

# CASE STUDY

## The Australian Hotel and Brewery Solar Hot Water System

### Project Scope

The Australian Hotel and Brewery is a new boutique hotel with the aim of being the "greenest pub in Sydney" in terms of energy, water and design efficiency. Urban Energy was engaged to design and install an efficient, low running cost and maintenance, high life expectancy solar hybrid hot water system. This system is described below.

The basic principle of the solar/gas system is as follows:

Heat from the sun is collected from the 6 solar collectors

This heat is stored in 2 x 580L stratified preheat storage tanks

2 boilers service the 2 x finishing tanks, keeping the outlet water temperature above 60 degrees.

### System Design

Standalone solar/gas boosted hot water system.

### SPECIFICATIONS

#### SOLAR COLLECTION PACKAGE

6 x Seido 1/16 Sunda Evacuated tube collector's with pitching frames	
Expected daily (yearly average) output	72 kWh/day
Expected daily summer output	91 kWh/day
Expected daily winter output	53 kWh/day

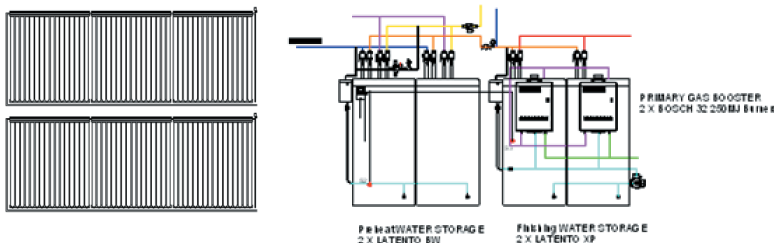
#### SOLAR STORAGE PLANT

2 x LATENTO BW580 Litre preheat storage tanks	
Heat storage capacity	101kWh
System peak flow rate	2.04 L/sec

#### GAS FINISHING PLANT

2 x LATENTO XP580 Litre storage tanks	
2 x Bosch 32 250Mj High efficiency Boilers	
84% efficiency - 56kW each, 112kW combined power	
0.8kg of CO2 saving per kWh delivered compared with direct electric element heating	

#### TANK LAYOUT - SOLAR FIELD 4 X TANKS AND 6 X SOLAR COLLECTORS



### CARBON DIOXIDE AND COST SAVINGS OF THE SYSTEM

This system saves an estimated 28 Tonnes CO<sub>2</sub> per year compared with an equivalent electric element system. Over a 15 year lifetime total solar array is equivalent to planting 2100 Trees.

By installing this efficient alternative energy hot water system the Australian Hotel has saved significant quantities of carbon dioxide, the leading contributor to global warming. The hotel has also reduced the running costs of the hot water plant significantly.

Below is an estimation of the amount of hot water used by the hotel per day and the resultant Carbon Dioxide emissions from this system and alternative systems.

Expected Hot water consumption = 1720L/day @ 65 degrees

Expected heat requirement = 100kwh/day

The current system covers 72% of this demand by using solar thermal panels

The installed system will save (compared to electrical element heating)

72kWh/day x 365 = 26,680kWh per year

26,680 kWh x 20c/kWh = \$5,336.00 per year