AUSTRALIAN PV INSTITUTE

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Call for new design software to drive increase in BIPV uptake in Australia

Solar energy generation through Building Integrated Photovoltaic (BIPV) technology could have a significant impact on CO2 emissions. However, in Australia, the use of BIPV is limited due to complexities in the design, planning and construction process. Researchers are calling for the development of a BIPV-specific software tool and product database for BIPV design and simulation, in order to drive growth in the use of this solar-producing building material.

As BIPV can completely replace many traditional building materials, the implementation of BIPV requires the consideration of both the building envelope and PV elements, identifying the correct design that would provide the best outcome in terms of solar irradiation, power output, building performance, and design outcomes. However, not many professionals have this BIPV project design experience as there are limited applications in Australia.

An ARENA funded report from the Australian PV Institute (APVI) examines BIPV design and integration in Australia to help increase the usage of BIPV technology. The study, which evaluated findings from thirty-seven building design, construction and BIPV professionals in Australia, and categorised operative approaches, methods, and workflows in the BIPV design and analysis process. It identified a need for BIPV-specific software platforms and digital product databases, to facilitate design and simulation in Australia.

To fill this gap, report author Rebecca Yang and colleagues at the Solar Energy Application Lab at RMIT University have developed the first BIPV design tool in Australia. The BIPV Enabler is a user-friendly platform that integrates product, regulation, technical, economic and construction data to create the optimal BIPV solution at the conceptual design/feasibility stage. Rebecca, who also an Australian expert on the IEA PV Powers Systems task force, notes that these developments will have a wide impact; “We have been collaborating with colleagues in North America, Europe, and Asia on global BIPV standard development, design guidebooks and performance assessment”, with the aim to increase the use of BIPV worldwide.

To further promote the use of BIPV, Associate Professor Yang, also conducted a study into the fire safety requirements of applying BIPV in Australia, to meet the National Constriction Code and associated Australian Standards. It is hoped that this ongoing research will significantly develop the BIPV market in Australia and beyond.

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Full Report:

BIPV Design Methods and Workflows in Australia

Authors: Yang R.J., Wijeratne W.M.P.U., Zhao H. (2021) BIPV design methods and workflows in Australia. Solar Energy Application Lab, School of Property, Construction and Project Management, RMIT University, Melbourne.

Full Report:

Fire Safety Requirements of Applying BIPV in Australia

Authors: Yang, R.J.; Hui, M.C.; Johansson, M.; Le, Q.; Zang, Y. (2021) Fire Safety Requirements of Applying BIPV in Australia. Solar Energy Application Lab, School of Property, Construction and Project Management, RMIT University, Melbourne.

Contact: Associate Prof. Rebecca Yang, Leader of Solar Energy Application Lab RMIT

rebecca.yang@rmit.edu.au | 0423 489 826

About the IEA PV Power Systems Programme:

A/Prof. Rebecca Yang of RMIT is Australia's expert for Task 15 of the IEA Photovoltaic Power Systems Programme. Task 15 aims to create an enabling framework to accelerate the penetration of BIPV products in the global market of renewables, resulting in an equal playing field for BIPV products, BAPV products and regular building envelope components, respecting mandatory issues, aesthetic issues, reliability and financial issues.

About the APVI

The Australian PV Institute is a not-for-profit, member-based organisation which focuses on data analysis, independent and balanced information, and collaborative research. Our objective is to *support the increased development and use of PV via research, analysis and information.*
The APVI promotes solar through its live solar mapping platform [http://pv-map.apvi.org.au], the national solar research conference and Australia's participation in two International Energy Agency (IEA) programs – PVPS (Photovoltaic Power Systems) for solar photovoltaics and SHC (Solar Heating and Cooling), concerned with new solar thermal products and services.

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