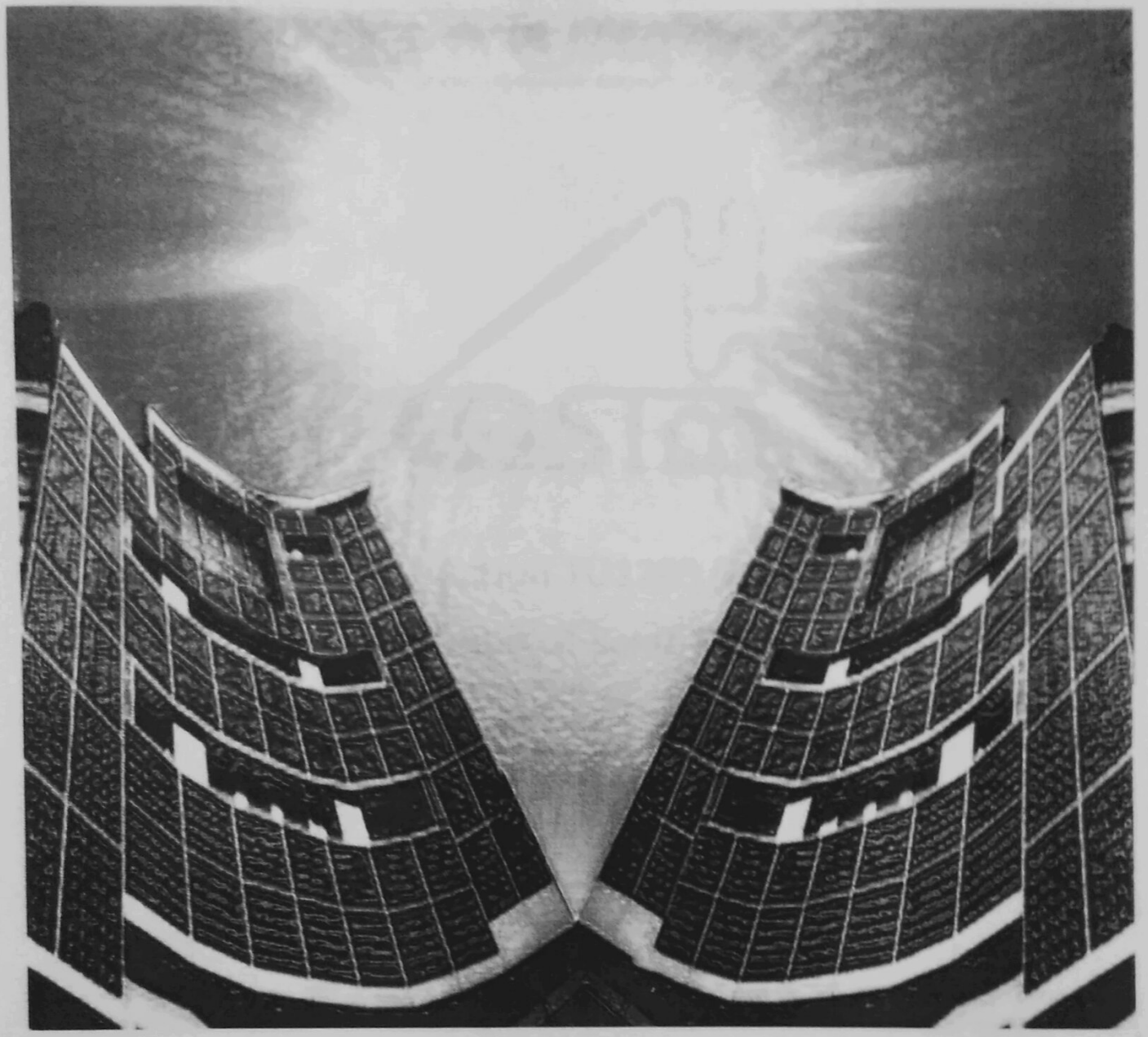

Proceedings of COST Action TU1205 Symposium

Combined with EURO ELECS 2015 Conference, Guimarães, Portugal

Edited by: Soteris A. Kalogirou

COST Action TU1205 (BISTS)
Building Integration of Solar Thermal Systems

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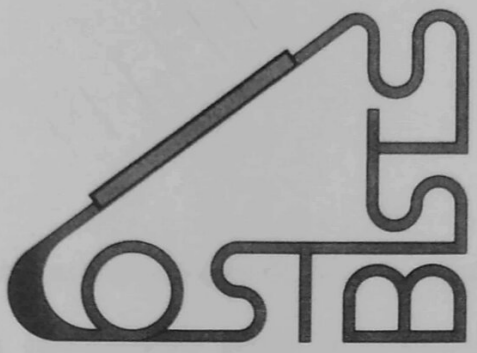

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Flexible Thin-film Photovoltaic Technologies in Building Integration

Milorad Bojic
University of Kragujevac, Faculty of Engineering, Department of Energy & Process Engineering, Kragujevac, Serbia
milorad.bojic@gmail.com

Jasna Radulovic
University of Kragujevac, Faculty of Engineering, Department for Applied Mechanics & Automatic Control, Kragujevac, Serbia
jasna@kg.ac.rs

Danijela Nikolic
University of Kragujevac, Faculty of Engineering, Department of Energy & Process Engineering, Kragujevac, Serbia
danijela1.nikolic@gmail.com

Ivan Miletic
University of Kragujevac, Faculty of Engineering, Department for Mechanical Constructions & Mechanization, Kragujevac, Serbia
imiletic@kg.ac.rs

ABSTRACT: New PV technologies that may advance new innovations, which may be developed into building integrated photovoltaics, might be found in flexible thin film solar cells. The use of flexible substrates offers new possibilities for the application of solar cells for building integration. Flexible cells are very thin and lightweight, which makes them also more flexible in use than rigid cells. One of the most important advantages of flexible solar cells is the potential to reduce production costs. Development of photovoltaic thin film modules ensures a satisfying flexibility of the surface, and the possibility to design appropriate shapes. In a past few years producers offered various products and new ways to integrate lightweight, flexible solar modules into buildings to achieve cost-effective and high-performance solar power.

Keywords: photovoltaics, flexible solar cells, building integrated photovoltaic

1 INTRODUCTION

Photovoltaic (PV) is one of the most prominent renewable energy technologies, characterized by a world-wide abundant available fuel source – the sun. Solar photovoltaic technologies are an attractive option for clean and renewable electricity generation – it is the direct conversion of sunlight into electricity. Photovoltaic devices are rugged and simple in design requiring very little maintenance. Solar energy using contributes to more efficient use of the countries own potentials in generating electrical and thermal energy, reduction of the greenhouse emission, reduction of importing and use of the fossil fuels, development of the local industry and new job openings (Pavlovic, 2013). PV systems are still an expensive option for producing electricity compared to other energy sources, but many countries support this technology.

Starting from 1990 industry of photovoltaic conversion of solar irradiation shows constant annual economical growth of over 20%, and from 1997 over 33% annually. In 2000 total installed capacities worldwide have surpassed 1000 MW, and in developing countries have overreached more than million house-holds which are using electrical energy generated by means of the photovoltaic systems. It is predicted that PV will deliver about 345 GW by 2020 and 1081 GW by 2030 (Ingmar,