

Abstract

The rotating electrical machine includes a stator, a rotor, and a casing that accommodates the stator and the rotor, in which at least one of the following conditions 1 and 2 is satisfied.

Condition 1: a thermal conductivity A of a non-oriented electrical steel sheet that is used for a core of the stator is in a range of 12 to 35 W/(m·K), a thermal conductivity B of a non-oriented electrical steel sheet that is used for a core of the rotor is in a range of 10 to 33 W/(m·K), and both the thermal conductivities have a relationship of an expression (1) of $A > B$

Condition 2: a thermal diffusivity A1 of the non-oriented electrical steel sheet that is used for the core of the stator is in a range of 3.0×10^{-6} to 9.0×10^{-6} m²/sW/(m·K), a thermal diffusivity B1 of the non-oriented electrical steel sheet that is used for the core of the rotor is in a range of 2.5×10^{-6} to 8.5×10^{-6} m²/sW/(m·K), and both the thermal diffusivities have a relationship of an expression (3) of $A1 > B1$

FIG. 1