



2016

Journées Nationales sur l'Énergie Solaire

28 au 30 juin 2016 Campus université Perpignan

« THIN FILM PHOTOVOLTAICS : TECHNOLOGIES AND MARKET »

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RÉSUMÉ

With an overwhelming market share of over 90%, crystalline silicon PV still remains the top dog of photovoltaic technologies. But progress in thin-film photovoltaics technologies has been noticeable.

And while polycrystalline silicon cells attain efficiency levels of 21.3 per cent, CIGS and CdTe solar cells have in the meantime already reached 22.7 and 22.1 per cent respectively. The efficiency of modules is still slightly better for silicon PV, but the three technologies are nearly equal at 15–17 per cent. Production costs of the CIGS modules have since fallen to the level of silicon technology – 40 cents U.S. per watt, while CdTe modules are cheaper than this.

Since production capacity of the youthful thin-film PV tech is still not as high as its mature competitor, considerably improved numbers could be expected following expansion of its production. Efficiency levels of 18 per cent or more as well as costs of about 25 cents U.S. per watt are attainable for thin film PV factories with an annual capacity of below 2,5 GW, according to industry representatives.

This talk focuses on the developments in thin film solar cells and how these technologies are evolving. Batteries thin film are considered as a tool for enhancing PV deployment. By relating to the information on market conditions, competing technologies and how different economic factors affect addressable markets, the growth trends and forecasts thin film technology penetration in the next decade are discussed.

Today there is a range of different thin film PV and battery technologies each with a different set of characteristics. Special attention is paid to CdTe, CIGS, and hybrid concepts along with varying chemistries for thin film batteries and manufacturing techniques.

This future development for thin film PV opens up new markets to PV and batteries which have difficulties in being addressable using traditional technologies. At the same time manufacturers can count on competitive advantage and innovation in order to achieve further penetration of new technologies.

Mots Clés : 4 à 6 mots