

The dependance on mechanical design in railway electrification: focusing on the ac perspective

J.R. Jiménez-Octavio, C. Sanchez-Rebollo, A. Carnicero

Abstract— Electrification of railway systems becomes a very tricky topic when designing overhead contact lines (OCLs). This article highlights the strong dependence of the mechanical design on the railway electrification. Indeed, only the high sensitivity of the quality of service to the mechanical performance of the OCL can explain the complex designs of the existing railway lines. The interoperability framework of the European Union together with the standards that tackle gauges and clearance calculations are briefly introduced, both for the static and dynamic analyses of the pantograph and catenary.

Index Terms— pantographs; power overhead lines; quality of service; railway electrification; sensitivity analysis;

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