

FAÇADE INTEGRATION OF SOLAR THERMAL COLLECTORS: PRESENT AND FUTURE

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ABSTRACT

Based on the results of a European survey on architectural integration quality, the paper presents a systematic analysis of the facade integration potential of solar thermal collectors provided by Swiss manufacturers, concentrating on glazed flat plates, unglazed flat plates and evacuated tubes systems. It demonstrates the poor “integrability” of most of them, indicating that novel collectors responding to facade integration issues should be developed. These new collectors should answer to the technical constraints of their specific solar thermal technology, but should also become architectural elements, conceived to be integrated into the building skin. They should provide an adequate level of flexibility in all the system characteristics affecting the building appearance (i.e. collector material and surface texture, absorber colour, shape and size of the modules, type of jointing). To ease the designer integration efforts and reduce overall costs, they should become multifunctional construction elements, facade cladding being the most relevant added function for glazed and unglazed flat plate collectors. Within this application mode, the use of dummy elements (non-active elements with a similar appearance, fulfilling only the construction function) is a key tool manufacturers should provide to make the geometric/architectural dimensioning of the system independent from the sole energetic sizing.

A novel system concept responding to these requisites is presented for glazed systems. New glasses have been developed that are able to hide the absorber behind a coloured reflection while letting the solar energy pass through, providing a new freedom level to architects. The same glazing can in fact be used to cover areas of the facade equipped or not with absorbers, finally opening the way to proper multifunctional active facade systems.

For the full text/presentation contact the author(s) or the publisher:

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