TMiT – Company Profile

Proposed Aluminum Ingot Manufacturing Operations | United States

Company Overview

TMiT is an international metals sourcing and industrial development company with active operations and supplier networks across the United States, Turkey, and China. The company specializes in metal supply chain coordination, specification-based sourcing, and industrial project development for manufacturing and construction sectors.

TMiT is currently planning the establishment of a value-added aluminum ingots manufacturing facility in the United States, aligned with local regulatory, environmental, and industrial standards.

Proposed US Manufacturing Activity

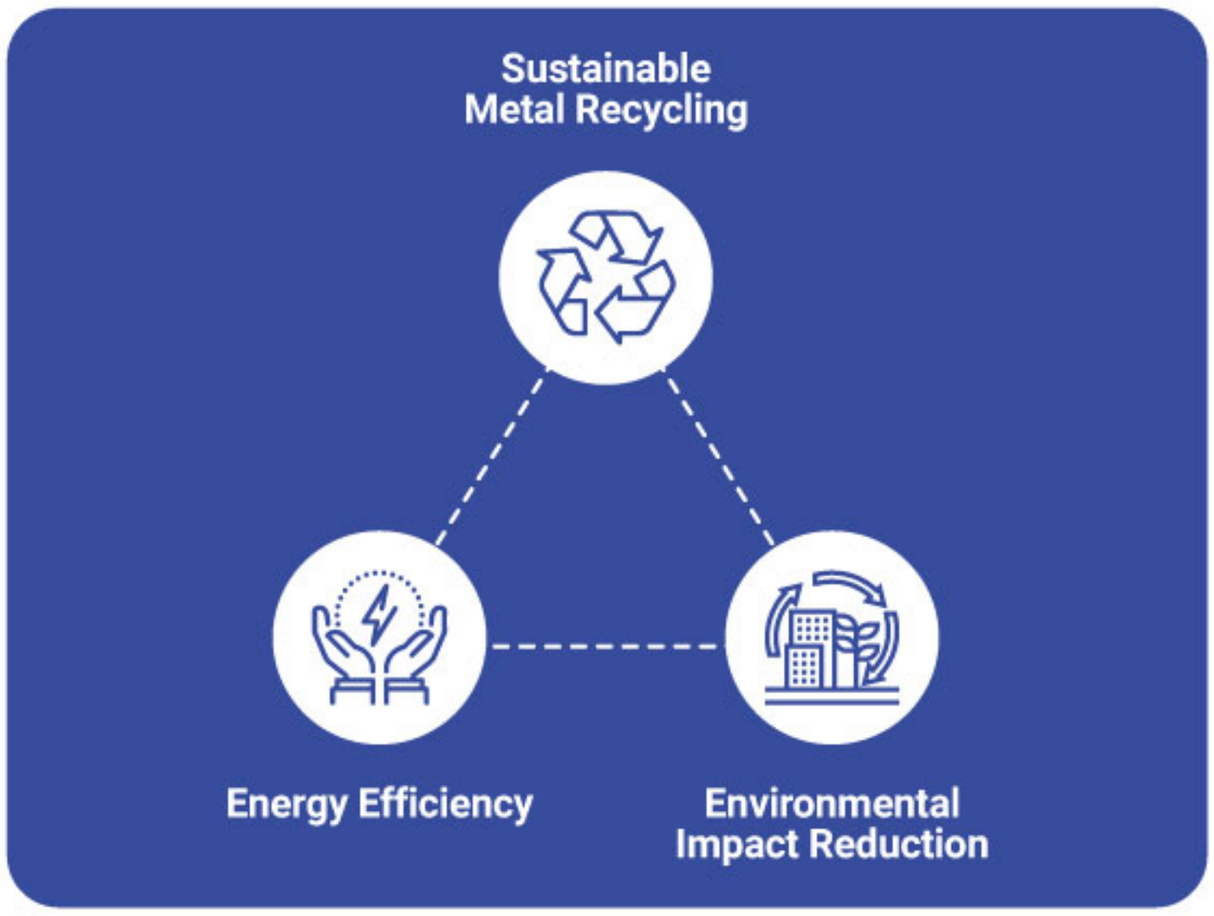
Project Scope:

- Manufacturing of **aluminum ingots** for industrial and downstream manufacturing use.
- Focus on **quality-controlled, specification-driven production**
- Designed to support US manufacturers with locally produced aluminum inputs.

Project Importance & Environmental Rationale

The proposed aluminum ingot manufacturing facility has been designed to **support sustainable metal recycling, energy efficiency**, and **environmental impact reduction** in alignment with modern industrial and regulatory standards.

