

New prototype rolled out and developed by NECSO, to guarantee a proper performance of selective coating during their expected working life

- **From the design of the first plants in the 1980s, the solar thermal industry has made notable advancements along the learning curve, thanks to the development of new technologies. An example of the innovative nature of this industry is *NECSO* project that aims to design accelerated ageing protocols to test the evolution of these coatings under more aggressive conditions in the new designs. It is part of the 7th Framework Programme of the European Commission and funded by them.**
- **NECSO consortium's insight about the impact of ageing process on energy efficiency will be presented at the next edition of SolarPaces 2014 (September 16th-19th, Beijing, China).**

More reliable and less expensive CSP plants are possible, by using NECSO ageing protocols. Quality assurance criteria for selective coatings are critical to bring the CSP technology to the high temperature regime of operation.

Madrid, August, 29th- CSP technology based on parabolic trough solar collector for large electricity generation purposes is currently one of the most mature CSP designs in terms of previous operation experience, scientific and technical research and development. The stack of layers, used in solar absorber tubes is a combination of coatings with different compositions and thickness. The global performance clearly depends on the nanometric properties of the entire stack. Some analysis have unveiled that during the working life, the solar absorber tubes suffer an ageing process, which reduces the global performance.

NECSO is a European Commission project funded under the 7th Framework Programme that aims to design accelerated ageing protocols to test the evolution of the coatings during the entire receiver's life. With these needs in mind, NECSO project, Nanoscale Enhanced Characterization of Solar selective coatings, is focused on the solar selectives behaviour, when they are affected by certain ageing conditions. NECSO consortium brings together industrial partners and research organizations from Spain, Switzerland, France, Belgium and Slovenia.

NECSO features some of these characterization methods and standard protocols and at the same time it defines an accelerated degradation protocol and real coatings ageing tests. Probably one of the main tools, which help to carry on with these research activities, has been a new prototype, which enables the ageing testing for solar selectives and identifies the improvement possibilities in terms of solar efficiency. NECSO (March 2013-March 2016) is reaching the half-point with interesting milestones, such as the prototype set up. This innovative and unique system enables researchers and developers to choose better critical components and to increase the competitiveness in the sector. This prototype has been led by TECNOVAC, one of the partners of NECSO consortium, dedicated to providing clients industrial vacuum technology worldwide with a huge commitment with research activities.

Some of the expected preliminary results will be shared in the 1st NECSO workshop, which will be held next autumn.

About NECSO project

The main idea behind this NECSO project is to provide tools to the end users, namely solar plants builders, to guarantee that the selective coating will work properly during 20 to 25 years. Novel experimental methods for testing materials under extreme conditions (temperature and radiation) are needed providing a deeper understanding of the interaction of electromagnetic radiation with nanomaterials, as basis for design of new spectrally selective absorber coatings. Nanoscale characterisation will correlate the nanostructure parameters with coating performance. The resulting outcomes are expected to contribute significantly to the infrastructure of the solar energy research, development and industrial activities worldwide.

For the purposes included in NECSO is necessary to establish characterization methods and standard protocols to guarantee the performance, durability and quality control at medium and high working temperatures (between 400°C and 600°C), designing an accelerated degradation protocol and testing the ageing of real coating. The objective is to contribute with the results in the industrial activities of the solar sector, helping in the comparison of the available solar layers using standard procedures and, in addition, to provide tools for the quality control on the coatings in solar parabolic technology.

For more information, please contact:

Aries Ingeniería y Sistemas

Sofía Martín

Dissemination Manager NECSO Project

smartin@aries.com.es

www.necso.eu