

CASE STUDY



Modern 4-Star Hotel Enhancing Comfort Through Smart Energy Design

PROJECT OVERVIEW

A comprehensive energy audit uncovered key savings across heating, ventilation and lighting. Celtic Dynamics delivered a turnkey upgrade including multi-pipe heat pumps, AHU replacements, full LED retrofit and dishwasher heat recovery with minimal disruption to hotel operations. The project achieved a **6.5-year payback**, with the dishwasher system alone **returning savings in just 2.7 years**.

These measures significantly reduced energy consumption and carbon emissions, helping the hotel meet EU sustainability targets and strengthen ESG credentials. The upgrades support compliance with CSRD and ISO standards, future-proof operations for renewable integration, and enhance guest comfort while unlocking long-term cost saving.

RESULTS & IMPACT

These upgrades achieved a **6.5-year total project payback** while delivering substantial **long-term energy and cost savings**. The improvements enhanced guest comfort, reduced environmental impact, and positioned the hotel for future renewable integration and **enhanced ESG performance**.

ANNUAL SAVINGS



Save €
€365,000



Energy
1.8 million kWh



Carbon
451 t CO₂

Boutique Hotel Enhances Efficiency with Smart Energy Upgrades

RESULTS & IMPACT

The project achieved a **6.1-year payback**, with significant reductions in energy use, emissions and maintenance costs. Comfort standards were maintained throughout, and the hotel strengthened its sustainability credentials aligning with EU ESG requirements and positioning for future renewable integration.

PROJECT OVERVIEW

A boutique hotel partnered with Celtic Dynamics to **enhance building efficiency, reduce costs, and improve guest comfort**.

A detailed energy audit identified key opportunities across HVAC, lighting, and controls. Upgrades included HVAC optimisation, full LED retrofit, and advanced zoning and scheduling controls implemented with SEAI funding to **maximise energy and carbon savings**.

ANNUAL SAVINGS



Save €
€96,275



Energy
963,716 kWh



Carbon
226.35 tCO₂

Family Hotel Boosts Efficiency with Sustainable Energy Upgrades

PROJECT OVERVIEW

This family run hotel partnered with Celtic Dynamics to **cut energy use, boost efficiency, and meet long-term sustainability goals.**

A targeted energy audit identified key upgrades across heating, lighting, and controls. Celtic Dynamics delivered LED lighting, system zoning, and fabric improvements to **reduce heat loss and enhance comfort** backed by SEAI grant funding to **maximise value and accelerate payback.**

RESULTS & IMPACT

The upgrades achieved a **4.8-year total project payback**, with measurable **energy and carbon savings**. The works enhanced **building performance, reduced operational costs**, and created a **more comfortable environment** for guests and staff.

ANNUAL SAVINGS



Save €
€45,531



Energy
628,257 kWh



Carbon
172 tCO₂

Energy Retrofits Boost Compliance for Full-Service Hotel

RESULTS & IMPACT

The project achieved a **5.7-year payback** with significant reductions in energy and gas use. Operational **costs fell, comfort improved**, and **carbon savings** strengthened the hotel's ESG profile aligning with EU compliance and paving the way for future renewable integration.

PROJECT OVERVIEW

Celtic Dynamics partnered with a full-service hotel to deliver a targeted energy upgrade.

A detailed assessment identified opportunities across mechanical and electrical systems, leading to the installation of heat pumps, AHU enhancements, VSDs on chillers, and PIR lighting.

Additional improvements included pool system optimisation, kitchen upgrades, and enhanced BMS monitoring for ongoing performance gains.

ANNUAL SAVINGS



Save €
€181,851



Energy
1.99 million kWh



Carbon
464.64 tCO₂