ENERGY ANALYSIS REPORT BASED ON INSULATION SCENARIO 1

Introduction

This document presents a detailed energy analysis based on the implementation of insulating materials in an existing building. The aim is to evaluate the impact of the selected materials on energy efficiency and thermal performance.

For clarity, the "demands" in the results refer to the amount of energy required by the building to maintain thermal comfort conditions:

- **Heating demand**: Represents the energy required to heat the building's interior spaces during the cold season. It depends on the thermal characteristics of the building envelope and external climatic conditions.
- **Cooling demand**: Represents the energy required to cool the building's interior spaces during the hot season. It is influenced by thermal insulation, solar exposure, and the efficiency of cooling systems.
- **Total energy consumption**: The combined sum of heating and cooling demands, representing the overall efficiency of the building.

Pre-Intervention Situation

The pre-intervention situation serves as the baseline for comparing the improvements introduced by various insulating materials.

- **Heating demand:** 22,391.14 kWh
- **Cooling demand:** 5,653.35 kWh
- **Total energy consumption:** 7,482.2 kWh

Scenario 1: Polyurethane Foam with Glass Fiber

- **Thermal conductivity:** 0.026 W/mK
- **Price:** €32.79/m^2
- **Applied thickness:** 25.92 mm
- **Energy results:**
    - **Heating demand:** 7,520.06 kWh
    - **Cooling demand:** 5,976.5 kWh
    - **Total energy consumption:** 3,872.2 kWh