SATURN INDUSTRIES

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GHG EMISSION REPORT

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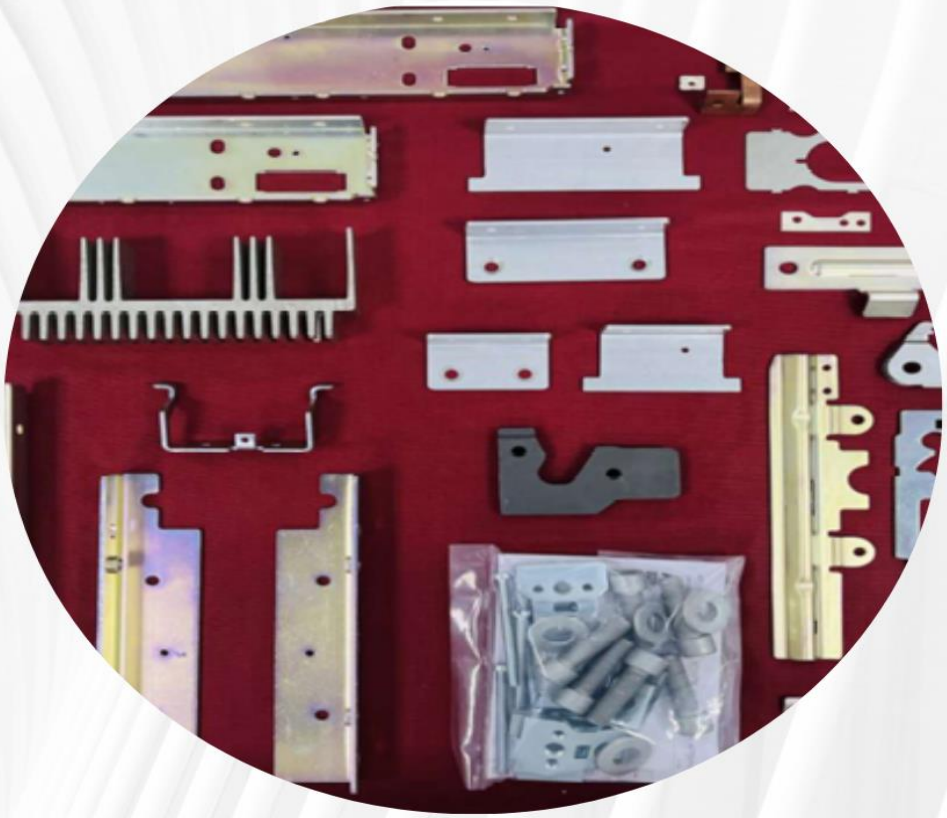

1. Executive Summary

Overview of Organization & Reporting Period

This GHG Emission Report presents the total carbon footprint of Saturn Industries for the reporting period 1 April 2024 to 31 March 2025**.** The assessment includes Scope 1, Scope 2 and relevant Scope 3 emissions based on ISO 14064-1 and GHG Protocol guidelines. Saturn Industries operates in the manufacturing of Pressed Sheet Metal Components, Precision Machined Components and Sub-Assemblies**.**

Key Emission Results

- **Total GHG Emissions: 4,569.39 tCO_2 e**
- **Scope 1:** 0.45 tCO_2 e
- **Scope 2:** 361.43 tCO_2 e
- **Scope 3:** 4,207.51 tCO_2 e
  Scope 3 constitutes the largest share (≈92%) due to metal raw material emissions and logistics.

Highlights & Reduction Achievements

- Installation of LED lighting and optimized machinery operation reduced electricity demand.
- Improved logistics planning reduced empty truck travel.
- Increased recycling of metal scrap minimized waste-related emissions.

2. Introduction

Purpose of the Report

To quantify, document, and communicate the total greenhouse gas emissions of Saturn Industries in line with ISO 14064-1 and GHG Protocol Corporate Standard.

