



Violin Technologies Private Limited (Group)

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GHG EMISSION REPORT January 2025 to December 2025

Form No : VTPL/ESG/083
Issue No : 01
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1. Executive Summary

♣ Overview of organization and reporting period

VTPL is an India-based organization engaged in Electronics Manufacturing Services (EMS), sheetmetal solutions, cable harness, box build, system integration, aerospace components and global sourcing. This report covers the calendar year from 01 January 2025 to 31 December 2025 and presents the organization's GHG inventory using operational control as the organizational boundary approach.

♣ Key emission results

Total reported GHG emissions for 2025 are 288.41 tCO₂e. Scope 1 direct emissions are 57.59 tCO₂e, Scope 2 purchased electricity emissions are 225.83 tCO₂e and Scope 3 other indirect emissions are 4.99 tCO₂e. Scope 2 contributes approximately 78.3% of total emissions and is the largest emission category.

♣ Highlights and reduction achievements

The inventory establishes a structured baseline for energy, fuel, refrigerant, waste, logistics, employee commuting and business travel controls. Key opportunities identified include electricity efficiency, renewable energy procurement, compressed air optimization, DG fuel reduction, improved refrigerant leak control, waste segregation and supplier logistics optimization.

Organizational Boundary

Violin Technologies Private Limited (Group)

Calculation period: January 2025 to December 2025

All values are in MT CO₂ e

GHG Emission Reporting Frequency: Annually

EMISSIONS	CURRENT YEAR JANUARY 2025 – DECEMBER 2025
Scope 1	57.59
Scope 2	225.83
Scope 3	4.99
Scope 3 Upstream	1.5
Scope 3 Downstream	3.49
Total GHG Emission	288.41

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2. Introduction

♣ Purpose of the report

The purpose of this report is to document VTPL’s greenhouse gas emissions, identify major emission sources, establish a credible 2025 baseline, and support ESG disclosure, customer sustainability expectations and internal reduction planning.

♣ Intended users

Intended users include VTPL management, customers, ESG reviewers, auditors, sustainability consultants, suppliers, investors and other stakeholders requiring transparent information on GHG performance.

♣ Reporting objectives

The reporting objectives are voluntary ESG disclosure, customer requirement fulfilment, internal management review, ISO 14064-1 aligned inventory preparation, and future verification readiness under ISO 14064-3.

3. Organization Description

♣ Company profile

VTPL provides EMS, sheetmetal, cable harness, box build, system integration, aerospace component and global sourcing services. The operations typically involve assembly, fabrication support, testing, inspection, packaging, warehousing, dispatch, administration and supplier coordination.

♣ Organizational structure

The assumed reporting structure includes top management, operations, production, quality, engineering, purchase, stores, maintenance, human resources, EHS/ESG and administration functions. Each function contributes activity data for the GHG inventory.

♣ Operations, facilities and boundaries

The report covers operations under VTPL’s operational control in India. Covered activities include energy use, fuel use, company vehicles, refrigerant leakage, purchased electricity, waste disposal, logistics, employee commuting and business travel. Manufacturing process emissions are considered not material unless specific process gas use is introduced.

4. Reporting Period

Total Employee : 524

Start Date: 01 January 2025

End Date: 31 December 2025

Reporting Frequency: Annual

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5. Reporting Boundary

♣ Organizational Boundary

VTPL has adopted the operational control approach for defining its organizational boundary. Under this approach, the company accounts for 100% of greenhouse gas (GHG) emissions arising from facilities, assets, and operations over which it has the authority to introduce, implement, and enforce operating policies. This includes manufacturing activities, utilities, equipment operation, and supporting infrastructure under VTPL's management control. The approach ensures consistency, transparency, and alignment with internationally recognized GHG accounting standards and reporting frameworks.

♣ Operational Boundary

The operational boundary encompasses emissions categorized under Scope 1, Scope 2, and relevant Scope 3 sources associated with VTPL's Electronics Manufacturing Services (EMS) and engineering operations. Scope 1 includes direct emissions from fuel combustion and refrigerant use, while Scope 2 covers indirect emissions from purchased electricity. Selected Scope 3 categories include transportation, waste management, purchased goods, and other value-chain activities where reliable data is available or can be reasonably estimated using accepted methodologies.

