscf gas used per hour each. The emission factors used are from US EPA AP-42 for natural gas burning. All emissions are due to natural gas combustion.

Hourly mass emission rate limitation = (14.5 mmBtu/hr. x 1/(1000 Btu/scf) x 7.6 lb PM<sub>10</sub>/mmscf)

Annual mass emission rate limitation = 0.11 lbs PM<sub>10</sub> x 8760/2000 = 0.48 tpy

- b. Emission limitation:  
1.45 lbs NOx/hr.  
6.35 tons NOx/yr.

Applicable compliance method:

The hourly and annual emissions limitations were developed as follows:

The Ladle preheaters are rated at 14.5 mmBtu/hr. each. The emission factor (0.1 lbs NOx/mmBtu) used was provided by the manufacturer for low NOx burners to be used in the preheaters. All emissions are due to natural gas combustion.

Hourly mass emission rate limitation = 14.5 mmBtu/hr. x 1/(1000 Btu/scf) x 0.10 lbs NOx/mmBtu of natural gas

Annual mass emission rate limitation = 14.5 mmBtu/hr x 1/(1000 Btu/scf) x 0.10 lbs NOx/mmBtu of natural gas x 8760/2000

- c. Emission limitation:  
1.22 lbs CO /hr.  
5.33 tons CO/yr.

Applicable compliance method:

The hourly and annual emissions limitations were developed as follows:

The Ladle preheaters are rated at 14.5 mmBtu/hr. each. The emission factors used are from US EPA AP-42 for natural gas burning. All emissions are due to natural gas combustion.

Hourly mass emission rate limitation = 14.5 mmBtu/hr. x 1/(1000 Btu/scf) x 84 lbs CO/mmscf

Annual mass emission rate limitation =  $14.5 \text{ mmBtu/hr} \times 1/(1000 \text{ Btu/scf}) \times 84 \text{ lbs CO/mmscf} \times 8760/2000$

- d. Emission limitation:  
0.01 lbs SO<sub>2</sub> /hr.  
0.04 tons SO<sub>2</sub>/yr.

Applicable compliance method:

The hourly and annual emissions limitations were developed as follows:

The Ladle preheaters are rated at 14.5 mmBtu/hr. each. The emission factors used are from US EPA AP-42 for natural gas burning. All emissions are due to natural gas combustion.

Hourly mass emission rate limitation =  $14.5 \text{ mmBtu/hr.} \times 1/(1000 \text{ Btu/scf}) \times 0.6 \text{ lbs SO}_2/\text{mmscf}$

Annual mass emission rate limitation =  $14.5 \text{ mmBtu/hr} \times 1/(1000 \text{ Btu/scf}) \times 0.6 \text{ lbs SO}_2/\text{mmscf} \times 8760/2000$

- e. Emission limitation:  
0.08 lbs VOC /hr.  
0.35 tons VOC/yr.

Applicable compliance method:

The hourly and annual emissions limitations were developed as follows:

The Ladle preheaters are rated at 14.5 mmBtu/hr. each. The emission factors used are from US EPA AP-42 for natural gas burning. All emissions are due to natural gas combustion.

Hourly mass emission rate limitation =  $14.5 \text{ mmBtu/hr.} \times 1/(1000 \text{ Btu/scf}) \times 5.5 \text{ lbs VOC/mmscf}$

Annual mass emission rate limitation =  $14.5 \text{ mmBtu/hr} \times 1/(1000 \text{ Btu/scf}) \times 5.5 \text{ lbs VOC/mmscf} \times 8760/2000$

## F. Miscellaneous Requirements

None

**B. State Only Enforceable Section**

**I. Applicable Emissions Limitations and/or Control Requirements**

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P162 - Ladle Dryer/Preheater No. 4 is fired with natural gas and has a maximum rated heat input of 14.5 mmBtu/hr.	None	None

