Environmental Engineering and Management Journal xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
http://omicron.ch.tuiasi.ro/EEMJ/

"Gheorghe Asachi" Technical University of Iasi, Romania

INDIRECT ENVIRONMENT-RELATED EFFECTS OF ELECTRIC CAR VEHICLES USE

Bogdan O. Varga, Florin Mariasiu*

Automotive Engineering & Transports Department, Technical University of Cluj-Napoca, Bdul. Muncii 103-105, Cluj-Napoca, Romania.

Abstract

The article presents a study on the indirect environment-related effects of electric car vehicles use. Although electric vehicles are considered zero emission vehicles, their use may be linked to indirect pollution of environment caused by energy sources used for electricity production and also other sources of pollution such as poor recycling procedures. A computer simulation was performed to determine the energy consumption of electric vehicles available on the Romanian car market. The values obtained were correlated with emissions of CO_2, NO_x and SO_x pollutants. Furthermore a supplementary analysis was performed to determine the necessary combination and related management of energy sources to minimize the environmental impact of electric vehicles, in order to increase their use for a future sustainable transportation domain. The study shows that SO_x emissions in particular will increase in Romania alone, as a result of the implementation of electric cars, unless alternative and renewable energy sources are implemented in the society. This study reports crucial statistics and information which delineate that legislative policies must be in place before a full implementation of electric vehicles is carried out, in order to avoid increase in emissions countries without the direct access to renewable energy resources.

Key words: electric vehicles, energy sources, environment, management, modeling, pollutant emissions

Received: June, 2014; Revised final: August, 2014; Accepted: September, 2014

* Author to whom all correspondence should be addressed: e-mail: florin.mariasiu@auto.utcluj.ro; Phone +040730011747; Fax +040264415950