

Title (en)
SYNCHRONOUS MACHINE EXCITED BY PERMANENT MAGNETS

Title (de)
PERMANENTMAGNETERREGTE SYNCHRONMASCHINE

Title (fr)
MACHINE SYNCHRONE EXCITÉE PAR DES AIMANTS PERMANENTS

Publication
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Application
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Abstract (en)
[origin: WO2022248300A1] The invention relates to a synchronous machine which is excited by permanent magnets and has a stator (2) and a rotor (1) which rotates adjacent to the stator (2) about a longitudinal axis (3). The rotor (1) comprises a number of surface magnets which are disposed along the circumference of the rotor (1). The surface magnets are designed as Halbach arrays (4), each of which comprises tangential segments (PM1, PM4, PM5, PM8), in which the magnetisation direction (M) is oriented predominantly in the circumferential direction, and normal segments (PM2, PM3, PM6, PM7), in which the magnetisation direction (M) is oriented predominantly in the radial direction or counter to the radial direction, and in the field of the stator (2) the tangential segments (PM1, PM4, PM5, PM8) are subjected to a radially inwardly directed force (-Fn) and the normal segments (PM2, PM3, PM6, PM7) are subjected to a radially outwardly directed force (+Fn). According to the invention, the tangential segments (PM1, PM4, PM5, PM8) and the normal segments (PM2, PM3, PM6, PM7) are shaped in such a way that, by form fitting, the tangential segments (PM1, PM4, PM5, PM8) partially compensate for the forces directed radially outwards onto the normal segments (PM2, PM3, PM6, PM7) by means of the forces directed radially inwards onto the tangential segments (PM1, PM4, PM5, PM8).

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