The consumption structure of the developed societies considerably transformed during the second half of the last century. The economic growth resulted in the enhanced level demand for meeting the requirements. Due to the higher consumption level, induced by the accelerating economic growth the appeasement of the hunger for energy has become essential. One solution is the application of renewable energy as supplementary resource. The history of renewable energy started over a century ago, though its permeation has been hindered by the almost unlimited availability of fossil fuels, which was an optimal resource to meet the requirements of the accelerating economic growth of the developed world. The renewable source of energy has achieved of greater importance only while the concerns about the limited resources and the global climate change have been emerged and escalated, parallel to the fear from uncertainties in energy supply. These concerns underlined the importance of sustainability requirements, as sustainable development should contribute to the better living quality of people in long term.

To meet the 20% renewable target of EU, specific attention has to be paid to the largest end use heating by renewable. Aside from biomass and ambient heat; solar thermal systems are the most promising option. Especially for residential water and industrial low temperature processes heating high efficiency solar collectors are the most appropriate solution.

High efficiency solar collectors need to the selective surfaces to absorb the solar heat. A production method and its process are developed for the mass manufacturing of selective surface coating on copper [1]. The coating process is a continuous electroplating process from roll to roll including nano-coated selective layer. Qualification test of solar absorber coating durability is made in collaboration with Institute für Solartechnik SPF – Switzerland [2]. The test procedure applied is basing on the service life assessment methodology developed by the International Energy Agency-SHCP under consideration of latest further developments of the procedure [3, 4]. The test results confirmed a life time more than 25 years under the thermal load of the absorber surface. There was no any adhesİon problem of the absorber coating according to the cross cut test (ISO 2409). Environmental impact of the system is also îaken înto consideration. Life Cycle Assessment calculations of the manufacturing process are carried out in collaboration with Chemical Engineering Department of Marmara University by using of Sima Pro 7,2 software. In this talk, the results of the research and application will be discussed with market potential of solar thermal systems in EU.

References