



Building Performance Report

Generated on 2025-06-23 22:02:18



Input Parameters

Typology: L-Shape

Ext.Wall Partition: Brick

Int.Wall Partition: Brick

Int.Slab Partition: Concrete

Roof Insulation: Cellulose

Volume: 7726.385020064201

Shape Efficiency: 0.368

Window To Wall Ratio: High Glazing

Ext.Wall Insulation: Cellulose

Ext.Slab Insulation: Extruded_Glas

Roof Partition: Concrete

Beams & Columns: Timber

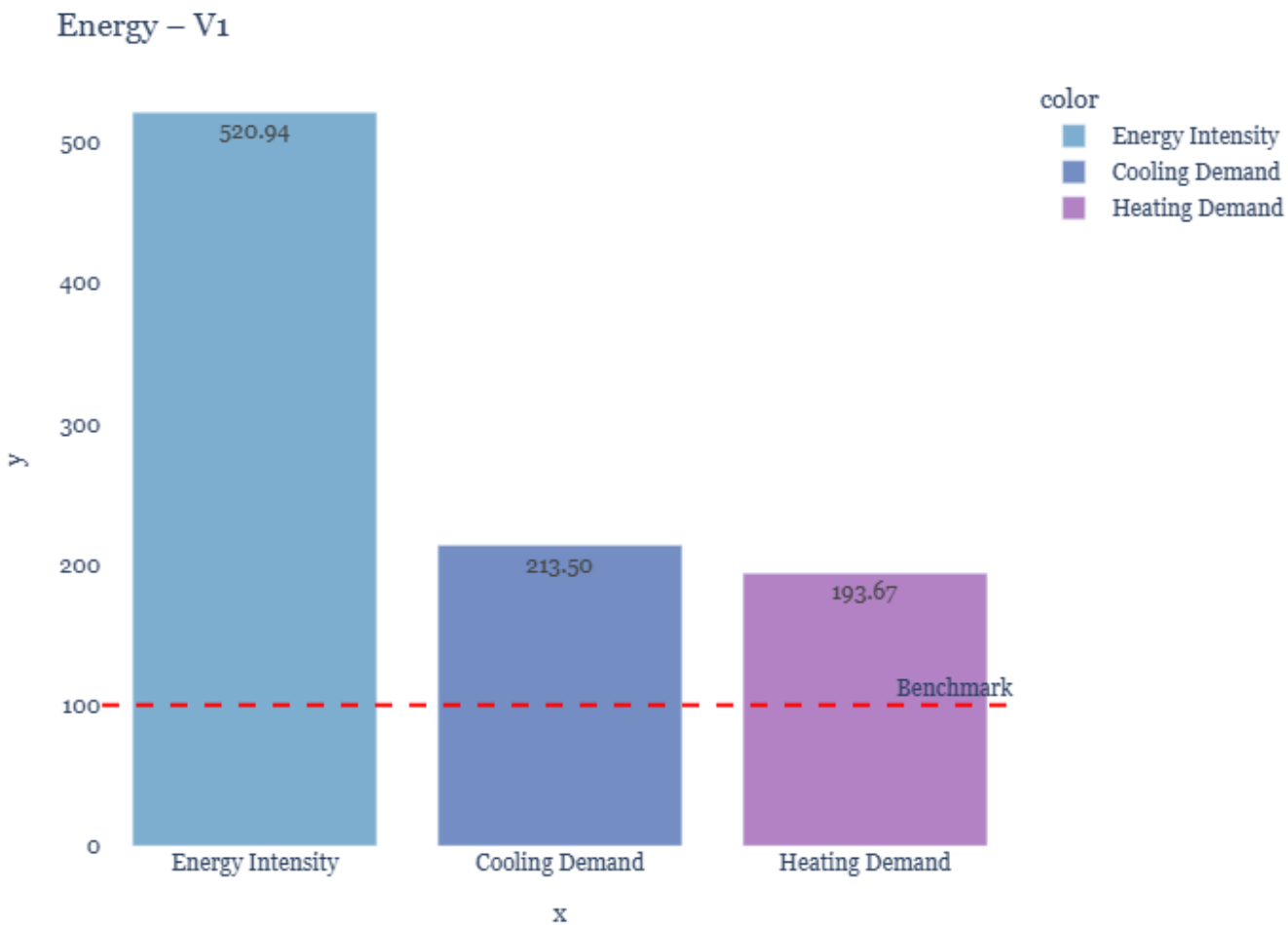
Compactness: 0.394

The design approach for this building is focused on achieving high sustainability through strategic use of materials and efficient spatial planning. The incorporation of high glazing, cellulose insulation in external walls, and extruded glass insulation in the slab ensures optimal energy performance, while the timber beams and columns add a touch of eco-friendliness.



Energy Performance – V1

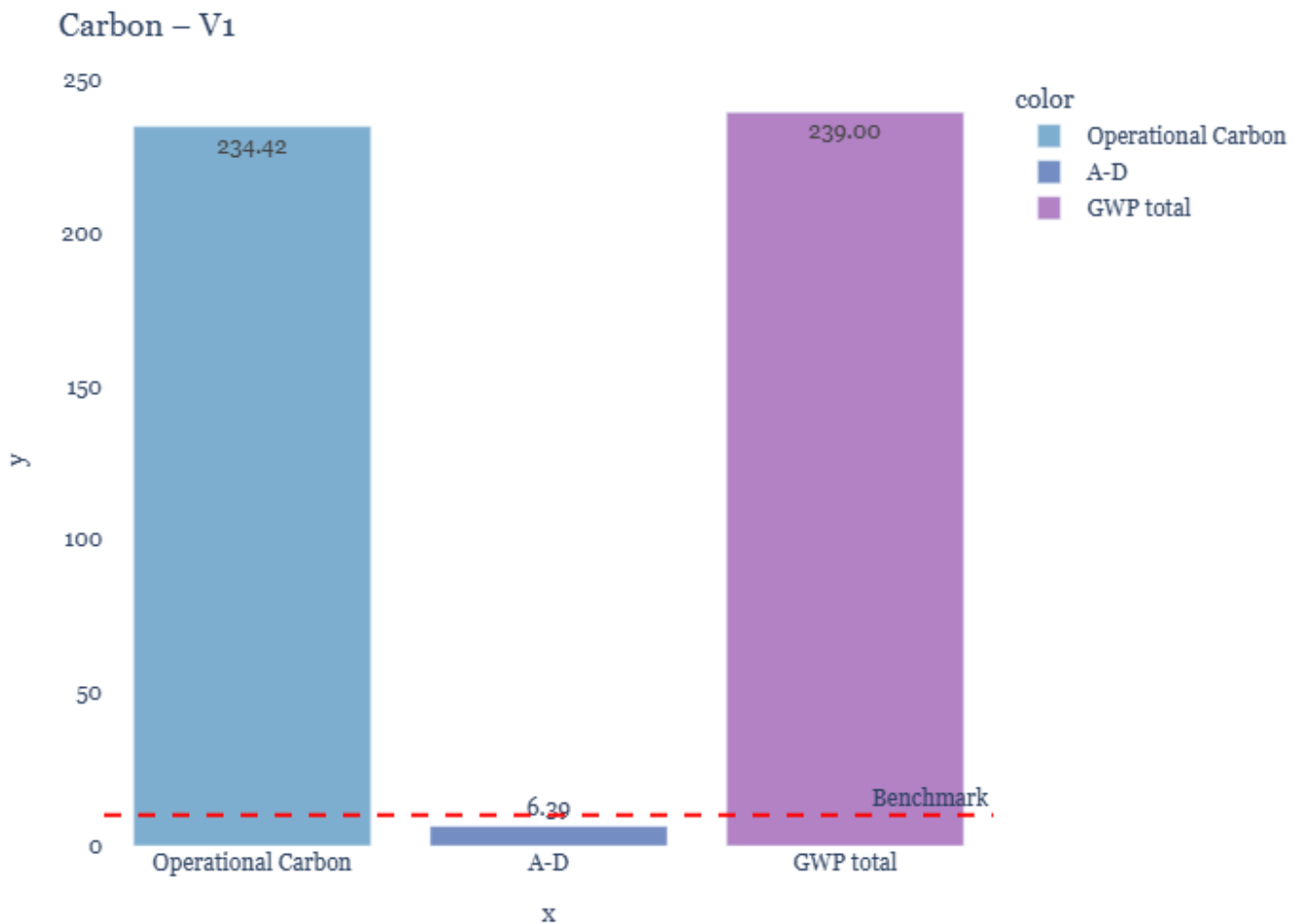
The Energy Performance report for the project indicates a total energy intensity of 520.94 kWh/m²a, with cooling and heating demands at 213.5 kWh/m²a and 193.67 kWh/m²a respectively. The operational carbon footprint is estimated at 234.42 kg CO₂e/m²a GFA, while the embodied carbon for materials A1-A3 and A-D amounts to 3.09 kg CO₂e/m²a GFA and 6.39 kg CO₂e/m²a GFA respectively. The total greenhouse gas emissions (GWP) are calculated at 239.0 kg CO₂e/m²a GFA. This data provides a comprehensive overview of the building's energy efficiency and environmental impact, highlighting areas for potential improvement in sustainability.





