

Short STSM Report Vesna Kosoric

I finished the research at the Laboratory of Solar Energy and Building Physics of Ecole Polytechnique Federale de Lausanne as planned. I have been there from April the 2nd to June 1st.

During my visit, I was working on survey of the Swiss solar thermal collector market, concentrating on flat plate, unglazed flat plates and evacuated tubes systems, mainly targeted at the flexibility offered by collector manufacturers in term of architectural integration freedom. This survey represents the poor integrability of most of available solar thermal collectors, indicating the novel collectors responding to façade integration issues should be developed. The 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.

Identification and thorough examination of existing thermal collectors is very important for identification of their global drawbacks and limitations and will significantly help in determining major guidelines for future development and modifications of thermal collectors.

During this research I visited 14 companies in Switzerland that produce solar thermal collectors, of which 9 produce glazed collectors, 2 evacuated tubes and 1 unglazed solar thermal collectors. Seven of them do implement collectors into facades, even if marginally, but only two propose collectors that are especially conceived for façade application. I made a comparative analysis of existing technologies that are dominant in thermal collectors design and made identification of benefits and drawbacks regarding their implementation into architectural solutions.

One of the results of my work is the scientific publication “Façade integration of solar thermal collectors: Present and Future, for the CISBAT 2007 Conference”, publication of which I am co-author. This paper presents a systematic analysis of the façade integration potential of relevant solar thermal collectors now available on the market.

This work will be part of my PhD thesis which I am currently working on the Faculty of Architecture of the Belgrade University. This thesis will be great help in both science and practice in the field of application solar energy in architecture and it will be very important for research and development work on the Faculty of Architecture. My mentor is professor Aleksandra Krstic-Furundžic who is a member of COST. This research is very important for Serbia to keep abreast of developments of EU countries.

This research will be fruitful for the project of National Energy Efficiency Program called “Development and demonstration of hybrid active and passive system for solar heating, solar cooling, ventilation, artificial lighting, and other electrical energy applications”. This project started since June 2006 and will last three years. I am one of participants in this project. Faculty of Architecture is also included in this project.

This research is one important step into actualization of application of solar systems on domestic market. With experiences gained in Lausanne, I will be able to implement these experiences in my PhD and mentioned ongoing project of Architectural Faculty and Ministry of Science and Technology.

Further work on this topic should be related to new methods in integration of thermal collectors into building envelope and urbanistic structures, and to develop new types of solar thermal collectors.