The proposed project involves the installation and operation of an **electrically powered aluminum induction melting furnace** for the conversion of aluminum scrap into aluminum ingots. The facility has been designed to operate as a **low-emission, energy-efficient recycling operation** in accordance with applicable Texas Commission on Environmental Quality (TCEQ) regulations.



1. Aluminum Scrap Recycling

This facility converts **aluminum scrap into reusable aluminum ingots**, supporting circular economy principles by reducing reliance on primary aluminum production and minimizing landfill waste.

Aluminum Scrap Recycling Function

The facility will process **clean aluminum scrap** and convert it into aluminum ingots for downstream industrial use. This operation supports material recovery and recycling, reduces the demand for primary aluminum production, and minimizes solid waste disposal.

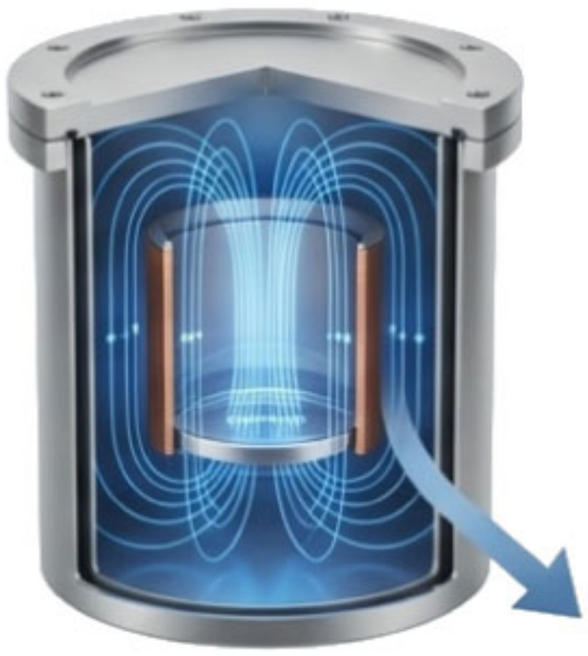
2. Reduced Energy Consumption

95% less energy is related to primary aluminium from bauxite ore vs recycled aluminium from scrap.

Energy Efficiency & Furnace Technology

The proposed aluminum melting process utilizes an **electric induction furnace**, which is inherently more energy-efficient than conventional gas-fired furnaces.
Based on manufacturer data and industry benchmarks:

TMiT Induced Furnace



Minimal Energy Loss

Recycling Aluminium Consumes **95% Less Energy** than Producing it from Raw Material

Overall furnace efficiency is approximately **30%** greater than traditional natural gas-fired furnaces.

The induction furnace operates without combustion, eliminating fuel-related emissions.

Conventional Gas Furnace

Significant Energy & Heat Loss

3. High-Efficiency Induction Furnace Technology

The project utilizes an **electric induction furnace**, which is approximately **30% more energy-efficient** than traditional gas-fired furnaces.
Key advantages include:

- No fuel combustion
- Faster and more controlled melting
- Improved thermal efficiency

Material Yield & Process Loss Reduction

The induction melting process results in **lower oxidation and metal loss** compared to gas-fired melting systems.

5%

Reduction in Process Wastage Relative to Conventional Gas Furnace Operations.

Expected aluminum loss during melting is approximately **0.8 to 3 percent**, representing an overall **reduction in process wastage of approximately 5 percent** relative to conventional gas furnace operations.

