

Model and Algorithm for Dynamic Wireless Electric Vehicle Charging Network Design

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Abstract : When in-wheel wireless charging technology for electric vehicles becomes mature, a need for such integrated charging stations network development is essential. In this paper, we thus investigate the optimisation problem of in-wheel wireless electric vehicle charging network design. A mixed-integer linear programming model is formulated to solve into optimality the problem. In addition, a meta-heuristic algorithm is proposed for efficiently solving large-sized instances within a reasonable computation time. A parallel computing strategy is integrated into the algorithm to speed up its computation time. Experimental results carried out on the benchmark instances show that our model and algorithm can find the optimal solutions and their potential for practical applications.

Keywords : electric vehicle, wireless charging station, mathematical programming, meta-heuristic algorithm, parallel computing

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