Carbon Emissions – V1

The data provided highlights the carbon emissions aspects of a building, including both operational and embodied carbon. The operational carbon is 234.42 kg CO₂e per square meter of gross floor area (GFA), while the total greenhouse gas emissions (GWP) amount to 239.0 kg CO₂e/m² GFA. This includes heating demand at 193.67 kWh/m² a, cooling demand at 213.5 kWh/m² a, and energy intensity of 520.94 kWh/m² a. Embodied carbon from construction materials ranges between 3.09 kg CO₂e/m² for category A1-A3 and 6.39 kg CO₂e/m² for categories A-D.





Input Parameters

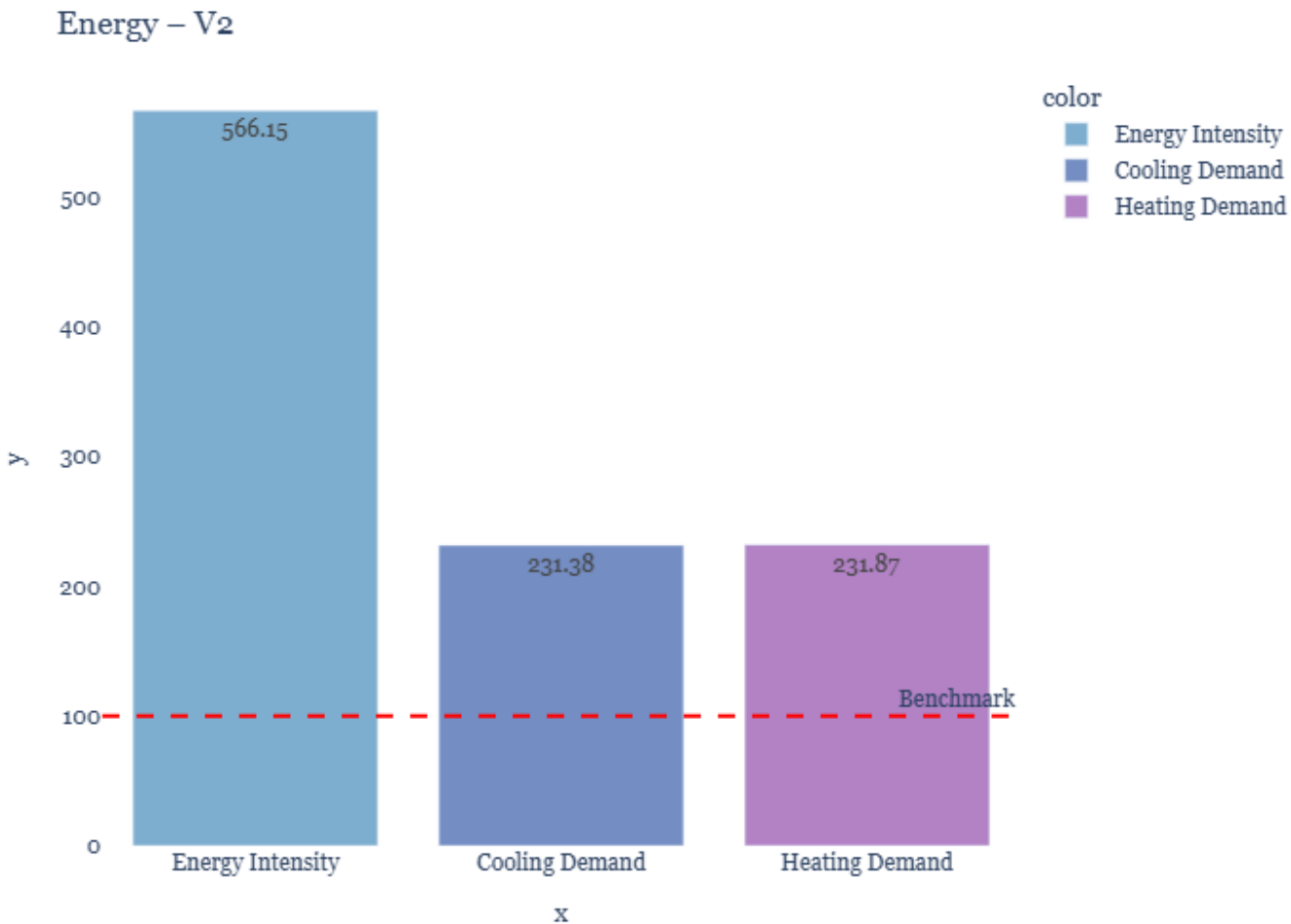
Typology: L-Shape	Window To Wall Ratio: High Glazing
Ext.Wall Partition: Brick	Ext.Wall Insulation: Cellulose
Int.Wall Partition: Brick	Ext.Slab Insulation: Extruded_Glas
Int.Slab Partition: Concrete	Roof Partition: Concrete
Roof Insulation: Cellulose	Beams & Columns: Timber
Volume: 14573.601588204696	Compactness: 0.389
Shape Efficiency: 0.181	

The design approach for this L-Shape building focuses on high glazing ratios to maximize natural lighting and passive solar heating, while using brick and cellulose insulation for external walls, ensuring thermal comfort and energy efficiency. The incorporation of timber beams and columns adds a touch of sustainability through reduced material waste and carbon footprint. Overall, the design aims to optimize compactness and shape efficiency without compromising on aesthetics or functionality.



Energy Performance – V2

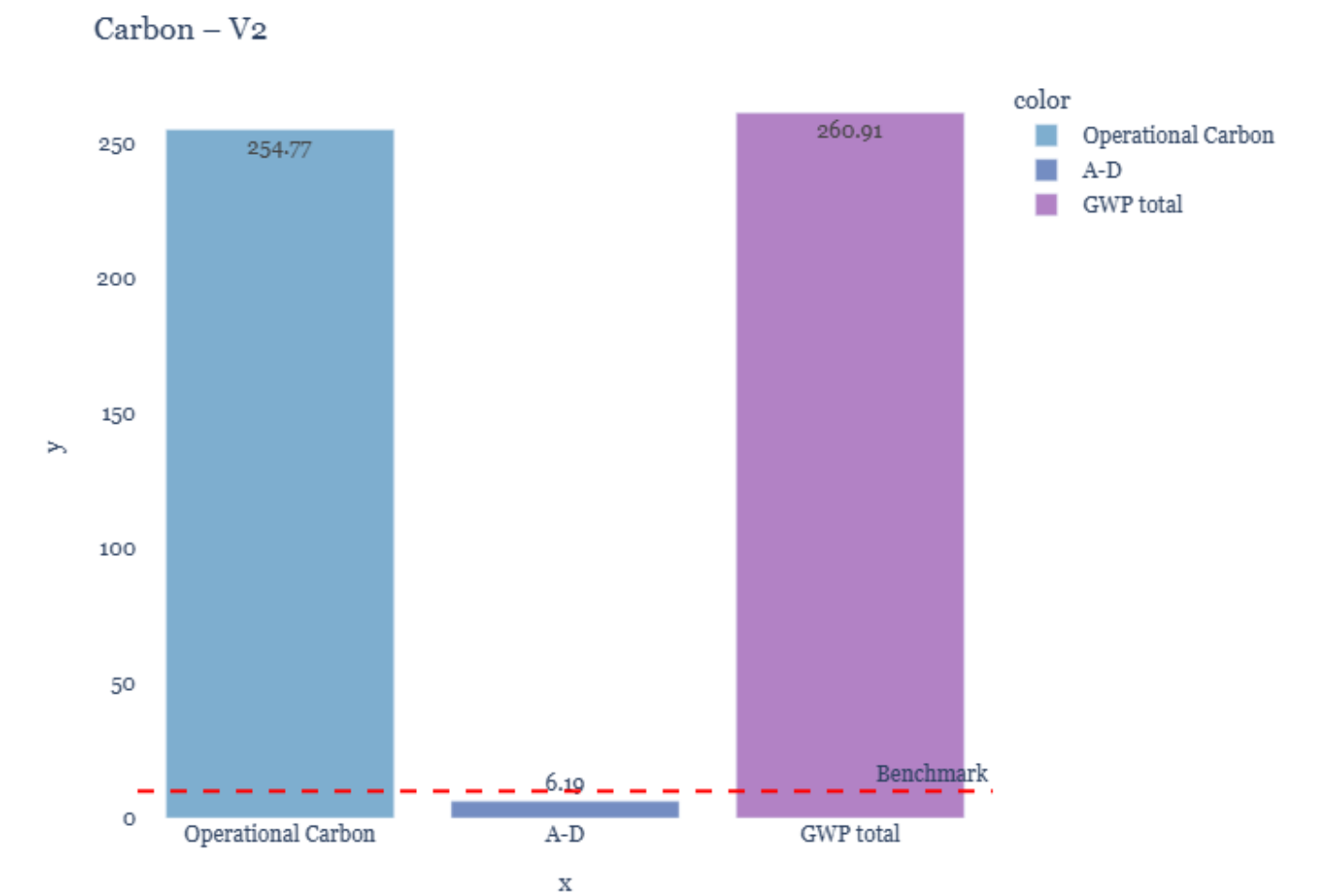
The Energy Performance report for the project indicates a building energy intensity of 566.15 kWh/m²a, with cooling and heating demands of 231.38 and 231.87 kWh/m²a respectively. The operational carbon emissions are at 254.77 kg CO₂e/m²a GFA, while the embodied carbon from materials A1-A3 and A-D totals to 3.04 and 6.19 kg CO₂e/m²a GFA, leading to a total Greenhouse Gas Protocol (GWP) of 260.91 kg CO₂e/m²a GFA. This data emphasizes the importance of sustainable architecture in reducing environmental impact.





