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Gas Networks Ireland

Case study

Natural gas in combination with solar panels allows 'A' rated homes to exceed NZEB requirements

Ashcroft Developments used a combination of natural gas and solar photovoltaic (PV) panels in their Berford development in Duleek, County Meath to ensure full compliance with Part L (Conservation of Fuel and Energy) of the building regulations. As the volume of renewable gas entering the gas network increases, homeowners of these energy efficient homes will continue to decarbonise their homes, reducing their carbon footprint and supporting Ireland's cleaner energy future.

Benefits of natural gas and solar PV panel solution:

- Lower energy costs for homeowners
- Meets Part L building regulations/NZEB
- PV panels provide renewable energy
- Ready for renewable gases such as biomethane and hydrogen
- Compatible with modern heating controls
- Warm, energy efficient A2 BER rated homes

Berford, Duleek, County Meath

Delivering new sustainable developments

Ashcroft Developments are an Irish owned residential development company with extensive experience of delivering high quality homes in the Dublin commuter belt.

Delivering professionally designed, and quality-built homes is a core principle of Ashcroft developments, so using a range of technologies to meet and exceed the energy requirements of the building regulations aligned hugely with their company ethos.

By implementing exceptional insulation standards, photovoltaic solar energy systems, high efficiency gas boilers and demand-controlled ventilation systems, Ashcroft Developments were able to deliver an affordable A rated development for home buyers. In addition, this sustainable development will benefit from the future decarbonisation of the national gas network as more renewable gas is introduced.

What is the NZEB standard?

NZEB stands for Nearly Zero Energy Buildings. An NZEB building is a building that has a very high energy performance. The nearly zero, or very low amount of energy required, should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby.

The NZEB standard comes from the Technical Guidance Document Part L of the Building Regulations and this is set out by the Department of Housing, Local Government and Heritage.

This guidance document sets out the requirements for the building elements, including levels of insulation, window details, thermal bridging, ventilation and the heating system, as well as renewable energy requirements.

The NZEB standard applies to all new buildings occupied after 31st December 2020.

High efficiency gas boiler

A Glow-worm Easicom 3 25s gas boiler is a highly efficient modern condensing boiler. The compact dimensions of this boiler allow it to be concealed neatly within most kitchen or utility cupboards.

Windows and air tightness

Double-glazed, argon filled PVC windows installed, eliminating draughts and heat loss.

Heating solution features

- JA Solar 375W high efficiency panels
- Low maintenance renewable technology
- Potential future income generation through the introduction of the government Micro-generation Support Scheme

How does the building perform?

The figures below outline the performance of the building when assessed using the Dwelling Energy Assessment Procedure (DEAP) and demonstrates compliance with Part L (NZEB), achieving the required A2 standard.

Building Energy Rating Parameters	Part (NZEB) Requirement	DEAP File (Actual)
Floor U-Value W/m²K	0.18	0.13
Wall U-Value W/m²K	0.18	0.15
Roof U-Value	0.16	0.11
Window U-Value	1.40	1.20
Door U-Value	1.40	1.40
Air Permeability m³/hr/m²	5	5
Thermal Bridging Factor W/m²K	0.08	0.08
Carbon Performance Coefficient (CPC)	0.35	0.246
Energy Performance Coefficient (EPC)	0.30	0.286
Renewable Energy Ratio (RER)	0.20	0.33
Boiler Efficiency	0.90	0.90

"Natural gas remained our energy source of choice, as it is familiar to our homeowners and will allow them to continue to decarbonise their homes into the future using renewable gas."

Damien Kennedy, Project Manager, Ashcroft Developments

Renewable Energy Ratio

To comply with part L of the building regulations, a minimum of 20% of the building's energy must be provided via renewable technologies. This is measured in the form of a renewable energy ratio (RER). The technologies leveraged in this development ensured that the RER was exceeded by 65%.

Increased Thermal Bridging Factor performance

Ashcroft Developments are committed to quality design and construction standards, focusing on key areas of the build process to ensure heat loss from the building fabric is minimised. This includes rigidly maintaining the necessary construction practices as laid out in the Acceptable Construction Details (ACDs). By following these guidelines, a nondefault value of 0.08 W/m²K can be entered for the Thermal Bridging Factor into DEAP.

Meets Part L compliance easily

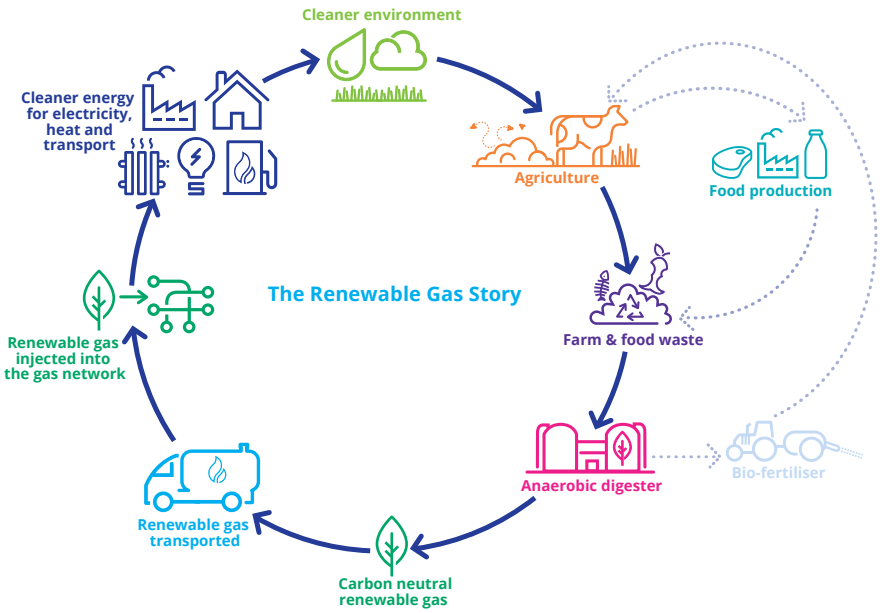
The combination of natural gas, PV panels and high standards of insulation is a cost effective approach that allow this development surpass all of the Part L Building Regulation requirements. With natural gas, homeowners are guaranteed a fully proven 'A' rated solution.

