

Truck-and-drone routing problems in last mile logistics: exact and heuristic approaches

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Abstract. In the last years, the integration of new distribution technologies in the delivery systems, specifically drones, has been investigated by several companies to reduce the costs of the Last Mile Logistics. The most promising delivery system, in terms of emissions and completion time reduction, consists of a truck and a drone operating in tandem for the parcel delivery to the customers. These truck-and-drone delivery systems have led to the definition of new and complex decision and optimization problems for which operations research methodologies represent a valuable support tool. In this work, we discuss exact and heuristic approaches for different truck-and-drone routing problems, and we provide a computational study on literature instances aimed at showing the performance of the proposed approaches in terms of the quality of the solution and computation time.

Keywords: Logistics, Drones, Mixed Integer Linear Programming, Heuristic

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