**2. Additional Terms and Conditions**

2.a None

**II. Operational Restrictions**

None

**III. Monitoring and/or Record keeping Requirements**

None

**IV. Reporting Requirements**

None

**V. Testing Requirements**

None

**VI. Miscellaneous Requirements**

None

**Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)**

**A. State and Federally Enforceable Section**

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PTI A|

Emissions Unit ID: P905

**I. Applicable Emissions Limitations and/or Control Requirements**

- 1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>
P905 - No. 7 EAF modification. This Electric Arc Furnace is being modified to increase production from 85 tons per hour to 183.3 tons steel/hr. This emission unit is controlled with the No. 4 Melt Shop evacuation control(DEC) and a building evacuation system for capture and a baghouse for control.	OAC rule 3745-31-05(A)(3)
	OAC rule 3745-31-21 thru 27
	OAC rule 3745-31-10 thru 20

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PTI A|

Emissions Unit ID: P905

	<u>Applicable Emissions Limitations/Control Measures</u>	
	<p>0.06 lbs lead/hour 0.124 tons lead/yr.</p> <p>Mercury (Hg) emissions shall not exceed 0.061 lb/hr and 0.27 TPY.</p>	<p>serving this emissions unit shall not exceed 28.7 lbs PM<sub>10</sub> per hour and 125.6 tons PM-10 per year</p> <p>The total PM<sub>10</sub>/PM<sub>2.5</sub> emissions rate, which includes filterable and condensible PM<sub>10</sub> emissions, from the control device serving this emissions unit shall not exceed 100.6 lbs PM<sub>10</sub>/PM<sub>2.5</sub> per hour and 440.8 tons PM<sub>10</sub>/PM<sub>2.5</sub> per year</p>
<p>OAC rule 37345-17-08 OAC rule 3745-17-07(A)(1)</p>	<p>Visible emissions shall not exceed the three (3) percent opacity as a six(6) minute average as measured at the discharge stack of the No. 4 Melt Shop baghouse when the emission unit is operating.</p>	<p>The filterable PM<sub>10</sub> grain loading as measured at the discharge of the No. 4 baghouse servicing this emissions unit shall not exceed 0.0014 grains/dscf.</p>
<p>OAC rule 3745-17-11 OAC rule 3745-18-06(E)(1)</p>	<p>Six (6) percent opacity as a six(6) minute average of fugitive dust emissions from roof monitors(vents) and openings of the No. 4 Melt Shop building, including doors, windows, etc.</p>	<p>The total PM<sub>10</sub>/PM<sub>2.5</sub> grain loading, which includes filterable and condensible PM<sub>10</sub>, as measured at the discharge of the No. 4 baghouse servicing this emissions unit shall not exceed 0.0048 grains/dscf.</p>
<p>NSPS 40 CFR Part 60, Subpart AAa (10/31/84)</p>	<p>The requirements of this rule also include compliance with the requirements of OAC rules 3745-31-10 thru 20 and 3745-31-21 thru 27.</p>	<p>Also see section A.I.2.a and 2.b</p> <p>Also see section A.I.2.c</p>
	<p>36.7 lbs NO<sub>x</sub>/hr. 160.75 tpy NO<sub>x</sub> (Mass emission rates specified above are based on an emission factor of 0.2 lbs NO<sub>x</sub>/ton steel produced)</p>	<p>The PM emissions rate from the control device serving this emissions unit shall not exceed 37.7 lbs PM per hour and 165.3 tons PM per year.</p>
	<p>0.35 lbs NO<sub>x</sub>/ton steel produced</p>	<p>The filterable PM grain loading as measured at the discharge of the No. 4 baghouse servicing this emissions unit shall not exceed 0.0018 grains/dscf.</p>
	<p>18.33 lbs VOC/hr. 62.24 tpy VOC 0.1 lbs VOC /ton of steel produced</p> <p>Also see section A.I.2.b</p>	<p>12.83 lbs SO<sub>2</sub>/hr. 45.0 tpy SO<sub>2</sub> 0.07 lbs SO<sub>2</sub> per ton of steel produced</p>
	<p>The filterable PM<sub>10</sub> emissions rate from the control device</p>	<p>366.50 lbs CO/hr. 1285 tpy CO</p>

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2 lbs CO/ton of steel  
produced

