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Design and Analysis of Wireless Charging Lane for Light Rail Transit

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Abstract : This paper presents a design and analysis of wireless charging lane system (WCLS) for light rail transit (LRT) by considering the performance of wireless charging, traffic conditions and energy consumption drawn by the LRT system. The dynamic of the vehicle movement in terms of the vehicle speed profile during running on the WCLS, a dwell time during stopping at the station for taking the WCLS and the capacity of the WCLS in each section are taken into account to alignment design of the WCLS. This paper proposes a case study of the design of the WCLS into 2 sub-cases including continuous and discontinuous WCLS with the same distance of WCLS in total. The energy consumption by the LRT through the WCLS with the different designs of the WCLS is compared to find out the better configuration of those two cases by considering the best performance of the power transfer between the LRT and the WCLS.

Keywords : Light rail transit, Wireless charging lane, Energy consumption, Power transfer
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