♣ Entities and Locations Covered

The GHG inventory covers all VTPL operations located within India and includes facilities, manufacturing units, warehouses, and administrative offices under operational control. Where multiple operating locations exist, the inventory should be supported by site-specific activity data to improve accuracy and traceability. Future inventories should incorporate expanded site-wise reporting to strengthen emissions management and performance tracking.

6. EMISSION SOURCES IDENTIFICATION

Direct and Indirect Emission Sources

Emission Source	Scope
Diesel for DG Sets	Scope 1
Fuel for Company Vehicles	Scope 1
Refrigerant Leakage	Scope 1
Purchased Electricity	Scope 2
Purchased Goods & Services	Scope 3
Transportation & Logistics	Scope 3
Employee Commuting	Scope 3
Business Travel	Scope 3
Waste Disposal	Scope 3
Downstream Distribution	Scope 3

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7. GHG Accounting Methodology

♣ Standards Followed

This GHG inventory has been prepared in accordance with the principles and requirements of ISO 14064-1:2018 and the GHG Protocol Corporate Accounting and Reporting Standard. The reporting process is guided by the key principles of relevance, completeness, consistency, accuracy, and transparency. These principles ensure that emissions data is reliable, comparable, and suitable for internal decision-making, stakeholder communication, and continual improvement of environmental performance.

♣ Calculation Approach

Greenhouse gas emissions are quantified using the standard methodology: $\text{GHG Emissions} = \text{Activity Data} \times \text{Emission Factor} \times \text{Global Warming Potential (where applicable)}$. Activity data includes energy consumption, fuel use, refrigerant losses, transportation, and waste generation. Appropriate emission factors are applied from recognized sources, and results are converted into tonnes of carbon dioxide equivalent (tCO₂e) to provide a consistent and comparable measure of climate impact across emission sources.

♣ Tools or Software Used

The primary source of information for this inventory is the GHG Emission Data Collection Sheet, which captures activity data from various operational sources. Emission calculations are maintained in controlled spreadsheets designed to ensure accuracy, traceability, and version control. Each calculation file includes document identification details, revision status, preparer and reviewer information, and approval records. This structured approach supports data integrity, audit readiness, and effective management of GHG reporting processes.

8. Emission Sources Identification

♣ Direct and indirect sources

Direct sources include diesel or other fuel used in DG sets, boilers, company vehicles and refrigerant leakage from air-conditioning systems. Indirect sources include purchased electricity, purchased materials, waste disposal, logistics, employee commuting and business travel.

♣ Mapping of emission sources in facilities

Emission points should be mapped at production floors, utility rooms, DG yards, compressor rooms, HVAC areas, warehouses, dispatch areas, canteens, offices and vehicle parking areas.

♣ Scope categorization

Scope 1 covers direct fuel, vehicle and refrigerant emissions. Scope 2 covers purchased electricity. Scope 3 covers selected upstream and downstream indirect emissions including purchased goods, waste, transport, commuting and business travel.

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9. GHG Scope Classification

9.1 Scope 1 - Direct emissions

Scope 1 emissions are 57.59 tCO₂e. For reporting clarity, these are assumed to include stationary combustion from DG/fuel use, mobile combustion from company vehicles and fugitive refrigerants. No material process emissions are assumed for EMS operations.

9.2 Scope 2 - Indirect energy emissions

Scope 2 emissions are 225.83 tCO₂e from purchased electricity. Purchased steam, heat or cooling has been assumed not applicable unless VTPL has external thermal energy purchase records.

9.3 Scope 3 - Other indirect emissions

Scope 3 emissions are 4.99 tCO₂e, including 3.49 tCO₂e upstream and 1.50 tCO₂e downstream. Covered categories include selected purchased goods/services, waste disposal, transportation and logistics, employee commuting, business travel and downstream product-related activities where data is available.

