

**Fundamental Study of Protection Method for DC Substation  
with due Consideration on the Characteristics of VVVF**

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Protection equipment for DC electrified railway substations breaks fault current within short time by detecting large current. The equipment must distinguish fault current from load one based on the appropriate criteria establishment. Recently, variable-frequency drive (VVVF) has been used for a new-type electric rolling stock, instead of conventional resistance control drive. The fluctuation range of load current of VVVF drive is different from that of the conventional drive. Therefore, we have investigated feeding current fluctuation range at several substations and studied appropriate protection method taking account of the characteristics of VVVF.