Carbon Emissions – V2

The data provided outlines the carbon emissions for a specific building, including operational and embodied carbon. The operational carbon emission is 254.77 kg CO₂e per square meter of gross floor area (GFA), which accounts for energy consumption during its operation. Embodied carbon from materials used in construction amounts to 3.04 kg CO₂e/m² GFA for components A1-A3 and 6.19 kg CO₂e/m² GFA for components A-D, resulting in a total greenhouse gas emissions of 260.91 kg CO₂e/m² GFA. This comprehensive analysis helps in understanding the building's environmental impact and can guide decisions towards sustainability.





Input Parameters

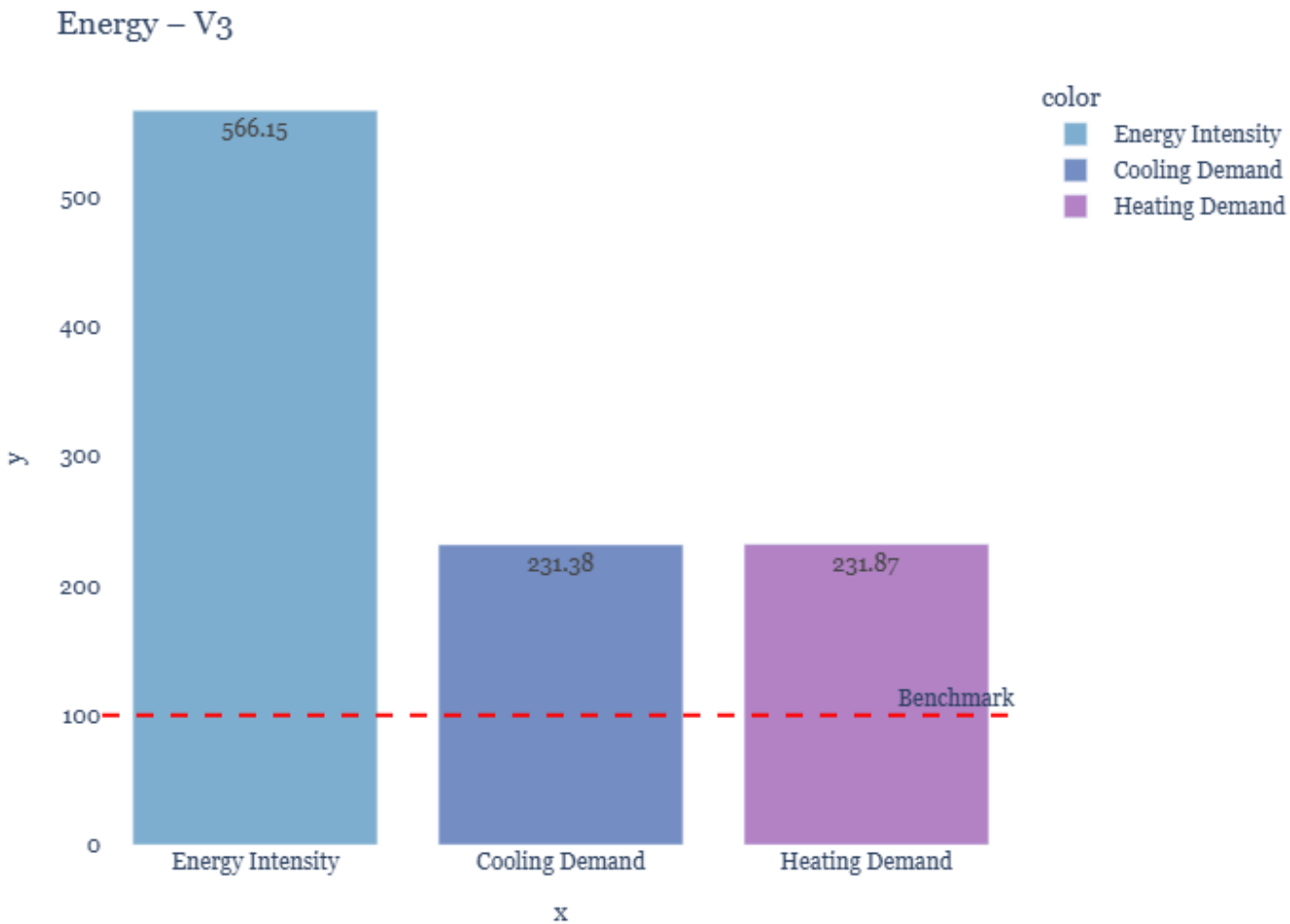
Typology: L-Shape	Window To Wall Ratio: High Glazing
Ext.Wall Partition: Timber_mass	Ext.Wall Insulation: Cellulose
Int.Wall Partition: Earth	Ext.Slab Insulation: Extruded_Glas
Int.Slab Partition: Timber_mass	Roof Partition: Timber_mass
Roof Insulation: Mineral_wool	Beams & Columns: Concrete
Volume: 14573.601588204696	Compactness: 0.389
Shape Efficiency: 0.181	

The design approach for this version V3 is centered around creating a sustainable and energy-efficient building, with an emphasis on high glazing ratios and the use of materials like timber mass, cellulose insulation, and mineral wool for roof insulation. This combination aims to maximize natural light while minimizing energy consumption.



