



# RED WoLF

Rethink Electricity Distribution Without Load Following



## Creating an AI-driven Hybrid Storage System merging batteries and storage heaters with solar panels and the Power Grid

### OBJECTIVES

The RED WoLF Project aims to increase the use of renewables and reduce CO2 emissions for electrically-heated homes.

Leeds Beckett University is leading the project in collaboration with 15 partner institutions from the UK, France, republic of Ireland, Belgium and Luxembourg.

We are creating and testing an AI-driven Hybrid Storage System combining batteries with cheaper thermal storage to create a cost effective residential storage solution. This system shifts households' energy demand from peak to off-peak times.

A number of benefits will ensue if this solution is widely adopted. Inefficient load-following power plants will be displaced. Renewable energy curtailment will be reduced by providing houses with the greenest, cheapest electricity.



Web

<https://www.nweurope.eu/REDWoLF>



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**Interreg**   
North-West Europe  
**RED WoLF**

European Regional Development Fund

Thematic priority: LOW CARBON

# ACTIVITIES

We designed and are currently implementing an original energy complex (the Hybrid Storage System) in which AI algorithms combine batteries with thermal storage (for both domestic hot water and space heating), with home solar PV and with the Grid connection in North-West Europe homes.

The algorithms run on the Project server located with Project Partner Institute of Technology Sligo: instructions, based on the energy usage monitored in the house, are computed and sent back to/implemented in the dwelling through a data connection, a Programmable Logic Controller and a set of switches.

This strategy maximizes the intake of renewables in the houses by picking the time intervals during which the CO2 content of Grid's electricity is the lowest, thus creating demand for green electrical energy otherwise curtailed. This, on the other side, reduces homes' demand at peak times and therefore the need for inefficient, carbon-intensive peak generation.

RED WoLF houses adapt automatically to the Power Grid with no intervention required from dwellers. Our Hybrid Storage System is being implemented in 100 Pilot houses in France (Neolia Pilot in Montbeliard, Doubs); UK (Oldham Borough Council and First Choice Homes Oldham Pilots in Greater Manchester); Ireland (Cork City Council's and Carbery Housing Association's Pilots in County Cork); and Luxembourg (Pilot owned by Energiepark Reiden).

## RED WoLF COMPONENTS

- PV Solar array

Generate renewable energy from the sun.

- Energy Storage

Storage enables the household to shift energy demand in time. Batteries store energy for powering appliances. Storage heaters and water cylinder convert electricity to stored thermal energy to provide, respectively, space heating and hot water.

- Smart Storage Driver

AI software that maximizes PV self-consumption and the intake of lowvalue, low carbon electricity by shifting demand to off-peak times. This will reduce CO2 emissions and electricity bills

### DURATION

2019 - 2022

### PROJECT BUDGET

Total: € 6.06 million  
EU funding (ERDF): € 3.64 million

PROJECT AREA

### PARTNERS

UK | IE | FR | BE | LU

