

Accepted Manuscript

Measurement, Evaluation and minimization of CO₂, NO_x, and CO emissions in the open time dependent vehicle routing problem

Mansoureh naderipour, Mahdi Alinaghian

PII: S0263-2241(16)30110-5

DOI: <http://dx.doi.org/10.1016/j.measurement.2016.04.043>

Reference: MEASUR 3980

To appear in: *Measurement*

Received Date: 6 January 2015

Revised Date: 10 April 2016

Accepted Date: 19 April 2016



Please cite this article as: M. naderipour, M. Alinaghian, Measurement, Evaluation and minimization of CO₂, NO_x, and CO emissions in the open time dependent vehicle routing problem, *Measurement* (2016), doi: <http://dx.doi.org/10.1016/j.measurement.2016.04.043>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Measurement, Evaluation and minimization of CO₂, NO_x, and CO emissions in the open time dependent vehicle routing problem

Mansoureh naderipour^a, Mahdi Alinaghian^{a*}

^aDepartment of Industrial and Systems Engineering, Isfahan University of Technology, 84156-83111 Isfahan, Iran

Abstract:

In this paper, a new comprehensive model has been presented for the measurement, evaluation and minimization of CO₂, NO_x and CO as three important emissions (emitted from vehicles) in the open time dependent vehicle routing problem (OTDVRP). In the OTDVRP, traffic properties of congested regions like city centers are considered. Travel time between two points depends on the time of departure, and the vehicles do not come back to the depot. In some distribution companies, vehicles are rental; therefore, they do not come back to the depot from the last customer. To solve the proposed problem, an improved Particle Swarm Optimization algorithm is developed. The results show good performance in computation experiments compared to original PSO algorithm. The results of the experiments show that considering minimization, the pollutants can reduce emissions by 16% on the average compared to the classical open TDVRP. Factors causing the variation in emissions are also identified and discussed in this study.

Keywords Air pollution, Transportation, Environmental emissions, Green open time dependent vehicle routing problem, Particle Swarm Optimization Algorithm.

* . Corresponding author, email address: alinaghian@cc.iut.ac.ir.

Download English Version:

<https://daneshyari.com/en/article/7123613>

Download Persian Version:

<https://daneshyari.com/article/7123613>

[Daneshyari.com](https://daneshyari.com)