See Section A.2.g

## 2. Additional Terms and Conditions

- a. The PM<sub>10</sub>/PM<sub>2.5</sub> emissions from this emissions unit shall be collected and controlled by the No. 4 Melt Shop evacuation system baghouse. This evacuation system is used to control PM and PM<sub>10</sub> emissions from emission units P907, P905, P106, P160, F009, and parts of P068:
  - i. The baghouse shall have a minimum control efficiency of 99 % for PM and PM<sub>10</sub> emissions.
  - ii. The evacuation system shall achieve and maintain a minimum capture efficiency that is sufficient to prevent violations of the six (6) percent opacity emission limitation for fugitive emissions from the melt shop.
  - iii. The visible emissions from the dust handling system servicing this emissions unit shall not exceed 10 % as a six minute average.
  - iv. In adherence with U.S. EPA's interim guidance regarding new source review for sources of PM<sub>2.5</sub> emissions, projected PM<sub>10</sub> emissions are to be used as a surrogate for PM<sub>2.5</sub> emissions. Therefore, compliance with PM<sub>10</sub> emission will suffice for compliance with PM<sub>2.5</sub>.
- b. The permittee shall employ the Lowest Achievable Emission Rate(LAER) specified in section A.I.1 and as defined in OAC rule 37445-31-01(OO) as an emission limitation for NOx and VOC. LAER for NOx consists of the operation of the furnace to minimize NOx generation, the use of low NOx/oxyfuel burner technology and oxygen lances to provide supplemental energy to heats, and emission limitations for NOx as specified in section A.I.1. LAER for VOC consists of the continued use of the company scrap management plan and emission limitations specified in section A.I.1. The mass rate of emissions for NOx and VOC were developed using the emission factors of 0.2 lbs NOx/ton of steel produced and 0.1 lbs VOC /ton of steel produced respectively. BAT emission limitations are as stringent as LAER.

The permittee shall also employ LAER for PM-2.5. Regulations implementing the Fine

Particulate NAAQS(PM<sub>2.5</sub> ) have not been finalized yet. US EPA has provided

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guidance which specifies that permittees must use the PM<sub>10</sub> regulatory program as a surrogate for PM<sub>2.5</sub>. Therefore, pursuant to this guidance, this project must also satisfy the LAER requirements for PM<sub>10</sub>.

- c. The permittee shall employ the Best Available Control Technology(BACT) as defined in OAC rule 3745-31-01(M) for PM<sub>10</sub>/PM<sub>2.5</sub>, Sulfur dioxides, and CO. BAT emission limitations are as stringent as BACT. BACT for this emission unit has been demonstrated to be the following:
  - i. The filterable PM emissions shall not exceed a grain loading of 0.0018 grains/dscf. The total PM<sub>10</sub> emissions, which includes filterable and condensable PM<sub>10</sub>, shall not exceed 0.0048 grains/dscf. The filterable PM<sub>10</sub> emissions shall not exceed 0.0014 grains/dscf.
  - ii. For Sulfur dioxide, efficient operation of the emissions unit to minimize sulfur dioxide emissions and an emission limitation based on an emission factor of 0.07 lbs SO<sub>2</sub> per ton of steel produced.
  - iii. For Carbon Monoxide, better CO conversion to CO<sub>2</sub> thru the use of an adjustable DEC gap and water cooled duct work. BACT also consists of an emission limitation based on an emission factor of 2 lbs CO/ton of steel produced.
- d. The capture system shall achieve and maintain capture efficiency of 99 % for CO and VOC.
- e. The terms and conditions specified in this PTI for emission unit P905 supersede all the P905 terms and conditions in PTI 15-01314 dated June 17, 1998 and modified January 22, 2002. In addition, the PM and PM-10 limits for P907, P106, F009, and parts of P068 are combined with the limit for P905.
- f. The permittee shall produce no more than 1,284,800 tons liquid steel per year and no more than 183.3 tons of liquid steel per hour.
- g. The emission limit specified by this rule is less stringent than the emission limit established pursuant to OAC rule 3745-31-05(A)(3).