5. Minimal Air Emissions

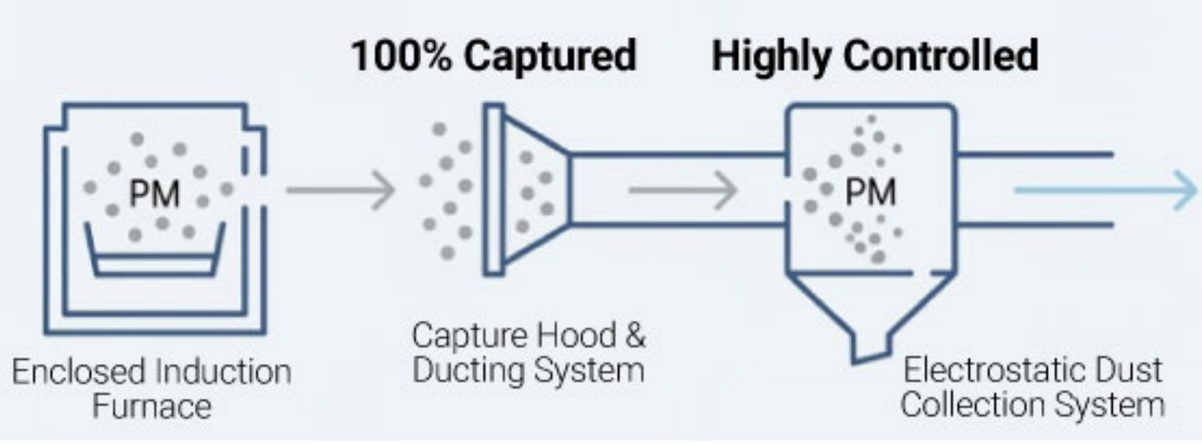
Because the induction furnace operates **without burning fossil fuels or organic materials, emissions of carbon monoxide (CO), nitrogen oxides (NOx), and sulfur oxides (SOx)** are effectively **zero**.
The only anticipated air emission is **particulate matter (PM)**, which is:

- Fully captured through an enclosed exhaust system
- Controlled using an electrostatic dust collection system
- Released well below applicable regulatory thresholds

Air Emissions Characteristics

Because the proposed furnace does **not involve combustion of fuels**, emissions of the following pollutants are **not generated** by the process:

- Carbon monoxide (CO)
- Nitrogen oxides (NOx)
- Sulfur oxides (SOx)



The only air contaminant of concern associated with the process is **particulate matter (PM)** generated during aluminum melting and material handling.
All exhaust gases are:

- Captured through an enclosed hood and ducting system
- Routed to an electrostatic dust collection system
- Controlled prior to atmospheric release

Controlled PM emissions are expected to remain **well below major source thresholds** and within Minor NSR applicability limits.

6. Low Water Consumption

The facility employs a **closed-loop cooling system**, resulting

- Minimal water usage
- No continuous wastewater discharge
- Efficient heat management without process water consumption

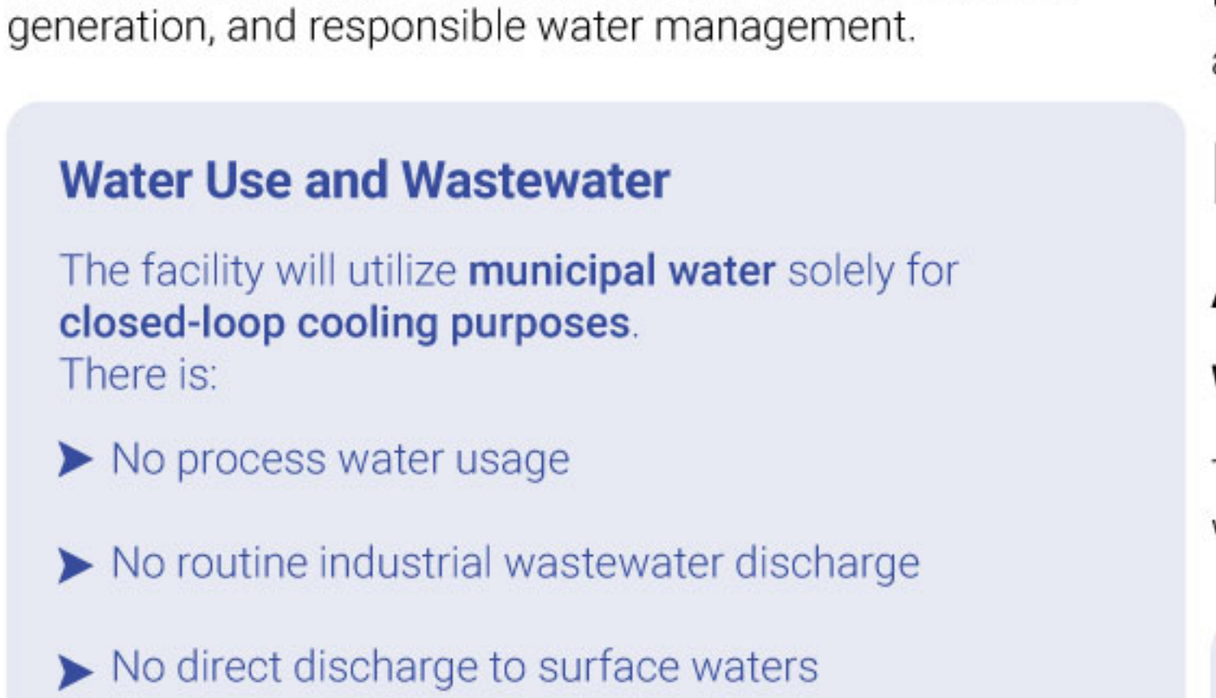
This project represents a **low-emission, energy-efficient aluminum recycling operation**, combining advanced induction melting technology, controlled emissions, reduced waste generation, and responsible water management.

