

CLOSED-STRUCTURE MULTISIDED PV SYSTEMS FOR EVENLY DISTRIBUTED IRRADIANCE COLLECTION

JANVIER KAMANZI¹ & MOHAMED TARIQ KAHN²

^{1,2}Centre for Distributed Power and Electronic Systems

^{1,2}Cape Peninsula University of Technology, South Africa

ABSTRACT

Though photovoltaics (PVs) are considered to lead the renewable energy sector, they have a shortcoming of not providing constant level power supply and this where this paper fits in to propose a possible solution. Gaussian-shaped outputs from solar panels are due to the way the available sun light is captured; and this directly depends on the positioning of solar panels. Techniques that have been applied, automated sun-tracking panels, have not been to the level of producing regulated outputs though acknowledgeable for improving output levels. This paper describes and develops a model that consists of making use of prism-shaped PV systems in order to ensure there is a same amount of PV area that faces the during the daytime. Also known as closed-structure- multisided (CSM) approach, it could sound obvious, yet the power dynamics and the accurate figures to quantitatively be determined and all this was deeply elaborated herein. As for the results, a cylindrical-shaped CSM PV system was qualified to provide the same level regulated power average as the average value of a single fixed-tilt PV panel of the same area and material.

KEYWORDS: Battery Charge and Discharge, CSM PV Systems, Multisided PV Approach, PV Regulated Output, Renewable Energy