## II. Operational Restrictions

1. The permittee shall follow the procedures outlined in its "Scrap Management Program" in order to minimize the use of scrap that contains mercury, lead, oils, plastics, and organic materials that are charged in the EAF. The "Scrap Management Program" was reviewed and approved by Canton LAA and shall be viewed as part of the operational requirements for the EAF permit. Any change to the "Scrap Management Program" that would increase the amount of these compounds present in the scrap, or result in the emissions of an air contaminant not previously emitted, must be approved by Canton LAA. Any radioactive scrap shall be disposed of pursuant to the permittee's Radiation Management Program.
2. The permittee shall employ, at the discharge of this emission unit and prior to the

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baghouse, an improved DEC gap control system which will allow efficient air infiltration into the DEC duct work providing better CO conversion to CO<sub>2</sub>. The duct work will be water cooled to promote temperature control to aid in the CO conversion.

3. The static pressure in the free space inside this emissions unit shall be maintained at a level which does not exceed 0.04 inches of water while the emissions unit is in operation. The static pressure level shall be maintained at all times when the EAF is operating during meltdown and refining periods. The permittee may petition the Ohio EPA for re-establishment of the static pressure limitation whenever the permittee can demonstrate to the Agency's satisfaction that the EAF operating conditions upon which the pressures were previously established are no longer applicable.
4. The damper positions for the baghouse shall be maintained in a position in the range of 45 to 81 percent. The baghouse fan motor amperes shall be maintained at 240 amps, plus or minus 15 percent, when a fan is being operated in the #1 fan position, and 300 amps, plus or minus 15 percent, when fans are being operated in fan positions #2, 3, 4, and 6. The values of these parameters shall be maintained at the appropriate levels during operation. Operation at other than baseline values will be considered by the Ohio EPA, DAPC to be unacceptable operation and maintenance of the control system. The permittee shall operate a minimum of three fans when operating one EAF and a minimum of four fans when operating two EAFs. The permittee may petition the Ohio EPA for re-establishment of the fan motor amp limitations whenever the permittee can demonstrate to the Agency's satisfaction that the EAF operating conditions upon which these restrictions were previously established are no longer applicable.

### III. Monitoring and/or Record keeping Requirements

1. The following are requirements of the NSPS Subpart AAa. Observations of the opacity of the visible emissions from the control devices shall be performed by a certified visible emissions observer as follows:
  - a. Visible emission observations shall be conducted at least once per day when the furnace is operating in the charging, melting, tapping, and refining period. These observations shall be taken in accordance with Method 9 of 40 CFR Part 60, Appendix A and, for at least three 6-minute periods, the opacity shall be recorded for any point(s) where visible emissions are observed. Where it is possible to determine that a number of visible emission sites relate to only one incident of the visible emission, only one set of three 6-minute observations will be required. In this case, Method 9 observations must be made for the site of highest opacity that directly relates to the cause (or location) of visible emissions observed during a single incident. Records shall be maintained of any 6-minute average that is in excess of the opacity limits specified in section A.I.2.a.

The appropriate records shall be maintained in the permittee's files to identify the persons responsible for conducting the opacity readings and to verify that the Method 9 certifications are up to date for the responsible individuals.

2. The permittee shall monitor the operation of the furnace control systems and maintain records in accordance with the following requirements:
  - a. The permittee shall install, calibrate, and maintain a monitoring device that allows

the pressure in the free space inside the EAF to be monitored. The monitoring device may be installed in any appropriate location in the EAF or DEC ductwork prior to the introduction of ambient air such that reproducible results will be obtained. The pressure monitoring device shall have an accuracy of  $\pm 5$  mm of water gauge over its normal operating range and shall be calibrated according to the manufacturer's instructions.

