

A UNIFIED APPROCH TO MODELLING OF PHOTOVOLTAÏC SYSTEMS

R.Andoulsi *, A.Mami **, G.Dauphin-Tanguy ***

(*) National Institut of scientific an Technic Research B.P. 95 Hammam-Lif 2050 Tunisia.

Fax: 216(71)430.934 _ Tel:216(71)430.160, E-mail: Ridha.Andoulsi@inrst.rnrt.tn

(**) Faculty of sciences of Tunis, C.U Belvedere 1060 Tunis. Tunisia. Fax: 216(71)885.073

(***) LAIL, UPRESA CNRS 8021, Ecole Centrale de Lille. B.P.48, 59651 Villeneuve d'ascq. Cedex France.)

Fax: (33)320335418, E-mail: gdt@ec-lille.fr

Abstract - The modelling of photovoltaic (PV) systems is a mean stage that must precede all sizing, identification or simulation applications. The PV systems are hybrid type and their modelling is complex. For it we propose an unified approach of modelling based on a graphic technique said bond graph. This technique is completely systemic and has a large flexibility to introduce different components in the system. In the same way, this modelling method has showed its efficiency in numerous examples like conception, simulation or computing of control law.

In this paper we present the bond graph models of PV generator, different DC/DC converters and DC motopumps. Theses converters assure a MPPT (Maximum Power Point Tracking) operating of the PV systems. Some simulation results, performed with 20sim software package, are presented.

Keywords: photovoltaic, modelling, bond graph, simulation, buck converter, boost converter.

Person to contact : Ridha ANDOULSI

E-mail: Ridha.Andoulsi@inrst.rnrt.tn

Tel: (216)71430160- Fax: (216)71430934