Water Use and Wastewater

The facility will utilize **municipal water** solely for **closed-loop cooling purposes**.
There is:

- No process water usage
- No routine industrial wastewater discharge
- No direct discharge to surface waters

Cooling water losses are limited to evaporation and periodic blowdown, consistent with standard industrial cooling practices.



Facility Overview (Engineering Summary)

The proposed TMiT facility will manufacture **aluminum ingots** using a **fully enclosed**, **electrically powered induction melting process.**

The operation involves **no combustion, no open flame**, and **no fuel-fired equipment**, resulting in significantly lower air emissions compared to conventional furnaces.

Installed Capacity (Design Facts):

Induction Furnace Capacity: *~3.0 metric tons/hour*	Electrical Load: *~1,500 kW (electric only)*
Operating Schedule: *~10 hours/day, 22–25 days/month*	Enforceable Annual Throughput Cap: *~8,000–9,000 metric tons/year*

Production capacity **does not define major source status.** Regulatory applicability is based on **Potential to Emit (PTE)** and enforceable limits.

Environmental Site Assessment (ESA)

Why Required

To identify any pre-existing environmental liabilities associated with the selected property.

Phase I ESA

- Review of historical land use records
- Physical site inspection
- Interviews with current and past occupants

Phase II ESA (Only if Required)

Triggered **only if Recognized Environmental Conditions (RECs)** are identified in Phase I.
Would include soil or groundwater sampling to confirm or rule out contamination.

Regulatory Basis: Due diligence requirement for industrial redevelopment and environmental risk mitigation.

Air Permitting - TCEQ New Source Review (NSR)

Why a Permit by Rule (PBR) Is NOT Applicable

- Facility throughput exceeds PBR simplicity thresholds
- Fluxing/degassing operations are outside PBR scope
- Multiple emission units and a control device are present

This is a **procedural limitation**, not an environmental deficiency.

