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# STEP-TRACKING PROGRAM SYNTHESIS OF AN AZIMUTH TRACKED CONCENTRATING PHOTOVOLTAIC (CPV) SYSTEM

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## Abstract

For the optimal working of the concentrating photovoltaic systems (CPV), these are usually tracked, and the accuracy required in following the sun path is much higher than in non-concentrating system. The paper focuses on the synthesis of the optimal step tracking program of an azimuth tracking system, used for accurate tracking of a CPV system. The paper presents the synthesis modelling algorithm and the numerical simulations for a CPV system, orientated with an azimuth tracking system, implemented in the mountain region as a case study in Brasov area, Romania, using the specific location parameters, considering the ideal (clear sky) and the in-field conditions. To find the optimal tracking program for the azimuth tracked CPV system following stages have to be followed: 1) the optimal daily motion estimating; 2) the optimal elevation angle estimating 3) the tracking algorithm optimization, by reducing the number of motions/building seasons (optimal number of days with the same orientation program) and 4) the year division into adequate seasons depending on the elevation angle variation (α*). The results obtained from the numerical simulations are: the year is divided into 100 seasons for which the daily motion has a step duration of 8 minutes (for 36 seasons) and 4 minutes (for 65 seasons) and the elevation motion has a step duration of 8 minutes for all the seasons.

*Key words:* photovoltaic system, solar radiation, tracking program,

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