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# Ricerca partner per il "Topic ENERGY.2009.2.1.2: Solar Photovoltaics

01 dicembre 2017

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Ricerca partner per il "Topic ENERGY.2009.2.1.2: Solar Photovoltaics: Manufacturing and product issues for thin-film photovoltaics"

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----- PARTNER SEARCH ENE7-PT-03CP-1 -----

<Reference n.: ENE7-PT-03CP-1>

<Deadline: 20/04/2009>

<Programme: Energia>

<Project Title: Topic ENERGY.2009.2.1.2: Solar Photovoltaics: Manufacturing and product issues for thin-film photovoltaics>

<Financial Scheme: >

<Description: Topic ENERGY.2009.2.1.2: Solar Photovoltaics: Manufacturing and product issues for thin-film photovoltaics

Thin-film PV has a very high potential for cost reduction if materials and manufacturing can be improved by intensive and effective R&D on the fundamental science and production technology. The challenges facing thin films are to be found mainly in the realm of up-scaling production capacity. The global production capacity of thin films is expected to

reach 4.2 GWp/year in 2010 and 10 GWp/ year in 2012. It is being installed mainly in Japan, the USA and Europe. Europe already has excellent thin-film R&D infrastructure and a number of thin-film factories.

To improve module prices, progress is needed on three fronts: the performance of the modules (efficiency, or W/m<sup>2</sup>), their direct manufacturing cost (?/m<sup>2</sup>), and increased volume production. It is direct manufacturing cost (\$/m<sup>2</sup>)

Except R&D, Quality Assurance and monitoring metrology could reduce the direct manufacturing costs of TFPV for the existing products. However these processes are still in their infancy for the TFPV manufactures.

This project proposes to overcome these limitations by integrating and optimizing a novel system -CONIN - to include and in-line monitoring and inspection techniques for the main processes within the TFPV production line. By introducing and validating CONIN for the manufacturing process the project is aiming to reduce materials, energy use, achieve higher yields, and improve the overall economics of the TFPV.

The CONIN is concentrating in monitoring and controlling main processes within the production of TFPV: Transparent Conductive Oxide TCO deposition, Laser Scribing and cell area.

It will integrate into one system methods, sensors and devices to monitor and control the following parameters:

- 1- For TCO deposition: layers thickness, roughness, surface resistivity and doping level.
- 2- For Laser Scribing: lines dimensions, under / over scribing, missing laser spots, shunts and laser spots attributes.
- 3- For TCO cell area: cell area pin holes, partly crossing pin holes and their calcification from each other and form particles.

Scientific and Technological (S&T) objectives

In order to achieve the main project's goals the following objectives:

1 Characterization of required measurements and defects for the TCO layer deposition and the laser scribing processes and cell area.

2 Development, integration and lab testing of the CONIN system for manufacturing of Si , CdTe & CIGS TFPVs

3 Development of the SW and HW for the CONIN outputs, data collection, and Man Machine Interface.

5 Installation and demonstration of CONIN at two TFPV manufacturers' sites

6 Evaluate CONIN effectiveness in: reduction of materials and energy use, improved yields, and overall manufacturing process economics, by applying and comparing Life Cycle Assessment (LCA) and process and product Life Cycle Cost (LCC) to the manufacturing process with and without CONIN

<Organisation Type: Altro>

<Partner Sought: Manufactuirng TFPV Control systems/devices

TF PV Manufacturer

En uder of TFPV for energy supply

For further information about this Partner Search, including Contact Person's details, please consult this web address:

<http://www.apre.it/formaAssist/scheda.asp?id=1234>