Energy Performance – V3

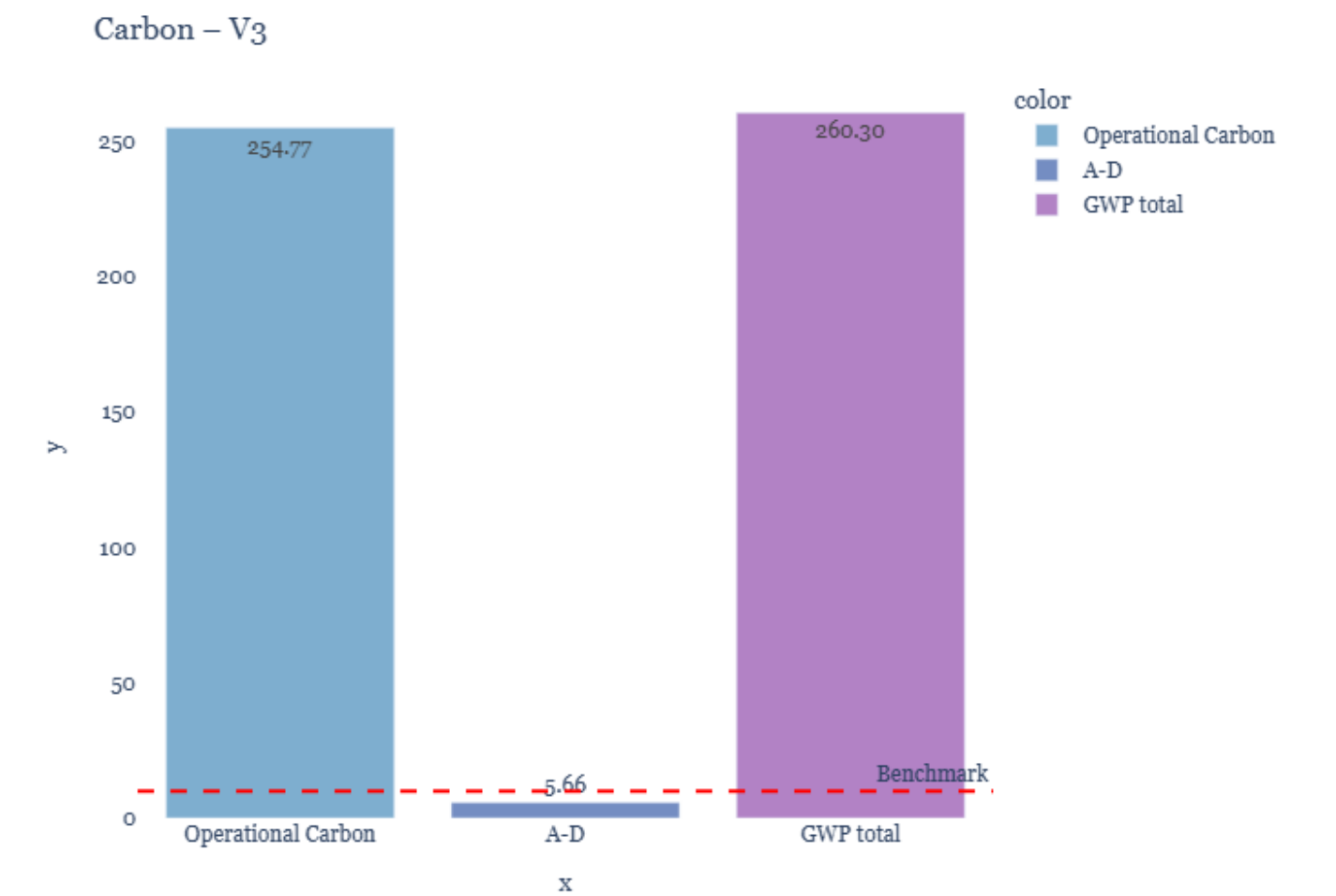
The energy performance data for the building indicates a significant focus on sustainability. The Energy Intensity, measured at 566.15 kWh/m²a, is relatively low compared to similar structures. Cooling and heating demands are balanced at 231.38 and 231.87 kWh/m²a respectively, suggesting efficient systems in place. Carbon emissions from operational activities total 254.77 kg CO₂e/m²a GFA, with embodied carbon for materials A1-A3 contributing an additional 0.25 kg CO₂e/m²a GFA. The overall Greenhouse Gas Potential (GWP) is 260.3 kg CO₂e/m²a GFA. This data highlights the building's commitment to environmental sustainability.





Carbon Emissions – V3

The Carbon Emissions report for V3 highlights the building's energy and carbon performance. With an Energy Intensity of 566.15 kWh/m²a, it requires a significant amount of energy for both cooling and heating demands. The operational carbon emissions are substantial at 254.77 kg CO₂e/m²a GFA, while embodied carbon from materials used in construction totals around 5.66 kg CO₂e/m²a GFA. This brings the total Greenhouse Gas Potential (GWP) to approximately 260.3 kg CO₂e/m²a GFA. These figures emphasize the importance of sustainable architecture and building practices for reducing environmental impact.





Input Parameters

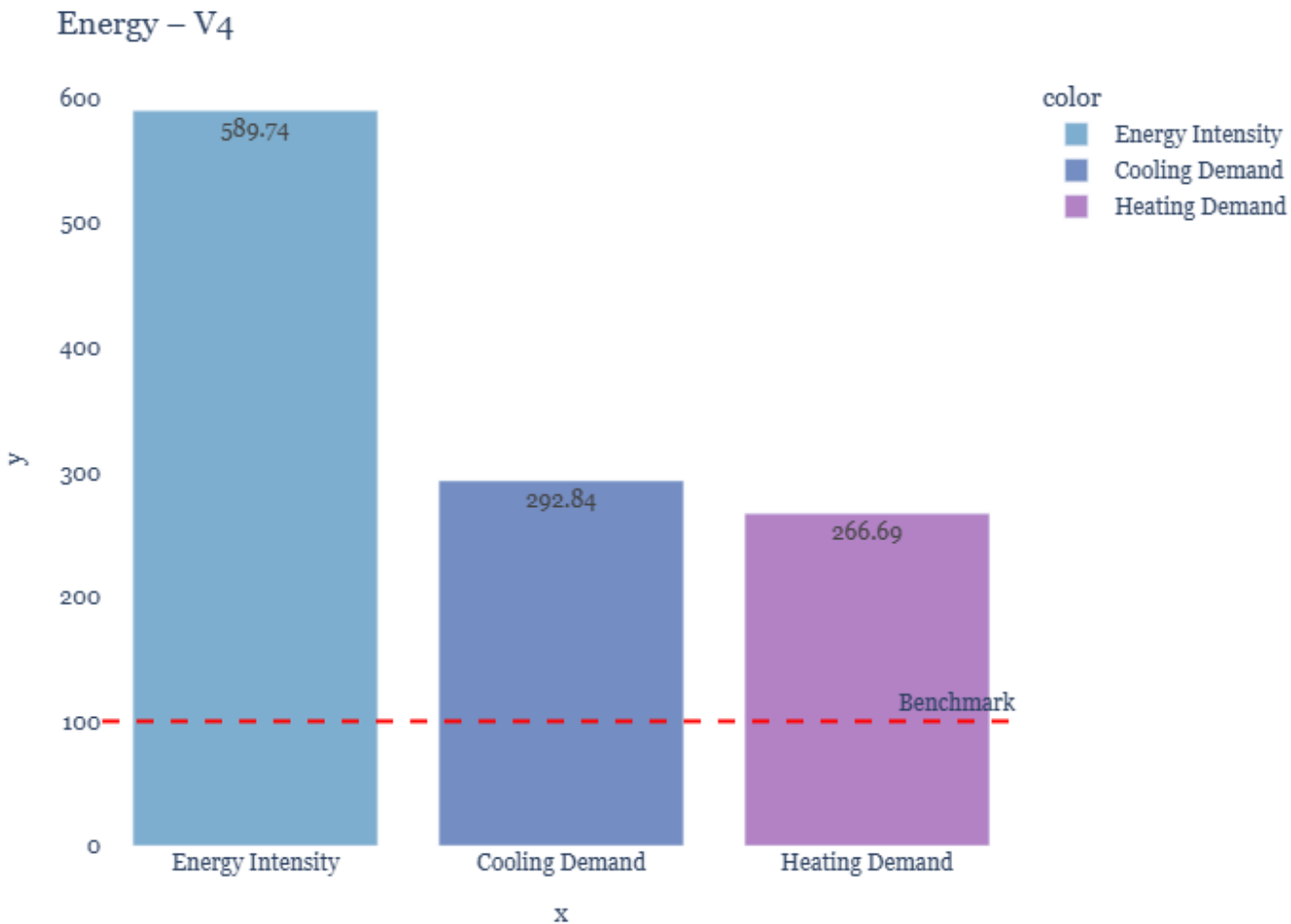
Typology: L-Shape	Window To Wall Ratio: High Glazing
Ext.Wall Partition: Brick	Ext.Wall Insulation: Cellulose
Int.Wall Partition: Brick	Ext.Slab Insulation: Extruded_Glas
Int.Slab Partition: Concrete	Roof Partition: Concrete
Roof Insulation: Cellulose	Beams & Columns: Timber
Volume: 2579.2527537158917	Compactness: 0.443
Shape Efficiency: 1.0	

The design approach for this building focuses on achieving a high level of sustainability by incorporating elements such as high glazing ratios, cellulose insulation in exterior walls and slab, and timber beams and columns. The use of brick partitions for both interior and exterior walls adds thermal mass, while the concrete slab and roof provide a solid base for structural support.



