INFLUENCE OF REAR SIDE VENTILATION AND INSULATION ON MODULE PERFORMANCE OF PV CURTAIN WALL FACADES

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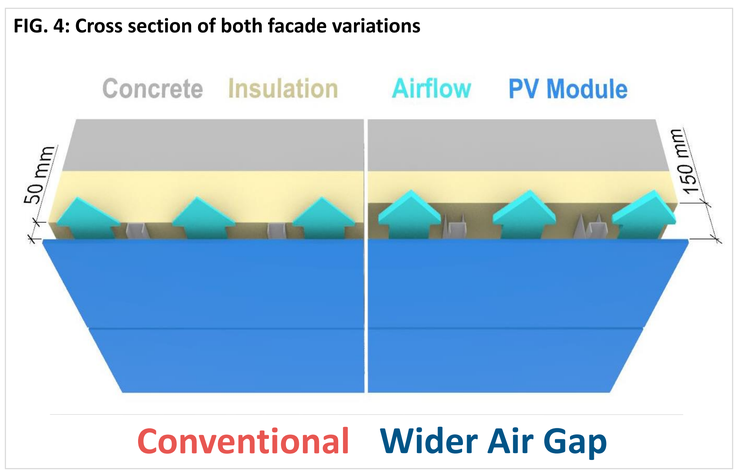
MOTIVATION

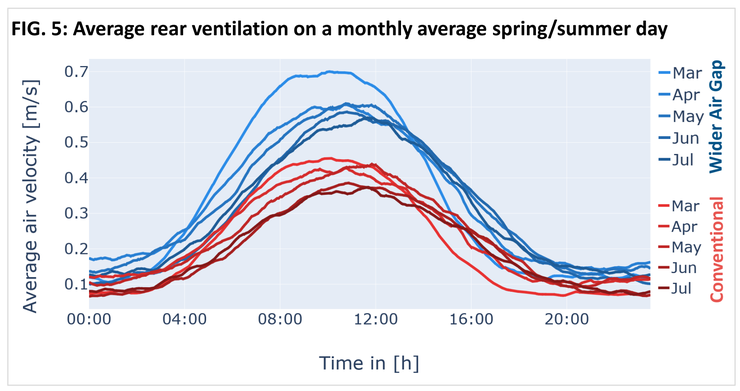
Helmholtz-Zentrum Berlin has constructed a new laboratory building with an integrated PV system as ventilated curtain wall. Due to certain design choices in the architectural planning process, an unusual high air gap was created behind the modules. This brought the opportunity to compare the **influence of different air gap widths on the module performance**, by changing the insulation thickness in the facade.

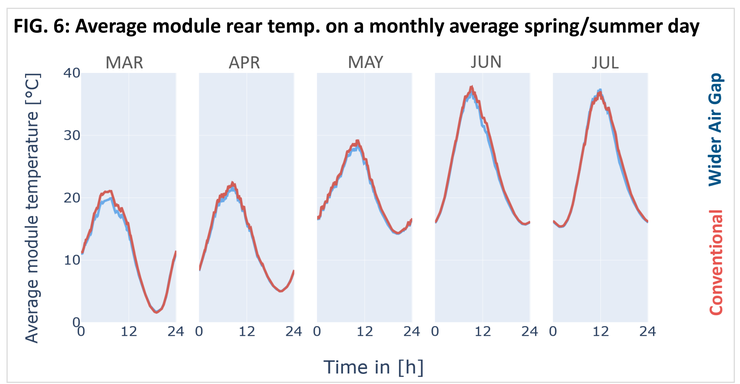
THE LIVING LAB FOR BIPV

SUBSTRUCTURE VARIATION



MEASUREMENT





ESTIMATED POWER DIFFERENCE

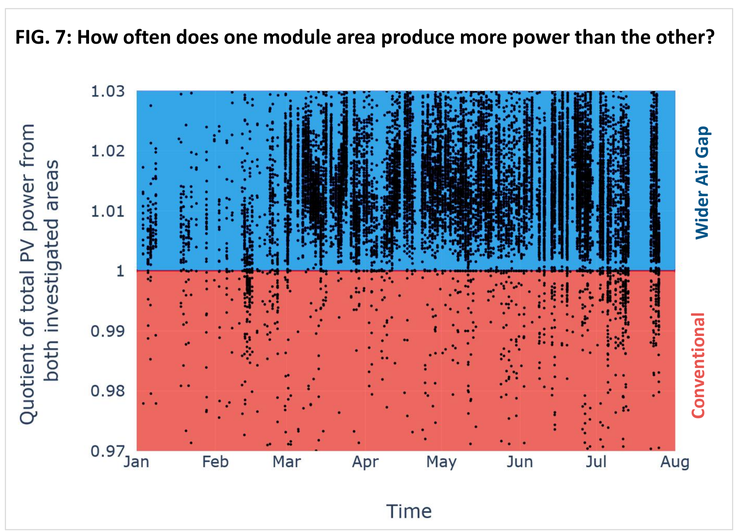
When multiplying the average measured difference in the module rear temperature ΔT_{mod} and the **temperature coefficent** for maximum power γ of the integrated PV modules, the difference in the overall PV power difference ΔP_{diff} can be estimated:

$$\Delta T_{mod} \cdot \gamma = \Delta P_{diff}$$

$$0{,}5\ K \cdot -0{,}39\ \frac{\%}{K} = -0{,}195\ \%$$

RESULTS

The module area with the **wider air gap performs slightly better** than the facade with the conventional substructure. The total measured PV energy yield in the area under investigation **differs by around 1,7 %** between both facade variations.



KEY FINDINGS:

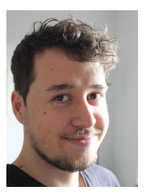
Small differences in the total energy yield of both module areas **+** Big differences in the rear ventilation behind both module areas **=** The variation of air gap widths has an insignificant influence on the temperature related power loss of the investigated modules

MORE INFORMATION

„Where does it take me? This is no official WCPEC-Link!“

Use this QR-Code to access the underlying conference paper. Since the conference proceedings are not yet available on the official WCPEC website, this link will direct you to a preliminary version on the official website of the PVcomB.

FURTHER QUESTIONS? GET IN TOUCH!



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