Estimation of Current Collection Performance of Catenary System with Gas Spring Type Tensioning Device

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The static geometry and current collection characteristics of overhead contact lines are affected by the influence of tension fluctuation which depends on the characteristics of the automatic tensioning device. In this paper, we clarified the influence of the properties of the automatic tensioning device, that of the catenary's geometry and condition upon the tension and height of the OCS and its current collection performance with a focus on the gas spring type automatic tensioning device (GSTB). We carried out numerical simulation to evaluate the structural fluctuation of the overhead contact line due to temperature change. As a result, it was ascertained that the heavy compound catenary system with the GSTB has sufficient current collection performance when trains run at a speed of 300 km/h or less.