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Controlling Rail Potential of DC Supplied Rail Traction Systems

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Abstract: Most modern DC electrified mass transit systems use a totally floating earth as their grounding strategy. A well-known problem related with totally floating systems is that the touch potentials can be dangerously high. In order to reduce the voltages on rails, several devices exist. Most of these devices allow a direct connection to earth when a certain voltage threshold is exceeded. In this paper, the working principles of these devices are given and the effect of certain parameters related with these devices on the minimum achievable touch potentials is investigated.

Key Words: Rail Transit, Earthing, Rail Potential Control, Stray Currents, Touch Voltage

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