

Séminaire du CIRRELT

Travel times and CO2 emissions in time-dependent Vehicle Routing

Abstract

Distribution is a vital component in virtually any supply chain, thus when addressing the growing concern over environmental issues, distribution should be encompassed as well. Regardless of whether companies are going to voluntarily incorporate green policies in practice, or will be forced into doing in the context of new legislation, change is foreseen in the future of transportation management. Assigning and scheduling vehicles to service a predetermined set of clients is a common distribution problem. Incorporating time-dependent travel times between the links has been recently adopted as a more realistic way of modeling travel time, as opposed to the classical approach that assumes constant travel times between the links. Within this framework, we address the vehicle routing problem from two extreme standpoints; one seeks to optimize exclusively on total travel time; the other does so on total CO2 emissions. In addition we develop a cost based optimization model, that takes into account emissions and travel times as cost components. Furthermore, we construct bounds on the total amount of emissions that may be saved by making use of distance based VRP solutions. Finally, in order to portray a more realistic picture. We present a cost based model that optimizes on a weighted average of travel time, emission and fuel costs. We experiment with standard sets from literature. Solutions are obtained via a tabu search procedure.



Tom Van Woensel

Tom Van Woensel is Assistant Professor of Operations Management at the Eindhoven university of Technology, School of Industrial Engineering in the Netherlands. He holds an M.Sc. in Applied Economics and a PhD in Operations Management from the University of Antwerp (Belgium). After the completion of his PhD, he moved to the Eindhoven University of Technology where he specializes in transportation under uncertainty and retail operations. He published over 20 papers in academic journals (including Production and Operations Management, Computers and Operations Research, Transportation Research, European Journal of Operational Research, Journal of Mathematical Modeling and Analysis, and International Journal of Production Economics) and several chapters in international books. Van Woensel is also a board member of the European Supply Chain Forum, a collaborative effort with about 20 large multinational companies. He held visiting appointments at the Université Catholique Louvain (Belgium), University of Antwerp (Belgium), Lessius University College (Belgium) and the MIT-Zaragoza Logistics Center (Spain).



Ola Gabali

Ola Gabali received the following degrees in Industrial Engineering: B.Sc. (2003) and M.Sc. (2007) from the Technion - Israel Institute of Technology. She is currently a PhD candidate at the Eindhoven university of Technology, the Netherlands. Her academic research has been in health care operations management and vehicle routing problems.

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10h30

Local 3510

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Bienvenue à tous

et à toutes!

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