Intended Users

- Internal management
- Customers and OEM clients
- ESG auditors and certification bodies
- Investors and stakeholders

Reporting Objectives

- Demonstrate compliance with ISO 14064-1
- Meet customer sustainability requirements
- Support ESG reporting and future carbon reduction planning

3. Organization Description

Company Profile

Saturn Industries is an Indian manufacturing company specialized in pressed sheet metal components, precision machined components, and sub-assemblies. The company integrates ESG principles and aims for continuous improvement in environmental performance.

Organizational Structure

Includes manufacturing plant, administrative block, warehouse, and tool room operations, all under single operational control.

Operations, Facilities & Boundaries

- Manufacturing facility located in India
- Operations include metal forming, machining, assembly, storage, and dispatch
- Boundary covers all owned and controlled facilities

4. Reporting Boundary

Organizational Boundary:

Operational Control Approach – Saturn Industries accounts for 100% emissions from operations under its control.

Operational Boundary:

Covers Scope 1, 2 and selected Scope 3 categories relevant to metal manufacturing.

Entities & Locations Covered:

All operations at Saturn Industries' manufacturing facility and logistics connected to raw material and product transport.

5. Reporting Period

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

6. GHG Accounting Methodology

Standards Followed:

- ISO 14064-1:2018
- GHG Protocol – Corporate Standard
- IPCC 2006 Guidelines
- India Grid Emission Factor (CEA)

Calculation Approach:

All emissions are calculated using the standard formula:
Emissions = Activity Data × Emission Factor

Tools Used:

- MS Excel calculation workbook (uploaded by user)
- IPCC/DEFRA emission factor tables

7. Emission Sources Identification

Direct & Indirect Sources Identified:

- Diesel combustion (DG set, vehicles) – Scope 1
- Purchased electricity – Scope 2
- Raw materials, waste, water, logistics, commuting, business travel – Scope 3

Mapping of Emission Sources:

- Production floor – electricity, diesel backup
- Logistics – goods transport, raw material delivery
- Workforce – employee commuting
- Administration – business travel

Scope Categorization:

✓ Scope 1: Fuel combustion
✓ Scope 2: Electricity
✓ Scope 3: Upstream + downstream emissions

8. GHG Scope Classification

8.1 Scope 1 – Direct Emissions

Diesel Consumption

Diesel used: **0.171 KL**
Emission factor: **2,640 kg CO_2 e/KL**
Scope 1 emissions = 0.45 tCO_2 e

No significant process or fugitive emissions were identified.

8.2 Scope 2 – Indirect Energy Emissions

Electricity consumed: **440,765 kWh**
Emission factor (Indian Grid): **0.82 kg CO_2 e/kWh**
Scope 2 emissions = 361.43 tCO_2 e

8.3 Scope 3 – Other Indirect Emissions

Upstream Emissions:

1. **Raw Materials (1896 MT steel)**
   Emission factor: **2 tCO_2 e/ton**
   = **3792 tCO_2 e**
2. **Waste Generated (412 MT)**
   Landfill factor: **0.21 tCO_2 e/MT**
   = **86.52 tCO_2 e**
3. **Water Consumption (9060 m^3)**
   EF = **0.344 kg CO_2 e/m^3**
   = **3.12 tCO_2 e**

Upstream total = 3881.64 tCO_2 e

Downstream Emissions:

4. **Business Travel – Air (105,600 km)**
   EF = 0.255 kg/km
   = **26.93 tCO_2 e**
5. **Employee Commuting (1,104,480 km)**
   EF = 0.12 kg/km
   = **132.54 tCO_2 e**
6. **Raw Material Transport (595,200 km)**
   EF = 0.125 kg/km
   = **74.40 tCO_2 e**
7. **Finished Goods Dispatch (744,000 km)**
   EF = 0.125 kg/km
   = **93.00 tCO_2 e**

Downstream total = 326.87 tCO_2 e

9. GHG Data Collection & Quality

Data Sources:

- Internal consumption records
- Purchase invoices
- Energy bills
- HR commuting survey
- Logistic trip sheets
- Waste tracking documents

