



SOLAR IRRADIANCE ESTIMATION FOR BRAȘOV URBAN AREA

Andreea - Laura Coste*, Elena Eftimie

*Transilvania University of Brașov, Product Design Centre for Sustainable Development and Recycling,
B-dul Eroilor, 29, 500036 Brașov, România*

Abstract

The present paper proposes the modelling of solar radiation for Brașov urban area, depending on the Linke turbidity factor (T_L , represents a convenient way to model the absorption and scattering suffered by solar radiation as it passes through Earth's atmosphere). For a more precise solar radiation modelling, this study proposes the use of two approaches for Linke turbidity, in premises of clear sky conditions; the first one consists of the use of constant values for each month and the other consists of the use of variable values (original functions depending on solar time are proposed). T_L factor was determined from direct solar radiation measurements obtained from a local weather station (global and diffuse radiation measurements). In order to validate the proposed models, the paper finally proposes the calculation of mean percentage error (MPE). The results are presented in graphical form.

Key words: Linke turbidity factor, solar radiation, the mean percentage error – MPE

Received: September, 2010; Revised final: February, 2011; Accepted: February, 2011

* Author to whom all correspondence should be addressed: e-mail: andreea.coste@unitbv.ro; Phone: +0040 268 412921; Fax: +0040 268 412921