S. Davidov and M. Pantos, "Optimization of expansion planning of electric drive vehicle infrastructure," *Mediterranean Conference on Power Generation, Transmission, Distribution and Energy Conversion (MedPower 2016)*, Belgrade, 2016, pp. 1-7.
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Abstract: This paper presents an optimization location model in order to minimize the overall charging infrastructure placement cost by satisfying the charging reliability constraint. Charging reliability of the charging infrastructure is defined by placing at least one charging station within the driving range of the electric drive vehicle drivers. The candidate location points of the road network and the trajectories of the electric drive vehicle drivers reflecting their behaviour are modelled by applying the finite set theory. Thus, considering an optimization period, the candidate location (nodal) traffic flow is identified and included in the optimization objective function. Also, the overall cost is considered in placing a charging station at the candidate location point, regarding the costs for installation, land, basic equipment, etc. The optimization model is applied on a test road network. Linear binary programming is applied in finding the optimal solution. Results show the optimal selection of candidate locations (minimal overall placement cost) with regards to the driving range of the electric drive vehicle and the charging reliability.
keywords: {electric drives;electric vehicle charging;optimisation;reliability;secondary cells;set theory;charging infrastructure placement cost;charging reliability constraint;charging station;electric drive vehicle drivers;electric drive vehicle infrastructure;expansion planning optimization;finite set theory;linear binary programming;optimization location;optimization objective function;test road network;traffic flow;charging infrastructure;discrete set modelling;electric drive vehicles;location optimization},
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