- b. The permittee shall check and record on a once-per-shift basis the furnace static pressure and either (1) check and record the control system fan motor amperes and damper positions on a once-per-shift basis; or (2) install, calibrate, and maintain a monitoring device that continuously records the volumetric flow rate through each separately ducted hood. The monitoring device may be installed in any appropriate location in the exhaust duct such that reproducible flow rate monitoring will result. The flow rate monitoring devices shall have an accuracy of  $\pm 10$  percent over their normal operating range and shall be calibrated according to the manufacturer's instructions. The Ohio EPA, DAPC may require the permittee to demonstrate the accuracy of the monitoring devices relative to Methods 1 and 2 of Appendix A of 40 CFR, Part 60.
  - c. The permittee shall perform monthly operational status inspections of the equipment that is important to the performance of the total capture systems (i.e., pressure sensors, dampers, and damper switches). This inspection shall include observations of the physical appearance of the equipment (e.g., presence of holes in ductwork or hoods, flow constrictions caused by dents or accumulated dust in ductwork, and fan erosion.) Any deficiencies shall be recorded and proper maintenance performed. The permittee may petition the Ohio EPA, DAPC to approve any alternative to monthly operational status inspections that will provide a continuous record of the operation of each emission capture system.
  - d. Upon approval by the USEPA, an alternative method may be established to replace the monitoring and record keeping requirements found in A.III.2.a, .2.b, and 2.c above.
3. The permittee shall perform weekly checks when the emissions unit is in operation during daylight hours and when the weather conditions allow, for any visible fugitive particulate emissions from any non-stack egress point from the building housing this emissions unit (e.g., windows, doors, roof monitors, etc.). The presence or absence of any visible fugitive particulate emissions shall be noted in an operations log. If visible fugitive particulate emissions are observed, the permittee shall also note the following in the operations log:
- a. the color of the emissions;
  - b. whether the emissions are representative of normal operations;
  - c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
  - d. the total duration of any visible fugitive particulate emission incident; and
  - e. any corrective actions taken to minimize or eliminate the visible fugitive particulate emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission incident under item (d) above or continue the daily check until the incident has ended. The observer may indicate that the visible emission incident was continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the tons of liquid steel produced each day, the number of operating hours per day for this emission unit, the average hourly steel production, in tons/hour, for this emissions unit, and the total annual production of liquid steel in tons steel/year. The average daily steel production is calculated by dividing the total tons of steel produced per day by the total number of operating hours per day for this emissions unit.

#### IV. Reporting

1. The permittee shall submit quarterly written deviation (excursion) reports of all exceedances of opacity restrictions contained in section A.I.1. For the purposes of these reports, exceedances are defined as all 6-minute periods during which the average opacity exceeds these limits.
2. The permittee shall submit quarterly written deviation (excursion) reports that identify all exceedances of the values established above and either operation of control system fan motor amperes at values exceeding plus 15 percent of the values established above or operation at flow rates or static pressures lower than those established above.
3. The permittee shall submit quarterly deviation reports that identify any exceedance of the permitted allowable mass emission limitations as specified in section A.I.1.

#### V. Compliance Methods and Testing Requirements

1. Compliance with the emission limitation(s) of this permit shall be determined in accordance with the following method(s):

- a. Emission Limitation

The PM emissions rate from the control device serving this emissions unit shall not exceed 37.7 lbs PM per hour. .

The filterable PM<sub>10</sub> emissions rate from the control device serving this emissions unit shall not exceed 28.7 lbs PM<sub>10</sub> per hour.

The total PM<sub>10</sub>/PM<sub>2.5</sub> emissions rate, which includes filterable and condensable PM<sub>10</sub>, from the control device serving this emissions unit shall not exceed 100.6 lbs PM<sub>10</sub>/PM<sub>2.5</sub> per hour.

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The lead emissions rate from the control device serving this emissions unit shall not exceed  
0.06 lbs lead/hour.

These limitations are the pounds per hour limitation for PM<sub>10</sub> for the combined emissions from P905, P907, P160, F009, P106, and parts of P068. Emission from the No. 4 Melt Shop Baghouse shall not exceed 0.0018 grains/dscf of filterable PM, 0.0014 grains/dscf of filterable PM<sub>10</sub>, and 0.0048 grains/dscf of total PM<sub>10</sub>.

