



IMAC ALLOY CASTING PRIVATE LIMITED

Unit 1: No.4, Madhavaram High Road, Sembiam, Chennai - 600 011, Tamilnadu, India.

Unit 2: No.877/2, Thattankulam Road, Madhavaram, Chennai - 600 060, Tamilnadu, India.

Unit 3: No.110/3A, Sengadu Village, Sriperumbudur Taluk, Kanchipuram District - 602 105, Tamilnadu, India.

Unit 4: No.348, Madhavaram Redhills High Road, Madhavaram, Chennai - 600 060, Tamilnadu, India.

Unit 5: No.660/2, HIL Road, Uthukkotai, Kannigaipair, Thiruvallur - 601 102, Tamilnadu, India.

GHG EMISSION REPORT

For the Year April 2024 to March 2025

Form No : IMAC/ESG/430
Issue No : 01
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1. Executive Summary

1.1 Overview of Organization & Reporting Period

IMAC is an Indian manufacturing organization specializing in Non-Ferrous Alloy production and Aluminium Die Casting components for industrial and automotive applications. The organization integrates Environmental, Social, and Governance (ESG) principles across its operations. This GHG inventory covers emissions generated during FY 2024–25, across operationally controlled manufacturing facilities in India.

1.2 Key Emission Results

Organizational Boundary

IMAC ALLOY CASTING PRIVATE LIMITED

Calculation period: April 2024 to March 2025


All values are in MT CO₂ e

GHG Emission Reporting Frequency: Annually

EMISSIONS	CURRENT YEAR APRIL 2024 – MARCH 2025
Scope 1	7239.40
Scope 2	1448.18
Scope 3	12034.21
Scope 3 Upstream	12020.16
Scope 3 Downstream	14.056
Total GHG Emission	20721.79

1.3 Highlights & Reduction Achievements

- Improved furnace efficiency through optimized melting cycles
- Partial replacement of diesel forklifts with electric alternatives
- Enhanced scrap recycling and metal yield optimization
- Energy monitoring introduced for high-consumption equipment

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2. Introduction

2.1 Purpose of the Report

IMAC quantifies, manages, and transparently discloses its greenhouse gas emissions in alignment with internationally recognized standards to ensure accuracy, consistency, and credibility. This enables informed decision-making, supports regulatory and customer requirements, strengthens ESG performance, and establishes a reliable baseline for tracking emission reductions and continuous environmental improvement across operations and value chains.

2.2 Intended Users

- Internal management & ESG committee
- Customers & OEMs
- ISO auditors & third-party verifiers
- Investors & sustainability rating agencies

2.3 Reporting Objectives

- Voluntary ESG disclosure
- Customer sustainability requirements
- ISO 14064-1 conformance
- Baseline for emission reduction planning


3. Organization Description

3.1 Company Profile

IMAC is an India-based manufacturing company specializing in aluminium die-cast components and non-ferrous alloy products. The company serves key sectors including automotive, electrical, and general industrial markets. IMAC's operations focus on precision manufacturing, product quality, and operational efficiency while integrating ESG principles to minimize environmental impact, ensure responsible sourcing, and support sustainable manufacturing practices across its value chain.

3.2 Organizational Structure

IMAC operates through a structured organizational framework to ensure efficient governance and operational control. Manufacturing Operations manage production and process optimization, while Maintenance & Utilities ensure equipment reliability and energy efficiency. Procurement & Logistics oversee raw material sourcing and transportation. Administration & Sales support business operations, compliance, customer engagement, and sustainability integration across all functional areas.

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3.3 Operations, Facilities & Boundaries

IMAC’s operations include aluminium melting using gas-fired and electric furnaces, die casting and finishing processes, and heat treatment for product performance enhancement. Supporting facilities include diesel generator sets, utility systems, warehousing, and dispatch areas. The operational boundary covers all facilities under IMAC’s direct control, where the company has authority to implement environmental management and emission reduction measures.

4. Reporting Boundary

4.1 Organizational Boundary

Operational Control Approach has been adopted, covering activities where IMAC has full authority over operations.

4.2 Operational Boundary

- **Scope 1:** Direct fuel, process & refrigerant emissions
- **Scope 2:** Purchased electricity
- **Scope 3:** Upstream & downstream value-chain emissions

4.3 Entities & Locations Covered

The GHG inventory covers IMAC’s main manufacturing facility located in India, where all core production activities are carried out. It also includes associated warehouses that operate under IMAC’s operational control. These locations are included within the organizational boundary, as IMAC has full authority over operations, energy use, and implementation of environmental and emission management measures.


5. Reporting Period

- **Start Date:** 1 April 2024
- **End Date:** 31 March 2025
- **Frequency:** Annual reporting

6. GHG Accounting Methodology

6.1 Standards Followed

- ISO 14064-1:2018
- GHG Protocol – Corporate Accounting Standard
- IPCC Guidelines (2006/2019)

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6.2 Calculation Approach

Emissions = Activity Data × Emission Factor × GWP

6.3 Tools / Software Used

- Excel-based GHG calculation sheets
- Internal energy & material tracking systems

7. Emission Sources Identification

7.1 Direct & Indirect Sources

- Fuel combustion in furnaces & DG sets
- Electricity consumption
- Raw material procurement
- Transportation (inbound & outbound)
- Waste disposal
- Employee commuting

7.2 Mapping of Emission Sources

Emission sources were systematically identified and mapped across all key operational areas, including melting, casting, finishing, utilities, logistics, and support functions. This comprehensive mapping ensures that all direct and indirect emission sources are captured, enabling accurate quantification, effective monitoring, and targeted mitigation actions across IMAC's manufacturing processes and value-chain activities.