Energy Performance – V4

The energy performance of the building is characterized by an Energy Intensity - EUI of 589.74 kWh/m²a, with significant demands for cooling and heating at 292.84 and 266.69 kWh/m²a respectively. The operational carbon footprint amounts to 265.38 kg CO₂e/m²a GFA, while the embodied carbon from construction materials is estimated at 5.8 kg CO₂e/m²a GFA. The total Greenhouse Gas emissions (GWP) are calculated to be 262.03 kg CO₂e/m²a GFA. This data highlights the importance of sustainable design and energy-efficient systems in reducing environmental impact.

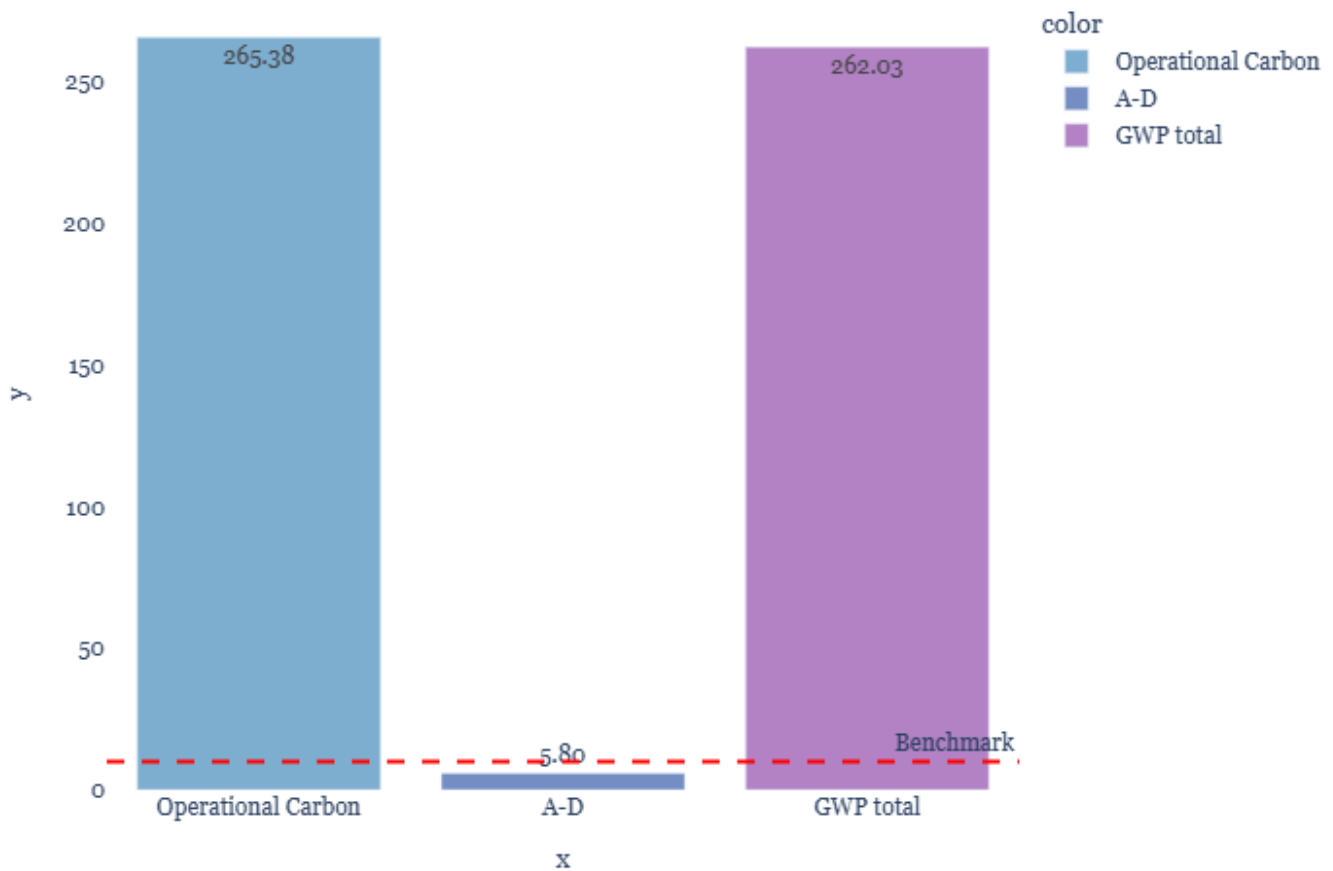




Carbon Emissions – V4

The summary for the report section titled: Carbon Emissions – V4, provides detailed insights into the carbon footprint of a building. The Energy Intensity is 589.74 kWh/m²a, indicating high energy consumption. Cooling and heating demands are also significant at 292.84 and 266.69 kWh/m²a respectively. Operational Carbon emissions amount to 265.38 kg CO₂e/m²a GFA, while Embodied Carbon for A1-A3 and A-D categories stand at 2.85 and 5.8 kg CO₂e/m²a GFA, respectively. The total GWP (Global Warming Potential) is estimated at 262.03 kg CO₂e/m²a GFA. This data highlights the need for sustainable design strategies to reduce carbon emissions in building operations.

Carbon – V4





Input Parameters

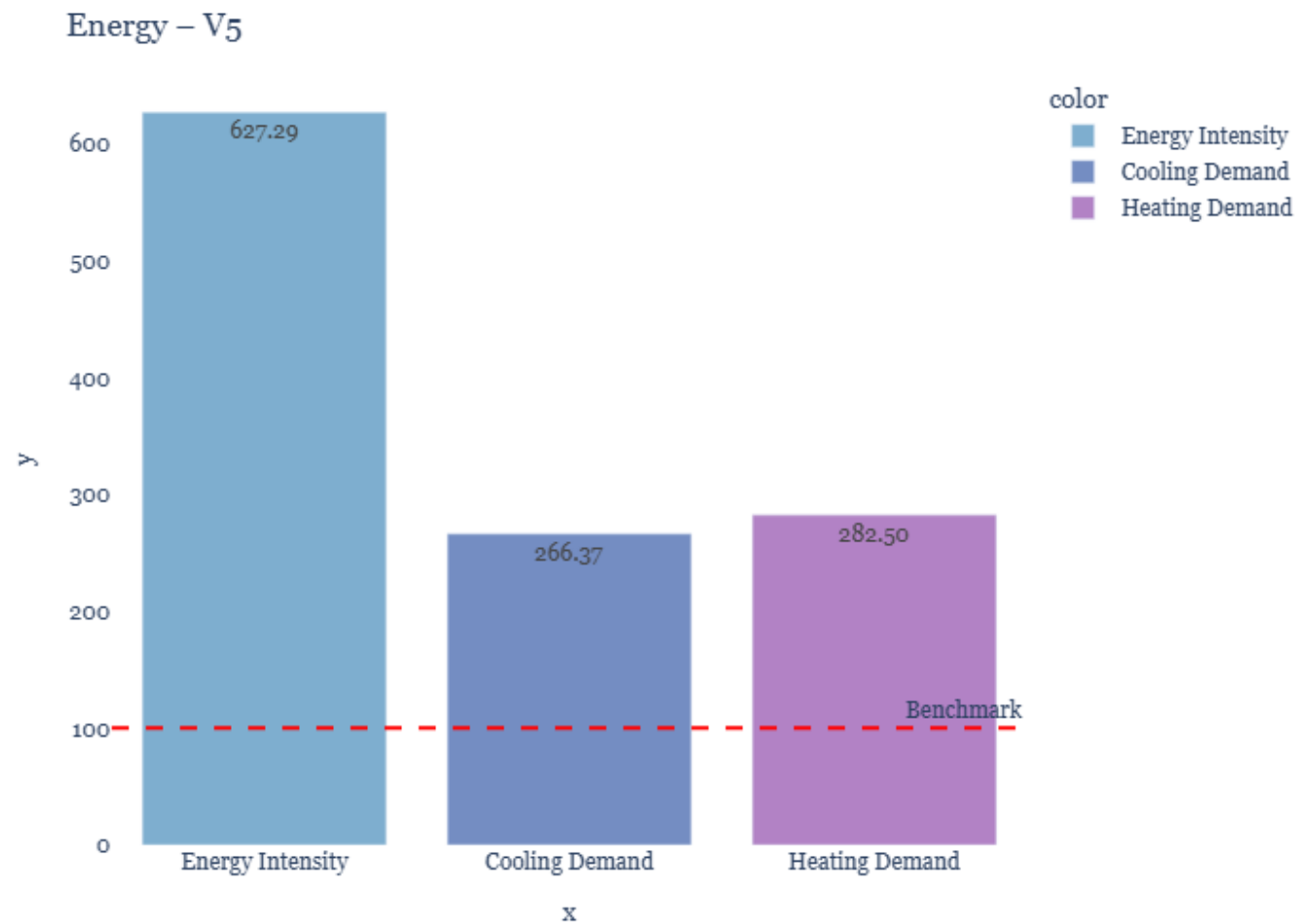
Typology: L-Shape	Window To Wall Ratio: High Glazing
Ext.Wall Partition: Brick	Ext.Wall Insulation: Cellulose
Int.Wall Partition: Brick	Ext.Slab Insulation: Extruded_Glas
Int.Slab Partition: Concrete	Roof Partition: Concrete
Roof Insulation: Cellulose	Beams & Columns: Timber
Volume: 106675.65277004783	Compactness: 0.22
Shape Efficiency: 0.311	

The design approach for this version V5 is centered around optimizing energy efficiency through high glazing and strategic insulation choices. The use of cellulose in exterior walls and extruded glass in the slab ensures thermal performance, while timber for beams and columns adds a touch of sustainability. This compact and efficient design minimizes environmental footprint.



