

# Renewable Energy and Environmentally Sustainable Design Case Studies

## Venny Playground – PV & Green Roof

### Site:

Kensington, Melbourne, Victoria

### Dates:

- System Design: March 2008
- System Installation: September 2009
- System Commissioned: December 2009

### Client:

City of Melbourne

### Project Goals:

Design, supply and install a grid-connected power system for a community building on an innovative green roof.

### Project Features:

- Roof-mounted photovoltaic array consisting of 30 x 170W Schott Solar PV panels.
- Fronius IG60 Inverter
- Complete system documentation including maintenance schedule and log sheets.
- System size: 5100 W
- Expected Average Output: 15.74kWh/day
- PV panels integrated onto a green roof.

Going Solar were engaged by the City of Melbourne to design and install a grid-connected PV system as another company, Junglefy, installed a green roof on a community building.

One of the key issues was determining how to install the solar panels securely on the roof so that they would meet wind loading requirements, without causing penetration issues through the roof.

Another concern was the length and type of support points and potential corrosion while sitting in the soil on the roof. In the end Going Solar used a special stainless steel mounting rod surrounded by a plastic sheath.

There are particular advantages in installing PV panels above green roofs – as long as the vegetation is not allowed to shade the panels – in that the material below help keeps the panels cooler, thus improving their efficiency and electrical output.



Inverter



PV Panels on Roof



Venny Playground



Edge of PV Panels on Green Roof



Venny Playground



Venny Playground

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*“Solar panels at a roof level are known to work more efficiently when installed on a green roof rather than on a conventional surface. ... Green roofs can reduce fluctuations of temperatures at the roof level and help maintain a more efficient climate around the photovoltaic panel increasing the panel’s efficiency.”*

**Ref: GrowingUp.Org,Au**

*“As a result of relatively cooler conditions on top of green roofs (brought about by the layer of green vegetation) PV cells operate with greater efficiency. ... Cooler conditions also improve the life span of the PV cells because constant high temperatures can threaten the long-term stability of the cells.”*

**Ref: City of Sydney**

*“The green roof can improve photovoltaic efficiency by reducing the ambient temperature, and the photovoltaic array can help protect the green roof from damage of gusting winds.”*

**Ref: Sustainable Gardening Australia**

*“In the future development of Melbourne’s Southbank suburb, with a projected population of up to 74,000 residents by 2040, ‘green roofs will be the norm’.”*

**Ref: City of Melbourne website**



**Waterproof Barrier**



**Support Rails on Coil Matting**



**Venny Playground Green Roof (Photo: Junglify)**



**Solar Panels Installed**

## **Project Team (for the PV):**

- Jo Bradley, Project Manager, Going Solar
- Narayan Kafle, Design Engineer, Going Solar
- Duncan McGregor, Lead Installer, Going Solar
- Alan Bates, Installer, Going Solar
- Russell French, Electrician

## **Further Information:**

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**Early Plantings & Edge of Panels**