#### Applicable Compliance Method

In adherence with U.S. EPA's interim guidance regarding new source review for sources of PM<sub>2.5</sub> emissions, projected PM<sub>10</sub> emissions are to be used as a surrogate for PM<sub>2.5</sub> emissions. Therefore, compliance with PM<sub>10</sub> emission will also suffice for compliance with PM<sub>2.5</sub>.

Compliance shall be demonstrated as follows:

The permittee shall demonstrate compliance with PM and lead emission limitations in section A.I.1 by the use of US EPA Method 5, 40 CFR Part 60, Appendix A. The permittee shall demonstrate compliance with total PM<sub>10</sub> emission limits by using US EPA Method 201 or 201A, 40 CFR Part 60, Appendix A for filterable PM<sub>10</sub> and US EPA Method 202 for condensable PM<sub>10</sub>.

Alternative US EPA approved methods and testing procedures may be used upon prior approval of the Canton LAA.

#### b. Emission limitation

3 percent opacity from the bag house exit, 6 percent opacity resulting from fugitives from # 4 melt shop, and 10 % opacity resulting from the dust handling system.

#### Applicable Compliance Method

Compliance shall be demonstrated by the use of US EPA Method 9, 40 CFR Part 60, Appendix A.

#### c. Emission Limitation

12.83 lbs/hour of sulfur dioxide  
18.3 lbs/hr of VOC  
366.5 lbs/hr. of CO  
36.7 lbs/hr. of NOx

#### Applicable Compliance Method

Compliance may be demonstrated by multiplying the respective pollutant emission factor, in pounds pollutant per ton of steel produced, established during the most recent emission test, by the actual average hourly steel production rate

from section A.III.4 (tons/hour).

d. Emission Limitation:

2 lbs CO/ton of steel produced  
0.35 lbs NO<sub>x</sub>/ton of steel produced  
0.07 lbs SO<sub>2</sub>/ton of steel produced  
0.1 lbs VOC/ton of steel produced

Applicable Compliance Method:

The permittee shall demonstrate compliance by the use of the following US EPA test Methods from 40 CFR Part 60, Appendix A or an approved alternative

For CO, Method 8  
For NO<sub>x</sub>, Method 7  
For VOC, Method 25  
For SO<sub>2</sub>, Method 6 .

e. Emission Limitations:

165.3 tpy of filterable PM  
125.6 tpy of filterable PM<sub>10</sub>  
440.8 tpy of total PM<sub>10</sub>/PM<sub>2.5</sub>  
160.75 tpy of NO<sub>x</sub>

Applicable Compliance Method:

The tpy emission limitations were developed by multiplying the lbs/hr emission limitations by the maximum operating schedule of 8,760 hrs/yr and dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the hourly emission limitations, compliance will also be shown with the annual emission limitations.

f. Operational Restriction :

The permittee shall produce no more than 1,284,800 tons liquid steel per year and no more than 183.3 tons of liquid steel per hour.

Applicable Compliance Method:

The permittee shall demonstrate compliance by using record keeping as specified in section A.III.4.

g. Emission Limitations:

45.0 tpy of SO<sub>2</sub>  
1285 tpy of CO  
62.24 tpy of VOC

0.124 tpy of Pb

Applicable Compliance Method:

Compliance shall be demonstrated by multiplying the respective pollutant emission factor, in pounds pollutant per ton of steel produced, established during the most recent stack test, by the actual annual steel production rate from section A.III.4 (tons steel/year).

- h. Emission Limitation: 0.061 lb Hg/hr, 0.27 tons of Hg .

Applicable Compliance Method: The lbs/hr limitation was developed by multiplying the PM hourly emission of 37.74 lbs/hr by an emission factor of 0.001608 (Ratio of Hg lb/hr to PM lb/hr based on Method 29 Hg stack test). The permittee shall demonstrate compliance with the hourly Hg limitation by emissions testing conducted in accordance with Methods 1-4 and 29 of 40 CFR, Part 60, Appendix A.

Annual emission limit was developed by multiplying the lbs/hr limitation by the maximum annual operating schedule of 8760 hrs/yr and dividing by 2000 lbs/ton.