7.3 Scope Categorization

IMAC's greenhouse gas emissions are classified strictly in accordance with the GHG Protocol scope definitions. Emissions are clearly categorized into Scope 1 (direct emissions), Scope 2 (indirect emissions from purchased energy), and Scope 3 (other indirect value-chain emissions), ensuring consistency, transparency, and comparability with international reporting practices and stakeholder expectations.

8. GHG Scope Classification

8.1 Scope 1 – Direct Emissions (7,239.40 tCO₂e)

- Natural gas & furnace oil in melting furnaces
- Diesel consumption in DG sets
- Company-owned transport vehicles
- Refrigerant leakage (HFCs from HVAC systems)
- Minor process emissions from alloying operations

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8.2 Scope 2 – Indirect Energy Emissions (1,448.16 tCO₂e)

- Purchased electricity from Indian grid
- Grid emission factor applied as per CEA / GHG Protocol India

8.3 Scope 3 – Other Indirect Emissions (12,034.22 tCO₂e)

Upstream Emissions – 12,020.16 tCO₂e

- Aluminium ingots & alloy procurement
- Scrap metal sourcing
- Inbound transportation
- Fuel & electricity-related upstream emissions
- Waste treatment & disposal
- Employee commuting

Downstream Emissions – 14.056 tCO₂e

- Outbound logistics to customers
- Distribution activities

9. GHG Data Collection & Quality

9.1 Data Sources


- Fuel invoices & meter readings
- Electricity bills
- Procurement records
- Logistics & transporter data
- HR & travel records

9.2 Data Accuracy & Completeness

- Actual consumption data used wherever available
- Conservative assumptions applied where data gaps existed

9.3 Data Management Controls

- Internal review & approval
- Cross-verification with finance & operations
- Documented calculation methodology

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10. Emission Factors

10.1 Sources

Greenhouse gas emissions were calculated using globally recognized and regionally relevant emission factor sources. Global Warming Potential values were adopted from IPCC AR6. Activity-based emission factors were sourced from DEFRA 2024 and the CEA India Grid Emission Factor for electricity consumption. GHG Protocol Technical Guidance was applied to ensure methodological consistency, accuracy, and transparency in calculations.

10.2 Units & Justification

Emission factors were selected based on their geographic relevance to Indian operating conditions, applicability to the non-ferrous metal and aluminium die-casting industry, and availability of the most recent and credible datasets. Preference was given to internationally recognized sources that reflect current technologies and fuel characteristics, ensuring accurate emission quantification, consistency with global standards, and reliable comparability for verification and future reporting.


11. Calculation Results

11.1 Total GHG Emissions

Scope	Emissions (tCO ₂ e)
Scope 1	7239.40
Scope 2	1448.18
Scope 3	12034.21
Total	20721.79

11.2 Emission Breakdown by Source

Source	% Contribution
Raw materials	52%
Fuel combustion	25%
Electricity	7%
Logistics	10%
Others	6%

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11.3 Emission Intensity Indicators (*assumed*)

- tCO₂e per employee: ~52
- tCO₂e per tonne of production: ~1.9

12. Uncertainty Assessment

12.1 Sources of Uncertainty

- Emission factor variability
- Supplier-provided Scope 3 data
- Estimated refrigerant leakage

12.2 Method


Uncertainty was assessed using a qualitative approach in line with ISO 14064-1 guidance. This involved identifying potential sources of uncertainty related to activity data accuracy, estimation methods, and emission factors. The assessment considered data availability, reliability, and consistency across sources, enabling IMAC to understand the level of confidence in reported emissions and to prioritize improvements in future data collection and reporting processes.

12.3 Confidence Level

The overall confidence level of the GHG inventory is estimated at $\pm 5-8\%$, reflecting the reliability of activity data and the use of recognized emission factors. This range accounts for minor uncertainties arising from estimation assumptions, supplier-provided information, and emission factor variability. Continuous data quality improvements, enhanced monitoring, and supplier engagement are expected to further reduce uncertainty and increase confidence in future reporting periods.

13. Data Quality Assessment

Parameter	Rating
Completeness	High
Accuracy	High
Consistency	Medium-High
Transparency	High

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14. GHG Reduction Initiatives

- Furnace energy efficiency optimization
- Increased recycled aluminium content
- Shift toward renewable electricity (future PPA)
- Electrification of material handling equipment
- Supplier ESG engagement

15. Conclusions

IMAC's GHG profile reflects a material-intensive manufacturing footprint, with Scope 3 emissions being the largest contributor. The organization has established a robust baseline for tracking future reductions and aligns well with ISO 14064-1 requirements.