



Newform Energy™

Redefining Renewables



CASE STUDY

OYSTER REACH WHITSTABLE

INTRODUCTION AND OVERVIEW

Newform Energy has applied its unique technology to achieve an “AA” energy efficiency rating for a commercial build.

The company’s PV-T system has been installed in a new development of five 2-bed apartments, located in the North Kent coastal town of Whitstable, by specialist thin joint block constructor Masonry Frame Systems.

NEWFORM ENERGY TECHNOLOGY	HYBRID SOLAR SOLUTION
Product Specification	30 PV-T Panel System
Industry sector	Construction – domestic residential
Project	New build apartment block
Location	Whitstable, Kent
Contractor / Developer	Masonry Frame Systems
Client	Masonry Frame Systems
Installation by	Subcontractor to Masonry Frame Systems
Date of completion	January 2014
House type[s]	3-storey block of 5 apartments
Application	Roof facing east and west
SAP rating	AA
EPC rating:	
Energy efficiency	A
Carbon emissions	A
CfSH level	4
Energy efficiency level	97%



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NEWFORM ENERGY TECHNOLOGIES DEPLOYED

Photovoltaic thermal hybrid solar collectors, also known as PV-T, are systems that convert solar radiation into thermal and electrical energy.

These combined arrays take up about 35% less roof area than separate PV and thermal panels would for the same capacity and, as an overall system, are less expensive.

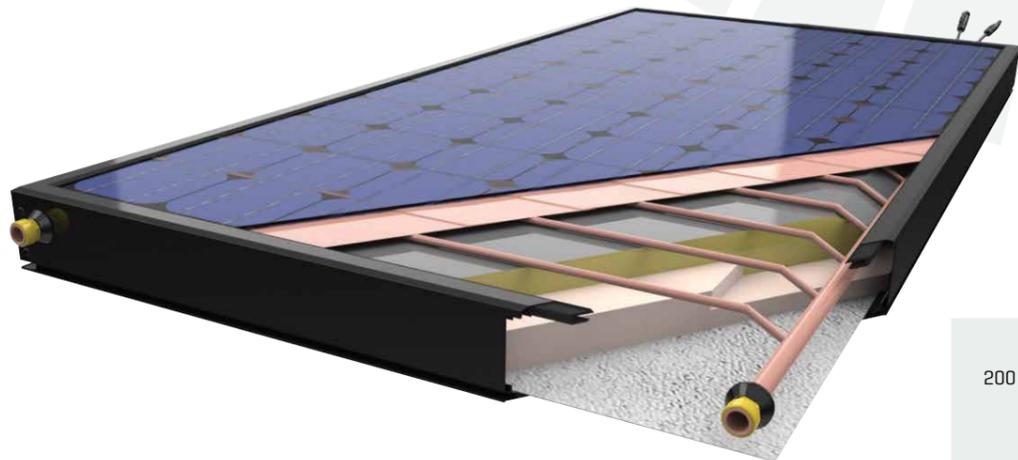
HOW DOES IT WORK?

PV-T combines photovoltaic or PV cells, which create electricity, and solar thermal collectors, which capture the remaining energy and remove waste heat from the panel.

The PV cells are bonded to a copper substrate which conducts the heat away from the PV-T module into a series of pipes and down to the energy store. This keeps the panels cool which enables them to produce significantly more electricity, typically 15% more over a full year.

The peak output for the PowerVolt panel is 200/450 watts electrical/thermal respectively.

When correctly installed, the collector will produce around 15% more electricity than conventional PV and, when the heat pump is running, the electrical output may increase by up to 25% under certain weather conditions.



OUTPUT

200 Wp per panel electrical
450 Wp thermal
650 Wp total

BENEFITS AND ACHIEVEMENTS

Conventional PV cells get hot in the sun and are therefore mounted above the roof tiles in order to utilise air flow, thus making them somewhat obtrusive. With Newform Energy's water-cooled hybrid, this is no longer necessary, so the panels can be mounted within the roof line, making them much less noticeable and able to blend in better with the roof tiling.