Energy Performance – V5

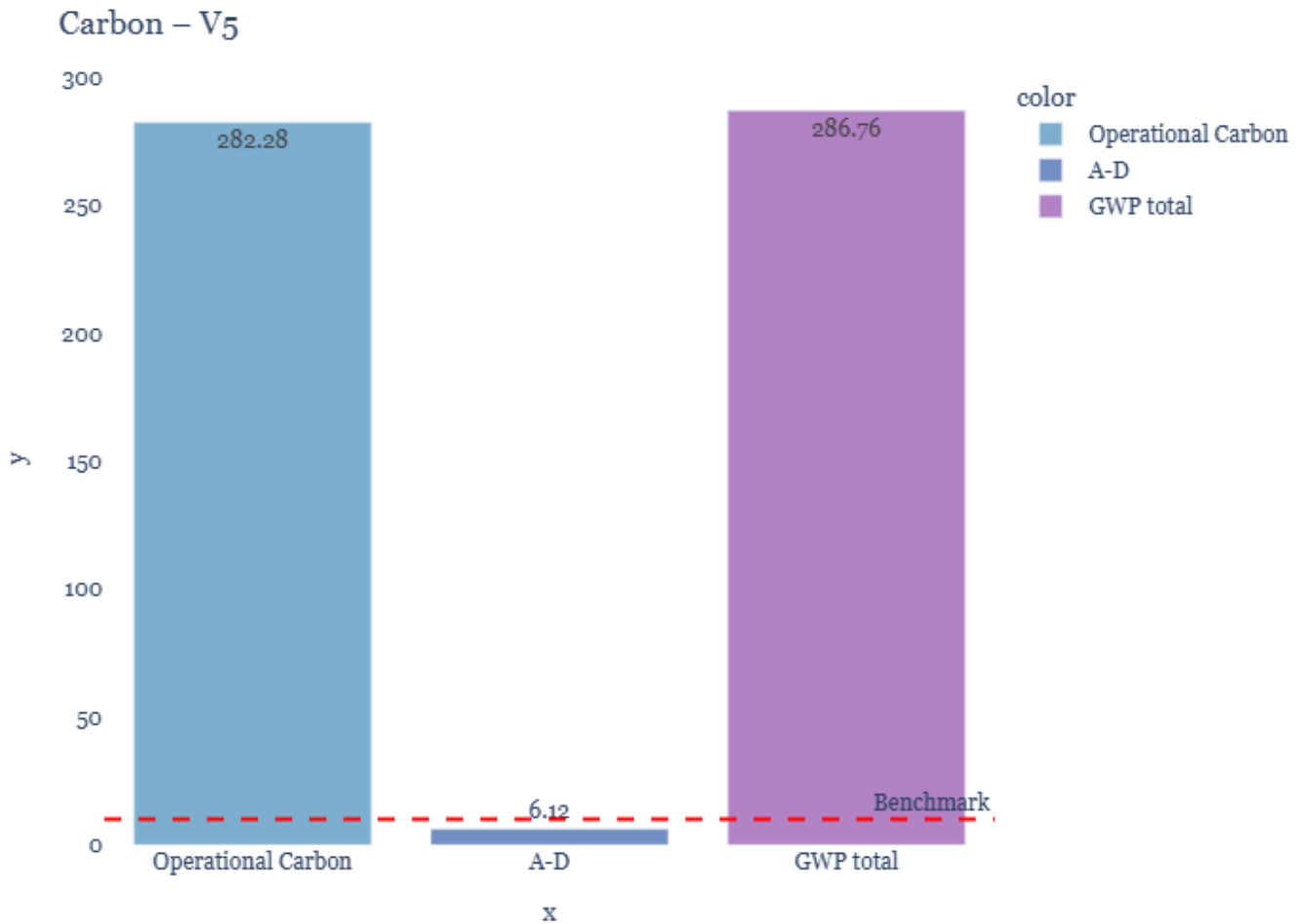
The energy performance data for the building indicates an Energy Intensity of 627.29 kWh/m²a, with significant demands on cooling and heating at 266.37 and 282.5 kWh/m²a respectively. The operational carbon footprint is calculated at 282.28 kg CO₂e/m²a GFA, including embodied carbon from materials used in construction stages A1-A3 and A-D, totaling 3.05 and 6.12 kg CO₂e/m²a GFA respectively. Overall, the building's total Greenhouse Gas Potential (GWP) is 286.76 kg CO₂e/m²a GFA. This data highlights key areas for optimizing energy efficiency and reducing environmental impact in future designs or operational adjustments.





Carbon Emissions – V5

The report section titled: Carbon Emissions – V5, provides detailed data on the carbon emissions of a building. The energy intensity is 627.29 kWh/m²a, with cooling and heating demands at 266.37 kWh/m²a and 282.5 kWh/m²a respectively. Operational carbon emissions amount to 282.28 kg CO₂e/m²a GFA, while the embodied carbon for materials A1-A3 and A-D is 3.05 kg CO₂e/m²a GFA and 6.12 kg CO₂e/m²a GFA, respectively. The total greenhouse gas emissions (GWP) are 286.76 kg CO₂e/m²a GFA. This comprehensive data helps in understanding the environmental impact of the building's operations and construction.





Input Parameters

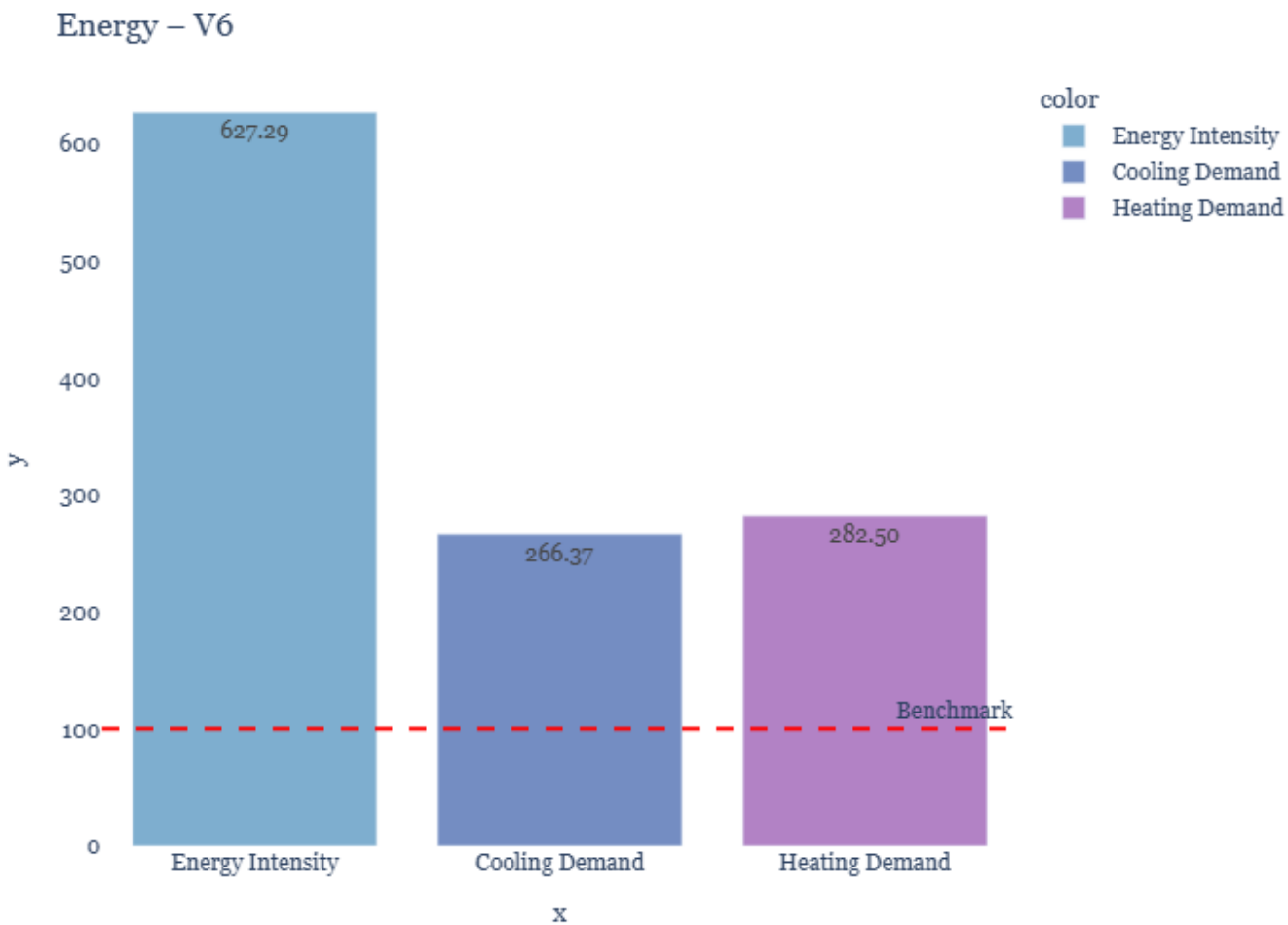
Typology: L-Shape	Window To Wall Ratio: High Glazing
Ext.Wall Partition: Brick	Ext.Wall Insulation: Cellulose
Int.Wall Partition: Brick	Ext.Slab Insulation: Extruded_Glas
Int.Slab Partition: Concrete	Roof Partition: Concrete
Roof Insulation: Cellulose	Beams & Columns: Timber
Volume: 113921.34596501723	Compactness: 0.21
Shape Efficiency: 0.268	

