

- **Beads deposition pattern optimization for pressurized bonded solar panel application**

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Abstract content

Improving the energetic efficiency of building would allow a drastic reduction of fossile energy consumption and greenhouse gaz emission. In this context, intelligent facade systems bring many solutions to supply and save energy. In the frame of Batisol project (1), a solar thermal collector for facade retrofiting has been proposed wich allows to heat water from solar radiation. This collector simply consists in bonding two aluminium plate with a series of thick and linear adhesive bead to join the plate but also create the hydraulic network. The design of the deposition pattern and beads dimension is very critical since any failure due to the pressurized fluid of the adhesive would lead to catastrophic failure of whole collector. Nevertheless, a less adhesive as possible should be deposited so as to minimize the collector cost. In this presentation, various strategies are developped aiming at proposing various optimized deposition pattern to maximize the maximum pressure with a limited amount of adhesive. Such deposition pattern are compatible with automatic dispensing system.

References

(1) Martinez, R. G., Goikolea, B. A., Paya, I. G., Bonnamy, P., Raji, S., & Lopez, J. (2017). Performance assessment of an unglazed solar thermal collector for envelope retrofiting. *Energy Procedia*, 115, 361-368.

Panel deformation / Stress in the Bead

