



CASE STUDY

Off-Grid Heating and Energy Solution for a Stone Barn Renovation in Mid Wales

CASE STUDY DELIVERED BY



Overview



Project Overview

Our client approached MJS Energy to design and implement a renewable energy solution for their renovated stone barn in Mid Wales. Their objective was to establish a heating and hot water system without reliance on fossil fuels, ensuring an energy-efficient and sustainable home.

Challenges

- The property required a completely new heating and electrical system.
- The client sought a low-temperature heating solution to enhance energy efficiency.
- The solution needed to integrate seamlessly with both a heat pump and solar power generation.
- The system had to provide underfloor heating, hot water, and electricity storage to maximize self-sufficiency.

Solution: Whisper Heliotherm Heat Pump & Solar PV System

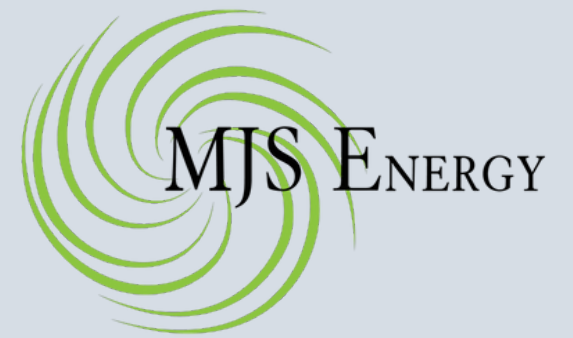
MJS Energy developed a comprehensive turnkey energy system tailored to the client's needs. The solution included:

1. Heating and Hot Water System

- Heat Pump: Heliotherm Whisper Airforce R290 heat pump, designed for maximum efficiency.
- Hot Water Storage: A 300-litre fresh hot water tank.
- Heating Distribution:
 - Underfloor heating throughout the property.
 - One radiator installed in the bedroom for additional comfort.

2. Solar PV and Battery Storage

- PV System: 6.9kW solar array featuring 16 x Trina 430W bifacial panels.
- Inverter: Midea 5kW hybrid inverter.
- Battery Storage: 20kWh capacity utilising four Midea 5kWh low-voltage battery modules.



Key Benefits

- Sustainable Energy Production: The solar PV system generates electricity, reducing reliance on the grid.
- Optimized Energy Costs: The client benefits from free electricity during the day and can charge batteries using a cheaper nighttime tariff.
- Ultra-Efficient Heating: The Whisper heat pump runs as low as 1.5 pence per kilowatt-hour, compared to fossil fuel alternatives costing 8-10 pence per kilowatt-hour.
- Year-Round Comfort: The combination of underfloor heating and a highly efficient hot water system ensures consistent comfort throughout the property.

Conclusion

MJS Energy successfully designed, supplied, and installed a fully integrated, renewable energy solution for the client's home. This project highlights our expertise in creating efficient, cost-effective, and sustainable heating and electrical solutions, demonstrating the potential for off-grid living without reliance on fossil fuels.

