

# REal Alternatives

Renewable Energy Systems on the Isle of Wight

## Case Study 4

### SOLAR THERMAL HOT WATER SYSTEM YARMOUTH HARBOUR OFFICES



**Yarmouth Harbour offices are the first land stop for visiting craft in the western Solent and the first impression that visitors to this area have of the Isle of Wight. The facilities offered at Yarmouth Harbour offices are state of the art and offer full personal washing and laundry facilities. A large solar thermal system was installed in December 2007.**



Solar panels

*"Visiting yachtsmen and women take in excess of 25,000 showers each year and we expect to see considerable reduction in gas consumption due to the new system"*

**Chris Lisher,  
Chief Executive,  
Yarmouth Harbour Commissioners**

### How does it work?

Sunlight is collected through evacuated tubes in the solar panels which can generate temperatures well in excess of 100° C. This heat is transferred to hot water cylinders, capable of storing and sustaining large volumes of hot water for everyday use.

The facilities block has a high demand for hot water and this has in the past been solely provided by natural gas fired boilers. The solar system at YHM allows solar heated hot water to be fed directly into the hot water system, which allows the boilers to remain on stand-by only for longer periods.



Controller



Hot water cylinders

### Technical Details

The solar array consists of 14m<sup>2</sup> of Eco-tech 58/1800 evacuated glass tubes. These tubes are incredibly robust and have been tested to withstand hailstones of 25mm. Facing due south the solar array is ideally aligned, and is capable of a peak output of 9.1 kWh. The system is expected to work approximately 1,800 hours per annum with a mean average production of 16,380 kWh/annum.

Hot water is stored in 3 Gledhill 'Torrent' style hot water cylinders each having 450 litres capacity. Mains pressure water is piped through these cylinders in series and picks up heat by latent transfer. The system is controlled by a Resol Deltasol 'E' controller which provides detailed information on the performance of the system.

## Economic Analysis

<b>Solar system – supply and installation</b>	<b>£20,180</b>
<b>Running Costs per annum</b>	<b>£19.62</b>
<b>Maintenance Costs per annum</b>	<b>£30.00</b>
<b>Savings – gas @ 10.7p</b>	<b>£1,752 per annum</b>
<b>Payback (gas price at installation date)</b>	<b>11 1/2 years</b>
<b>Payback (based upon predicted annual increase of 15%)</b>	<b>7 years</b>
<b>CO2 Savings</b>	<b>3,112kg pa</b>

## Benefits

- Free energy
- Long term reduction in conventional fuel consumption
- Low maintenance
- Long service life (20+ years)
- Increased boiler life expectancy
- Increased public awareness of environmental issues

## Project Details

Yarmouth Harbour Commissioners  
The Quay,  
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Isle of Wight

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**Solent Solar**  
Solar Energy Specialists

