

## HARMONIC DISTORTION IN RESIDENTIAL AREAS DUE TO LARGE SCALE PV IMPLEMENTATION IS PREDICTABLE

*P.J.M. Heskes<sup>1</sup>, J.F.G. Cobben<sup>2,3</sup>, H.H.C. de Moor<sup>1</sup>*

<sup>1</sup> *Energy research Centre of the Netherlands (ECN), Renewable Energy  
in the Built Environment, Westerduinweg 3, 1755 LE Petten, the  
Netherlands, Phone (31) 224-564780, Fax (31) 224-564976,  
E-mail: heskes@ecn.nl*

<sup>2</sup> *Continuon, Utrechtseweg 68, 6812 AH Arnhem, the Netherlands*

<sup>3</sup> *Technical University of Eindhoven, Den Dolech 2, 5612 AZ Eindhoven, the Netherlands*

*Keywords:* harmonics; inverters; LV-grid; micro-generator

### ABSTRACT

Currently the total power of PV-generators in the built environment is small compared to the power of the distribution transformer. With the steady growth of PV installations, the penetration of PV-generators in the built environment will grow as well. This can lead to harmonic distortion [1,2]. In order to be able to predict whether this will occur, a simple though accurate harmonics model for the grid, the cables, the loads and the inverters is presented, as well as a measuring method to determine the necessary frequency dependent parameters of inverters and loads in general.