



WIRELESS ENERGY MONITORING SYSTEM OF PHOTOVOLTAIC PLANTS WITH SMART ANTI-THEFT SOLUTION INTEGRATED WITH CONTROL UNIT OF HOUSEHOLD ELECTRICAL CONSUMPTION

P. Visconti *¹, A. Lay-Ekuakille², P. Primiceri³ and G. Cavalera^{4#}

Department of Innovation Engineering, University of Salento, 73100, Lecce, Italy

Company Cavalera S.r.l. , 73044, Galatone, Lecce, Italy.

Emails: paolo.visconti@unisalento.it¹, aime.lay.ekuakille@unisalento.it²,
patrizio.primiceri@gmail.com³, g.cavalera@cavalerasrl.it⁴.

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Abstract - This paper describes an intelligent system for monitoring photovoltaic plants, detecting thefts or malfunctions and optimizing energy production by algorithm to drive solar trackers. Sensing/processing board detects environmental parameters and calculates produced power/energy for monitoring efficiency while anti-theft system reveals any critical condition. Designed board controls biaxial trackers calculating sun position and following solar orbit to optimize energy production. Monitoring and anti-tampering systems communicate with PC or remote stations by wireless modules. Finally, wireless monitoring system of household facilities measures absorbed currents viewing consumption values on web-page. Depending on light/presence sensors, system can switch on/off monitored facilities obtaining energy savings.

Index terms: Wireless monitoring of PV plants, Anti-theft system, PIC signals processing, Solar trackers, Household energy savings.