10. GHG Data Collection and Quality

Primary data should be taken from electricity bills, fuel invoices, DG logbooks, vehicle fuel records, refrigerant top-up/service reports, waste vendor records, logistics invoices, travel claims, attendance/commuting surveys and purchase records. The uploaded summary provides complete scope totals but limited source-level activity data. Therefore, source-level breakdowns and intensity denominators in this report are treated as reasonable assumptions for initial ESG reporting and should be replaced with actual metered or invoice-based records during verification. VTPL should maintain a controlled GHG register with monthly data entry, evidence attachment, preparer review, EHS/ESG approval, management review and change-control for emission factors and recalculations.

11. Calculation Results

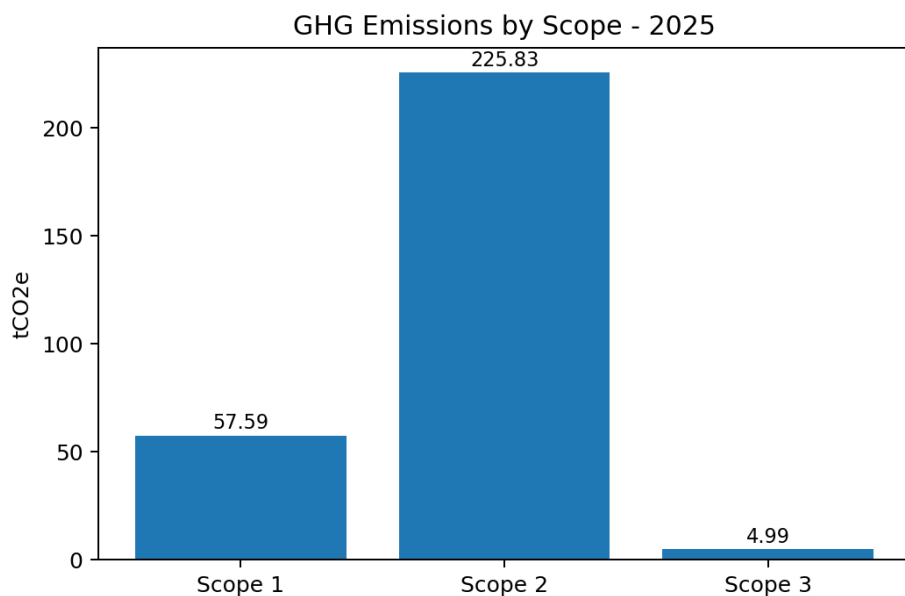
11.1 Total GHG Emissions by Scope

Scope	2023 Emissions (tCO ₂ e)	2024 Emissions (tCO ₂ e)	2025 Emissions (tCO ₂ e)
Scope 1	59.91	58.74	57.59
Scope 2	234.96	230.35	225.83
Scope 3	300.06	294.18	4.99
Scope 3 Downstream	1.56	1.53	1.50
Scope 3 Upstream	3.63	3.56	3.49
Total GHG Emissions	594.93	583.27	288.41

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11.2 Emission Breakdown by Source

Emission source	Scope	Emissions (tCO ₂ e)	Remarks
Stationary combustion - DG/fuel use	Scope 1	18.50	Assumed allocation within reported Scope 1
Mobile combustion - company vehicles	Scope 1	34.50	Assumed allocation within reported Scope 1
Fugitive refrigerants - HVAC/service top-up	Scope 1	4.59	Assumed allocation within reported Scope 1
Purchased electricity	Scope 2	225.83	Reported Scope 2 total
Purchased goods, waste, inbound logistics, commuting, travel	Scope 3 upstream	3.49	Reported upstream total
Downstream logistics / product-related activities	Scope 3 downstream	1.50	Reported downstream total
Total	All scopes	288.41	Reported total



11.3 Emission Intensity Indicators

Indicator	Value	Assumption / basis
Total emissions per employee	0.605 tCO ₂ e/employee	Assumed 477 direct employees; replace with actual headcount if different
Scope 2 emissions per employee	0.473 tCO ₂ e/employee	Indicates electricity intensity per employee
Total emissions per 1,000 sq.ft	5.77 tCO ₂ e/1,000 sq.ft	Assumed 50,000 sq.ft facility area
Total emissions per 1,000 production units	2.40 tCO ₂ e/1,000 units	Assumed 120,000 production units / job-lot equivalent

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12. Emission Factors

♣ Source of emission factors

Recommended emission factor sources include IPCC Guidelines, India electricity grid emission factor published by competent Indian authorities, DEFRA/UK Government GHG Conversion Factors where Indian factors are unavailable, refrigerant GWP values from IPCC Assessment Reports, and supplier-specific factors where reliable.