The design approach for version V6 focuses on maximizing natural light through a high window-to-wall ratio, while also prioritizing insulation and energy efficiency with the use of cellulose in external walls and an extruded glass slab. The incorporation of timber beams and columns adds to the sustainability context by reducing carbon footprint.



Energy Performance – V6

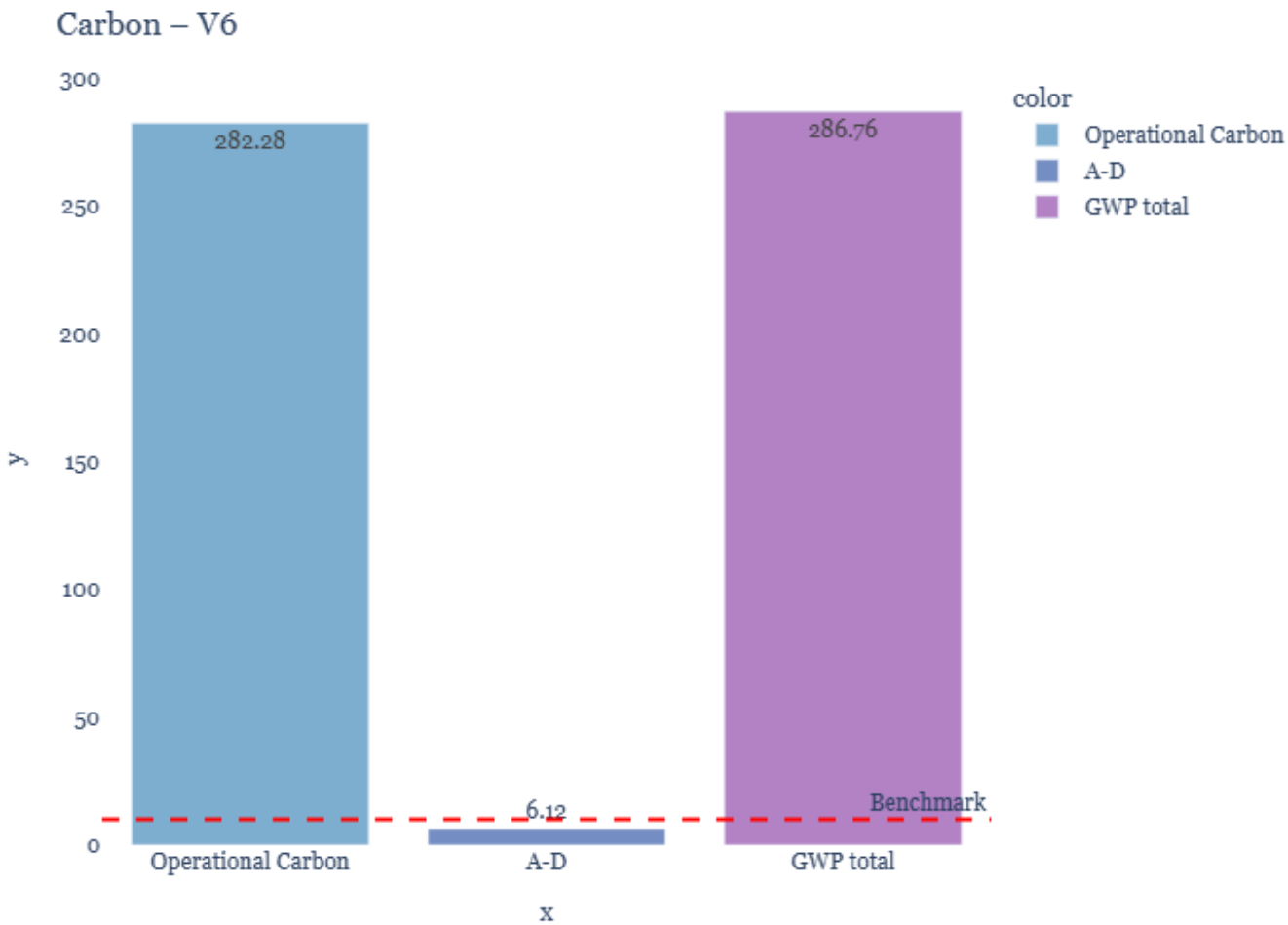
The Energy Performance report for V6 highlights several key metrics, including an Energy Intensity of 627.29 kWh/m²a, with notable cooling and heating demands at 266.37 and 282.5 kWh/m²a respectively. The operational carbon footprint is 282.28 kg CO₂e/m²a GFA, while embodied carbon for the building's materials totals 3.05 kg CO₂e/m²a GFA for A1-A3 components and 6.12 kg CO₂e/m²a GFA for A-D components. The total Greenhouse Gas Emissions (GWP) amount to 286.76 kg CO₂e/m²a GFA. This data provides a comprehensive overview of the building's energy performance and environmental impact.





