Mathematical model of vehicle routing problem with compartment, split delivery, multi product, and time windows

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Abstrak

ABSTRAK
This research proposes a mathematical model of the Vehicle Routing Problem with Compartment (VRPC) by considering split delivery, multi product, and time windows. VRPC is variant of VRP which is an extention of the Capacitated Vehicle Routing Problem (CVRP) by considering the used of compartment in the vehicle. Compartment is used to separate different product to be distributed. The application of the VRPC concept in a real system can be found in the distribution system of fuel, oil, recycled waste, or food distribution. The mathematical model is used to determine the route that minimize the distance. AMPL software and CLPEX solver is used to create the mathematical programming of the model and solve it. The proposed mathematical model is Mixed Integer Nonlinear Programming (MINLP). Numerical experiments is conducted to illustrate the use of the model. The experimental results show that the model passed the verification and validation tests.