♣ Units and justification

Fuel should be recorded in litres or kg, electricity in kWh, refrigerants in kg, waste in kg or tonnes, logistics in tonne-km or km, commuting in passenger-km, and business travel in km. All final results are converted to tCO₂e.

13. Base Year and Trend Analysis

The year 2025 is selected as the base year because the uploaded sheet provides the first consolidated Scope 1, Scope 2 and Scope 3 emissions summary for the full calendar year. No prior verified historical data was provided in the uploaded sheet. Trend analysis should be added from the next reporting cycle by comparing 2026 results against the 2025 baseline. Base year recalculation should be performed if there is a major acquisition, divestment, outsourcing/insourcing change, significant facility expansion, methodology change, or correction of material errors.

14. Uncertainty Assessment

Uncertainty may arise from estimated fuel use, limited Scope 3 coverage, average emission factors, refrigerant leakage assumptions, distance estimates, incomplete supplier data and absence of process-level metering. A qualitative uncertainty assessment is applied based on activity data quality and emission factor reliability. Future reports should apply quantitative uncertainty ranges where metered data and factor uncertainty values are available. Overall confidence is assessed as moderate for Scope 1 and Scope 2, and low-to-moderate for Scope 3 due to limited category coverage and reliance on estimated data.

15. Data Quality Assessment

Scope 2 electricity data is expected to be high quality when supported by utility bills. Scope 1 is moderate to high when fuel and refrigerant invoices are available. Scope 3 is low to moderate unless supplier-specific and logistics records are complete. Recommended validations include bill-to-meter reconciliation, fuel invoice-to-logbook reconciliation, refrigerant purchase-to-service report reconciliation, waste vendor cross-check, logistics invoice review and management approval of final scope totals.

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16. GHG Reduction Initiatives

♣ Energy Efficiency Programs

VTPL is committed to improving energy performance through a range of energy efficiency initiatives. Key measures include replacing conventional lighting with LED systems, optimizing HVAC temperature settings, reducing compressed air leaks, installing high-efficiency motors, and implementing preventive maintenance programs. Additional actions include energy monitoring and analysis, power factor improvement, and optimized production scheduling to minimize peak electricity demand. These initiatives help reduce energy consumption, lower operating costs, and decrease greenhouse gas emissions across manufacturing operations.

♣ Waste and Water Reduction Measures

VTPL aims to minimize waste generation and conserve water resources through systematic management practices. Initiatives include improved segregation and recycling of scrap materials, reuse of packaging materials, reduction of process rework and product rejection, and effective monitoring of hazardous waste disposal. Water conservation measures include installing water-efficient fixtures, promoting responsible water use, and reusing treated water wherever technically and economically feasible. Employee awareness programs further support resource conservation and sustainable operational practices.

♣ Future Sustainability Goals

VTPL plans to strengthen its sustainability performance through measurable environmental objectives and continuous improvement initiatives. Future goals may include achieving a 3–5% annual reduction in electricity consumption intensity, increasing the share of renewable electricity procurement, reducing refrigerant leakage rates, and optimizing transportation and logistics activities. The company also intends to enhance supplier engagement for improved Scope 3 emissions data collection and reporting. These efforts will contribute to long-term emissions reduction, resource efficiency, and sustainable business growth.

17. Conclusions

VTPL's 2025 GHG inventory totals 288.41 tCO₂e. Scope 2 electricity is the dominant source at 225.83 tCO₂e, followed by Scope 1 at 57.59 tCO₂e and Scope 3 at 4.99 tCO₂e. The company has established a formal baseline and identified major emission reduction opportunities. The highest impact opportunity is electricity reduction and renewable energy procurement, supported by stronger fuel, refrigerant and Scope 3 data controls.