Carbon Emissions – V6

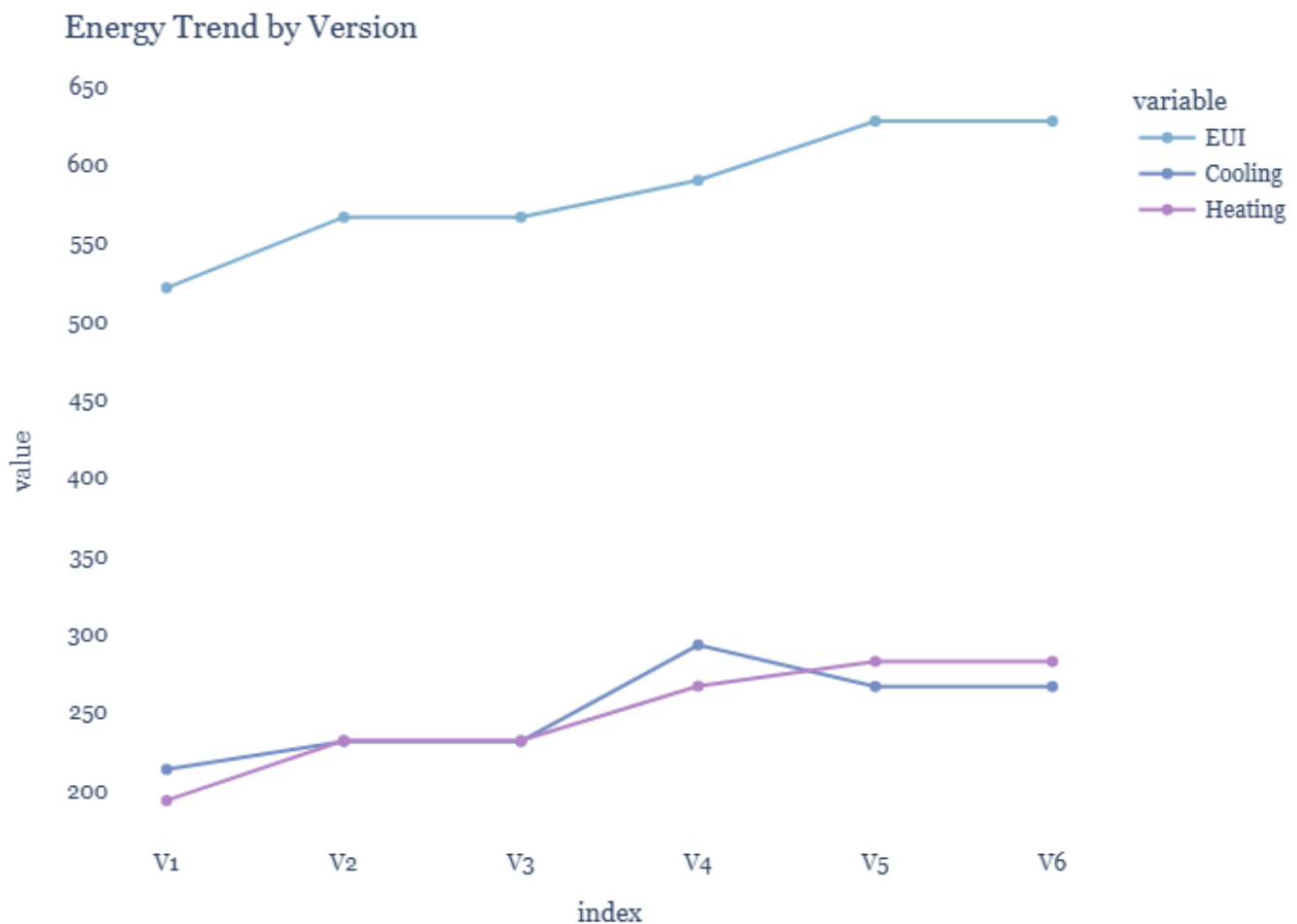
The data provided for the report section on Carbon Emissions – V6 highlights several key metrics related to a building's energy usage and carbon footprint. The Energy Intensity, measured in kWh/m²a, is 627.29, indicating the total energy consumed by the building per square meter annually. Additionally, the report shows significant cooling and heating demands of 266.37 and 282.5 kWh/m²a, respectively. Operational Carbon emissions amount to 282.28 kg CO₂e/m²a GFA, while Embodied Carbon for the structure (A1-A3) is 3.05 kg CO₂e/m²a GFA. The total Greenhouse Gas Potential (GWP) comes to 286.76 kg CO₂e/m²a GFA. This comprehensive data offers insights into the building's environmental impact and potential areas for improvement in terms of sustainability.





Energy Trend by Version

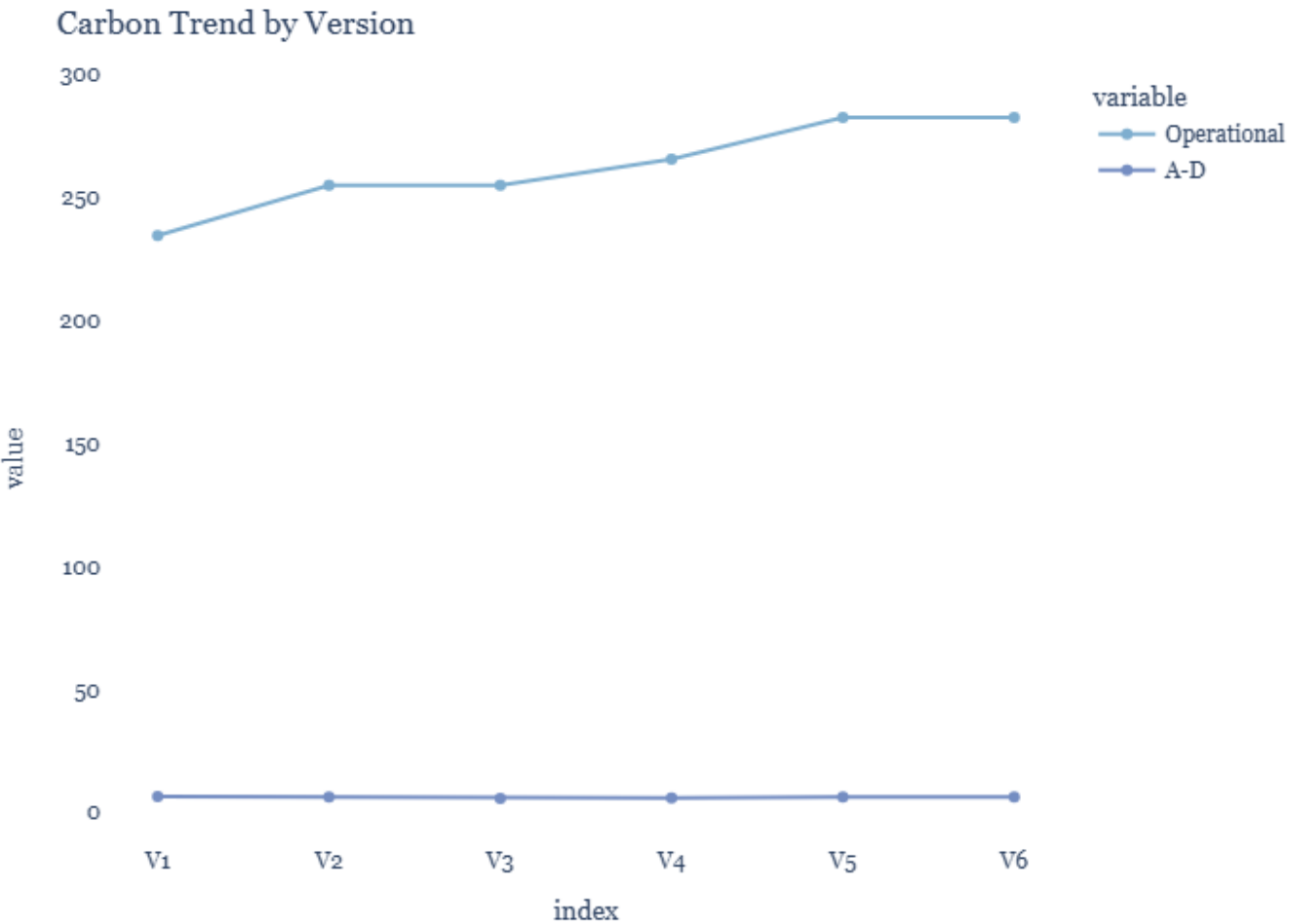
The Energy Trend by Version section of the report provides a detailed analysis of energy consumption trends across different versions of a building system. The data includes metrics for EUI (Energy Use Intensity), Cooling, and Heating requirements for each version from V1 to V6. Notably, the EUI increases steadily from 520.94 kWh/m² in Version 1 to 627.29 kWh/m² in Versions 5 and 6, indicating a consistent rise in energy consumption over these versions. Cooling requirements also show an upward trend, with the highest demand observed in Version 4 at 292.84 kWh/m². Heating demands vary across versions but generally increase from Version 2 onwards, reaching the highest point in Version 6 at 282.5 kWh/m². This suggests that as newer versions are adopted, both cooling and heating requirements become more significant. This information is crucial for architects and builders seeking to optimize energy efficiency in their designs by understanding how different system versions impact energy consumption.





Carbon Trend by Version

The Carbon Trend by Version report section provides insights into the carbon emissions of buildings across various versions. For operational emissions, version V1 had the lowest at 234.42 kgCO₂e/m²/yr, increasing to 282.28 kgCO₂e/m²/yr for versions V5 and V6. Versions V2 and V3 also share a common emission rate of 254.77 kgCO₂e/m²/yr. The A-D category shows similar trends with varying rates. This data highlights the importance of considering version-specific factors in sustainable building design to minimize environmental impact.





GWP Trend by Version

The Global Warming Potential (GWP) trend by version data indicates a gradual increase in GWP values across different versions, starting from Version 1 to Version 5 and then stabilizing at Version 6. The initial value was approximately 240.81 for Version 1, which increased to around 288.4 by Version 6. This trend suggests that the impact of greenhouse gas emissions has been consistently assessed as more significant over time, emphasizing the need for sustainable architecture solutions.