Correct Air Permitting Pathway

Permit by Rule (PBR): Not applicable

▼

Major NSR / PSD: Not triggered

▼

Title V: Not triggered

▼

Minor NSR: Correct and lawful

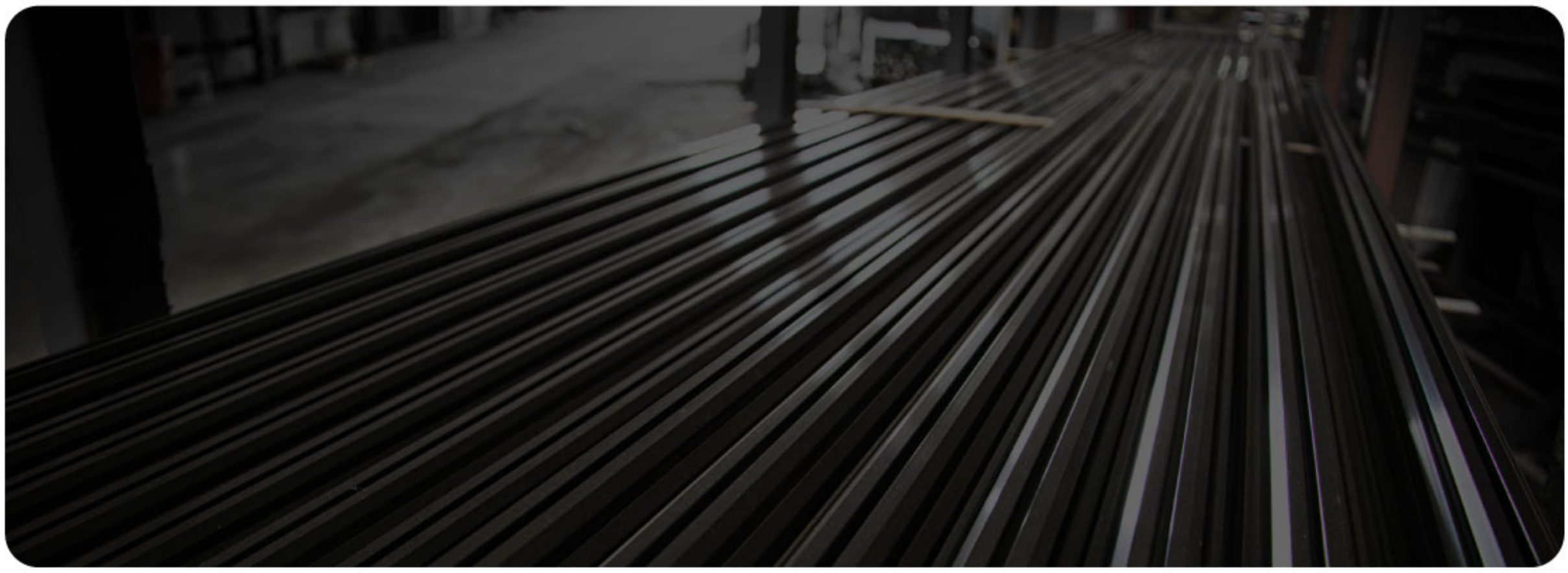
Emission Units & Controls

Emission Unit List

- EU-1: Induction melting furnace
- EU-2: Charging & material handling (fugitive PM)
- EU-3: Fluxing / rotor degassing
- EU-4: Casting line (negligible emissions)
- EU-5: Wet Electrostatic Precipitator (control device)

Air Capture & Control

- Fully enclosed hood with negative pressure
- Single ducted exhaust to wet ESP
- No roof vents or uncontrolled releases
- Estimated exhaust flow: ~20,000–25,000 ACFM



Air Emissions – Quantified & Controlled

Particulate Matter (PM)

- Uncontrolled PM: ~0.40 kg/metric ton
- Wet ESP control efficiency: ≥75% (conservative)
- Controlled PM: ~0.10 kg/metric ton

Annual PM @ 9,000 MT: ~0.99 tons/year
Major source threshold: 100 tons/year
Well below regulatory limits

Volatile Organic Compoutds (VOCs)

- No combustion processes
- Minimal VOCs from flux usage only
- Emissions in gram-per-ton range (negligible)

Acid Gases (HCl)

- No chlorine gas injection
- Controlled flux usage only
- Estimated: ~0.10–0.20 kg/metric ton

Annual HCl: ~1.3–1.5 tons/year
Below HAP major source thresholds (10 / 25 tpy)

Dioxins / Furans

- No scrap dryers
- No decoating kilns
- No coated scrap combustion

Expected formation: microgram-per-ton range.
Not a regulatory trigger

Solid Waste & Hazardous Material Handling

Why Registration Is Required

To ensure proper classification, storage, transport, and off-site disposal of industrial by-products.

Waste Streams

- Aluminum dross: ~1–3% of melt, recycled off-site
- Wet ESP residue: minimal, licensed recycler
- Spent refractory: non-hazardous industrial waste

No on-site treatment or disposal

Stormwater Pollution Prevention Plan (SWPPP)

Why Required

To control stormwater runoff and prevent pollutant discharge.

Compliance Path

- Notice of Intent (NOI) filed with TCEQ

Eligibility for No Exposure Certification due to:

- Indoor scrap storage
- Roofed processing areas
- Concrete floors throughout

Water Use Permit

Why Required

Facility uses city water for closed-loop cooling tower operation

Details

- No process water use
- No water consumption in melting
- Water used only for heat rejection

SPCC Plan (Spill Prevention)

Not Required

- No bulk oil storage
- No petroleum tanks
- No regulated oil volumes

Building & Trade Permits

Commercial Building Permit

- Structural approval
- Fire safety review
- Occupancy classification

Trade Permits

- Electrical (high-load equipment)
- Mechanical (HVAC & ventilation)
- Plumbing (cooling systems)

Certificate of Occupancy

Issued Upon:

- Final inspections
- Fire marshal approval
- Compliance with zoning & building codes

OSHA Compliance

Worker Safety Controls

- Robotic handling for molten metal transfer
- Defined exclusion zones
- PPE requirements
- Lock-out / tag-out procedures
- Hot-work permits
- Training & certification programs

No shredding, drying, or decoating operations are present.

Final Regulatory Position

Worker Safety Controls

- PBR: Not applicable by design
- Major Source / PSD: Not triggered
- Title V: Not required
- Minor NSR: Correct permitting pathway

The facility is technically feasible, environmentally controlled, and compliant with applicable federal, state, and county regulations.

The proposed induction-based aluminum ingot facility presents a low-emission, non-combustion industrial operation with enforceable throughput limits and engineered controls. All required permits are identified, and no statutory emission thresholds are exceeded.