Natural Gas – A unique selling point

Natural gas is reliable. It provides instantaneous heating and hot water and is easy to control. The NZEB compliant insulation standards used in these homes, combined with PV panels, will offer homeowners one of the most modern, comfortable and cost-efficient heating systems on the market.

Natural gas combined with smart heating controls will also enable homeowners to use less energy, support the environment and further reduce their running costs. Combining natural gas with renewable technologies provides a modern heating system for a modern home that is ready for an even cleaner energy future with renewable gas.

What is renewable gas and how does it work?

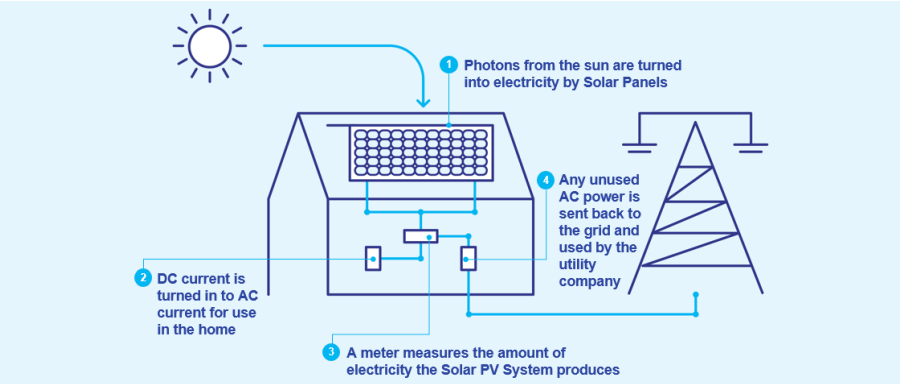


Today, more than 680,000 Irish homes rely on the gas network to provide a safe, reliable, flexible and affordable energy to meet their heating and cooking requirements. In addition, Ireland's gas network generates almost 50% of Ireland's electricity, highlighting the vital role this national asset will play in helping Ireland transition to a cleaner energy future. By gradually replacing natural gas with renewable, carbon neutral and ultimately zero carbon gases, such as biomethane and hydrogen, these same homes and more will be powered by increasingly cleaner energy.

Biomethane, which began flowing on the network in 2019, is the first step on this journey. Produced from agricultural and food waste, this renewable gas is structurally identical to natural gas and can be used in exactly the same way through the existing infrastructure, boilers and appliances, meaning homeowners will transition to this carbon neutral energy and play their part in the decarbonisation of Ireland's home heating sector without changing a thing.

By connecting new homes and developments to the gas network today, you are ensuring that each homeowner will have reliable, affordable and increasingly clean energy keeping them and their families warm and comfortable for generations to come.

Benefits of solar PV panels



Lower energy bills

On average, a solar PV system can save between €200 - €300 per year on a domestic electricity bill *(SEAI 2020).*

Operate all year

Modern, high efficiency solar PV panels operate all year round, ensuring the benefits to the homeowner are not restricted to the summer period.

Reduced emissions

Generating renewable electricity will mean the energy consumed will be clean therefore reducing greenhouse gas emissions.

Whole House Extract Ventilation

Aereco V4A continuous mechanical extract ventilation with humidity control, supplemented with window trickle passive air vents.

High efficiency solar photovoltaic panels

Photovoltaic systems convert solar energy into free electricity. These types of high efficiency panels operate all year round ensuring the benefits to the home owner are not restricted to the periods of warm weather.

What are solar photovoltaic panels?

Solar panels that produce electricity are known as solar photovoltaic (PV) panels.

Solar PV panels capture the light from the sun and convert it into the electricity that can be used in your home to power your television, kettle, toaster, phone and other household appliances.

With the proposed introduction of Micro-generation feed in tariffs, homeowners with PV panels will potentially be able to generate electricity on their roof tops and sell it back to the national electricity grid allowing them to reduce their energy costs.

“Ashcroft Developments is committed to delivering quality developments that will provide homes to buyers for years to come. We believe providing an A2 home today will allow homeowners enjoy unrivalled comfort at the lowest possible running cost. By connecting to the gas network, we believe that they will also continue to reduce the carbon footprint of their homes into the future with renewable gas.”

Damien Kennedy, Project Manager, Ashcroft Developments

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CL5009/02/2022