“ PV-T technology has the ability to attain a significantly higher total power conversion rates than either PV systems or solar thermal systems, therefore giving a higher CO2 offset per meter squared of roof space than any either PV or solar thermal technologies. ”

Professor Peter Childs
Department of Mechanical Engineering, Imperial College London

At the Whitstable development, the system uses both a PowerVolt collector, the first MCS accredited PV-T panel available in the UK, and its sister product, PowerTherm.

The PowerVolt collector has been developed to maximise the electrical return of the panel whilst also producing a large volume of medium grade thermal energy, sufficient to meet all of the property's energy requirements in summer and to provide a reasonable amount of heat in winter (even without a heat pump).

Hot water demands in cold weather, along with some of the properties electricity requirements, are met by the PowerTherm collector, which provides a lower electricity yield but a large volume of high grade thermal energy.



COSTS AND PERFORMANCE

Newform Energy's PV-T system is able to produce hot water and more electricity than PV with little or no CO2 emissions.

The system provides all of the property's hot water requirements safely and reliably whilst generating sufficient electricity to do this carbon neutrally.

It has enabled the development to achieve a SAP (Standard Assessment Procedure) rating of 'AA'. Furthermore it has also been awarded an EPC (Energy Performance Certificate) rating of 'A' for both energy efficiency and carbon emissions, where previously a 'B+' was considered to be the ceiling of achievement.

Built to Level 4 of the Code for Sustainable Homes, the development has embraced the principles of PassivHaus and even features triple glazed windows to achieve a 0.93 level of airtightness, the lowest the builder, Masonry Frame Systems, has ever achieved and substantially lower than the industry average of 3.5.

Furthermore, despite the majority of the flats enjoying a sea facing aspect, the 3-storey building's 97% energy efficiency level will result in an average energy running cost of just £175 per year.

The panels are able to bring the properties to an AA rating, even without a heat pump, through the intelligent integration of PV-T to create an efficient communal hot water system, whilst the electrical generation is sized specifically for each apartment.

CHALLENGES

This has been the first time that the builder has adopted solar technology and whose over-riding objective for its Whitstable development was to create a unique exemplar model of best practice. After comprehensive market research, Masonry Frame Systems selected Newform Energy as the ultimate specialist supplier in this sector.

TESTIMONIALS

On his collaboration with Newform Energy, Joint Managing Director of Masonry Frame Systems, Norman Hinckes, commented:

“ In both the quality of its product and the level of its knowledge and support, Newform Energy has proved to be a perfect partner with whom we are now looking forward to working together on many of our future developments ”





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AWARDS

FOR ITS HYBRID SOLAR SOLUTION NEWFORM ENERGY HAS WON:

The Renewable Innovations Award at the 2013 Environment and Energy Awards,

The Natural Energy Award at the 2013 Rushlight Awards, and

The Sustainable Product Innovation Award at the 2013 Sustainable Housing Awards.

THE COMPANY HAS ALSO BEEN A FINALIST IN NUMEROUS OTHER AWARDS INCLUDING:

Most Innovative Use of Renewable Technology at the 2014 Housing Innovation Awards

Renewable Energy Infrastructure Awards 2011

BRE Innovation Zone Competition 2011



SINCE 2011 ALL PRODUCTS HAVE BEEN FULLY MCS ACCREDITED.



The UK's first practical and affordable zero carbon house, Caplin Homes' Solar House, at Great Glen in Leicestershire, features Newform Energy's HSS.

In 2011, a house featuring Newform Energy's solar technologies won Grand Design's Home of the Year and the company was recognised as one of Kevin McCloud's 'Green Heroes' in both 2010 and 2011.

BACKGROUND INFORMATION

Newform Energy is a UK company specialising in the research, development and supply of renewable energy solutions. Located in Faversham, Kent, the company was founded in 2006 and is widely recognised as the market leader in understanding thermal and solar systems integration and product innovation.

Masonry Frame Systems was established in 2004 as a division of Wye Manage Limited and has established itself as a leading regional builder of eco-friendly and energy efficient properties. In its bid to dramatically reduce CO2 emissions, Masonry Frame Systems has developed its own materials including "aircrete", which is made from recycled fuel ash that has been sourced from coal-fired power stations, and "Celfix" mortar, ensuring each property it build is air tight.

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