**CONTEXT** | This thesis unveils a novel Photovoltaic-Thermal (PVT) panel design, a leap forward in addressing sustainability concerns in traditional solar panels. The focus was on enhancing repairability and recyclability by replacing the conventional EVA laminate with a liquid encapsulant. This shift not only improved thermal stability and light transmittance but also transformed the panel into an innovative Photovoltaic-Thermal (PVT) system.

Various concepts underwent thorough testing at TU Delft's PVMD lab. Initial assessments on both a single-cell level and small module size confirmed enhancements in light transmittance, compared to Biosphere Solar panels that utilized air as an encapsulant. These validated findings show promising results, prompting further investigation into long-term performance and system optimization, laying the groundwork for future in sustainable PVT-systems.



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