Accuracy & Reliability:

- Electricity & diesel: High accuracy
- Commuting data: Estimated through employee survey
- Transport distance: Based on standard routes
- Raw material EF: Industry average for steel manufacturing

Controls:

- Review by plant head
- Cross-verification with bills and records

10. Emission Factors

Sources:

- IPCC 2006 AFOLU Guidelines
- DEFRA (UK)
- GHG Protocol
- India CEA Grid Factor 2024
- Industry standard steel emission factors

Justification:

Emission factors used are internationally recognized and align with ISO 14064-1 expectations.

11. Calculation Results

GHG Emission Reporting Frequency: Annually

11.1 Total GHG Emissions

Scope	Emissions (tCO_2e)
Scope 1	0.45
Scope 2	361.43
Scope 3 – Upstream	3881.64
Scope 3 – Downstream	326.87
Total	4569.39 tCO_2e

Gas-wise Breakup (Scope 1)

Diesel combustion includes **CO_2 , CH_4 , N_2O**, but accounted in CO_2e values.

11.2 Emission Breakdown by Source

Source	Emissions (tCO_2e)
Raw material production	3792
Electricity	361.43
Logistics & transport	167.40
Employee commuting	132.54
Waste	86.52
Business travel	26.93
Diesel	0.45

11.3 Emission Intensity Indicators

• **Per employee** (assuming 220 employees):
= **20.77 tCO_2e/employee/year**

• **Per ton of finished goods (1488 MT):**
= **3.07 tCO_2e per MT product**

12. Base Year & Trend Analysis

Base Year: FY 2024–25 (first formal GHG reporting year)

Rationale:

Complete activity data available and aligns with ESG rollout.
Future reports will compare reduction trends against this base year.

13. Uncertainty Assessment

Sources of Uncertainty:

- Commuting distance estimates
- Truck load factor assumptions
- Raw material emission factor variation
- Air travel class uncertainty

Method:

- Expert approximation
- Sensitivity analysis with ±10% variation

Confidence Level:

Medium–High for Scope 1 & 2
Medium for Scope 3

14. Data Quality Assessment

Activity Data:

High quality for electricity, diesel, production data
Medium for transport surveys

Emission Factors:

High for IPCC and CEA
Medium for industry averages (materials)

Validation:

Cross-check with invoices and logbooks completed.

15. GHG Reduction Initiatives

Current Initiatives:

- LED lights and energy-efficient motors installed
- Optimized machinery scheduling
- Increased recycling of scrap metal
- Improved transport routing for lower fuel consumption

Future Goals:

- Solar rooftop installation
- EV-based employee commuting
- Supplier engagement to reduce raw material footprint
- Water recycling and zero-discharge initiatives

17. Conclusions

The total GHG emissions of Saturn Industries for FY 2024–25 amounted to **4,569.39 tCO_2 e**. Majority emissions (≈92%) originate from **purchased raw materials**, a common trend in sheet metal manufacturing. Opportunities exist in renewable energy, recycling expansion, supplier decarbonization, and logistics efficiency.

Next Steps:

- Establish reduction targets
- Implement renewable energy systems
- Annual reporting improvement
- Engage supply chain partners on ESG

18. Appendices

Appendix A – Activity Data Table

(Directly derived from uploaded sheet)

Parameter	Value
Diesel	0.171 KL
Electricity	440,765 kWh
Raw materials	1896 MT
Finished goods	1488 MT
Waste	412 MT
Water	9060 m^3
Air travel	105,600 km
Commuting	1,104,480 km
Raw material transport	595,200 km
Product dispatch	744,000 km

Appendix B – Emission Factors Reference

- IPCC (2006) Volume 2 Energy
- DEFRA 2023–24 Factors
- CEA India Grid 2024
- GHG Protocol Technical Guidance

Appendix C – Definitions & Abbreviations

CO_2 e, Scope 1/2/3, EF, MT, KL, etc.

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