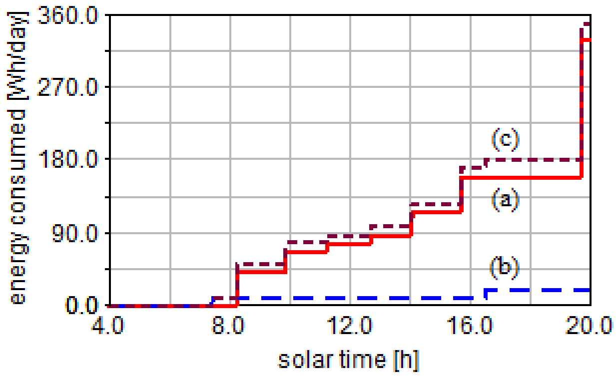

Fig. 8. The energy consumption: (a) daily motion, (b) elevation motion, (c) total consumption.

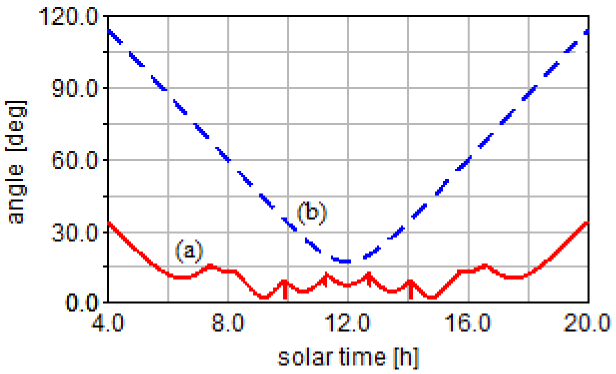

Fig. 9. The angle of incidence: (a) bi-axial PV system, (b) fixed PV system

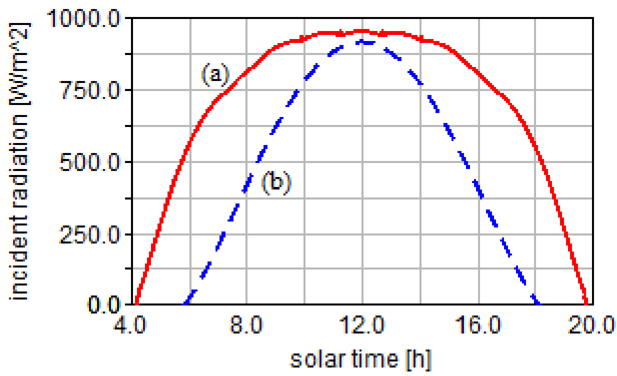

Fig. 10. The incident radiation: (a) bi-axial PV system, (b) fixed PV system.

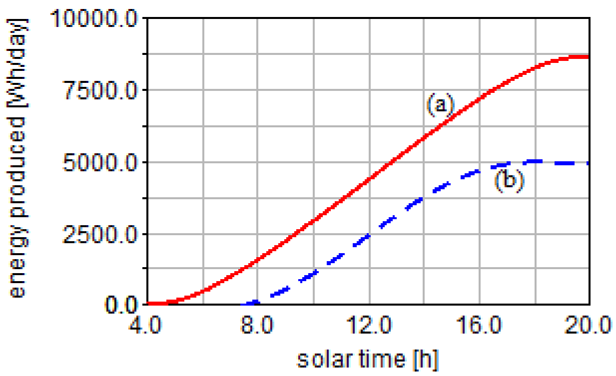

Fig. 11. The energy produced: (a) bi-axial PV system, (b) fixed PV system.

Concluding, the proposed bi-axial solar tracker, which combines the features of the classical platform and string configurations, has the following advantages: possibility to orient medium and large platforms of strings of PV modules; reducing the cost of the system by minimizing the number of motor sources relative to the classical solution of individual modules; the gears interleaved in the daily and elevation movement subsystems act as stroke multipliers and power reducers, thus allowing to use low size/power actuators. By the way in which the bi-axial solar tracker is designed, the energy gain (by reference to the equivalent fixed system) is reflected in values that prove a high efficiency (not only for the representative day considered as an example in the work, but for the whole year), thus justifying the usefulness of the proposed solution, which will be implemented and tested under real operating conditions (this is expected as a direction for further research).

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