

RP1001

# AIR HANDLING SOLUTION, INTEGRATION APPROACHES AND BUILDING DESIGN CONSIDERATION FOR PHOTOVOLTAIC THERMAL AIR ROOFING

## Problem

Photovoltaic thermal (PVT) air systems can potentially contribute a significant fraction of the thermal load required by a residential dwelling. There is a need to identify the best suited building typologies for PV/T systems and to determine the air transport solutions which

Figure 1- Bluescope BIPVT on a House in Sydney



provide the greatest benefit at the minimum running cost and energy consumption for the PV/T roofing in various climates of Australia. Both residential and commercial building are being investigated, however this research mainly focuses on the investigation of a particular BIPVT air system for new and existing houses in Australia.

## Solution

This study will provide solutions for the commercial implementation of PVT air systems in buildings in Australia either as stand-alone systems, or as a supplement to conventional HVAC systems. Generally the outcomes of this research can be summarized as follows:

For Australian climate zones

1. Optimization of PVT air systems key parameters.
2. Identification of the optimal building typologies and climates for PVT air systems.

3. Determine the air transport solutions and integration approaches which provide the greatest benefit in terms of cost and energy consumption.

The above solutions still are being developed.

## Integration of Photovoltaic Thermal Air Systems into Various Buildings in Australia

## Benefits

It is expected that a practical method will be determined for the optimal design of PVT air systems. Also, the greatest market opportunities in the building typologies and the best suited air handling systems for the PVT air system outlet in the respective buildings will be identified. The results will be useful for researchers, government departments, and companies specializing in PVT air system design and integration to buildings.

## Contact

Name: Mehrdad Farshchimofared (PhD Student)

Supervisor: A. Professor Alistair Sproul

Organization: UNSW

Email: [m.farshchimofared@unsw.edu.au](mailto:m.farshchimofared@unsw.edu.au)

[a.sproul@unsw.edu.au](mailto:a.sproul@unsw.edu.au)