2. The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:
- a. the emission testing shall be conducted in accordance with the schedule of testing established in the company's Title V permit or within six (6) months following the start of operation of the modified emission unit, whichever is most expeditious;
  - b. the test(s) shall be conducted while the emissions units P907, P905, P106, P160, and F009 are operating at or near its maximum capacity unless otherwise specified and approved by the Canton local air agency.
  - c. Emissions testing shall be conducted at the bag house discharge to demonstrate compliance with the allowable grain loading, PM/PM-10 mass emission limitations, and the control efficiency of the bag house. The testing shall be conducted utilizing US EPA Method 5(or an approved alternative), 40 CFR Part 60, Appendix A.
  - d. Emissions testing shall be conducted to demonstrate compliance with the mass emission limitations for NO<sub>x</sub>, VOC, SO<sub>2</sub>, CO, and lead utilizing the following US EPA approved methods:
    - 1) For NO<sub>x</sub>: Method 7 or a USEPA approved alternative.
    - 2) For VOC: Method 25 or a USEPA approved alternative.
    - 3) For Sulfur dioxide: Method 6 or a USEPA approved alternative.
    - 4) For Carbon monoxide: Method 8 or a USEPA approved alternative.
    - 5) For lead: Method 12 or a USEPA approved alternative.

- e. During the test method 9 visible emissions observations shall be conducted on the stack servicing this emissions unit. These readings shall be used to determine compliance with the opacity limitation in section A.I.2;
- f. The parametric monitoring requirements established for the baghouse specified in section A.I.2 shall be checked during the emissions test;
- g. The permittee shall determine compliance with the particulate matter(PM) standards as follows:
  - i. Method 5D shall be used for positive-pressure fabric filters to determine the particulate matter concentration and volumetric flow rate of the effluent gas. The sampling time and sample volume for each run shall be at least 4 hours and 4.50 dscm (160 DSCF) and, when a single EAF is sampled, the sampling time shall include an integral number of heats;
  - ii. Method 9 and the procedures of 40 CFR Part 60.11 shall be used to determine opacity;
  - iii. the test runs shall be conducted concurrently, unless inclement weather interferes;
  - iv. if the test results show particulate emissions exceed the PM<sub>10</sub> emission limit, then the permittee shall perform a particle size distribution to determine the fraction of the PM<sub>10</sub> present in the composite sample which was collected;
- h. The permittee shall determine compliance with the PM<sub>10</sub> emission limits by using US EPA Methods 201 or 201A for filterable PM<sub>10</sub> and US EPA Method 202 for condensible PM<sub>10</sub>(Appendix A, 40 CFR Part 60).
- i. During the particulate matter runs, the permittee shall obtain the following additional information:
  - i. the pressure in the free space inside the furnace shall be determined during the melting and refining period(s) using the monitoring devices required by this permit;
  - ii. the control system fan motor amperes and all damper positions or the volumetric flow rate through each separately ducted hood shall be determined during all periods in which a hood is operated for the purpose of capturing emissions from the EAFs; and,
- j. During performance tests, the permittee shall not add gaseous diluents to the effluent gas stream after the fabric in any pressurized fabric filter collector unless the amount of dilution is separately determined and considered in the determination of emissions.
- k. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Canton Local Air Agency. The "Intent

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to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Canton Local Air Agency's refusal to accept the results of the emission test(s).

Personnel from the Canton Local Air Agency shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the appropriate Canton Local Air Agency within 30 days following completion of the test(s);

**E. Miscellaneous Requirements**

None

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**B. State Only Enforceable Section**

**I. Applicable Emissions Limitations and/or Control Requirements**

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P905 - No. 7 EAF	OAC rule 3745-31-05	None

**2. Additional Terms and Conditions**

- 2.a None

**II. Operational Restrictions**

None

**III. Monitoring and/or Recordkeeping Requirements**

None

**IV. Reporting Requirements**

None

**V. Testing Requirements**

None

**VI. Miscellaneous Requirements**

None