



Abstract

162162

This synchronous motor controlling apparatus comprises a current detection section 5a, voltage detection section 5b, position and speed detection section 6, speed difference calculation section 7a, speed controlling section 7b, torque controlling section 7c, multiplication section 7d, phase controlling section 8, and current controlling section 9. The current detection section 5a detects a motor current supplied to the synchronous motor 4. The voltage detection section 5b detects a voltage at a terminal of the synchronous motor 4. The position and speed detection section 6 is determined a motor model therein, receives the motor current and voltage as input, carries out predetermined operation, and detects a rotation speed of a rotor and rotation position of the rotor. The speed difference calculation section 7a calculates a difference between the detected speed and a speed command given from the exterior. The speed controlling section 7b receives the speed difference as input, carries out speed controlling operation, and outputs current command so that average speed becomes the command speed. The torque controlling section 7c receives the speed difference as input, carries out torque controlling operation, and outputs current amplitude modulation signal for compensating the current command. The multiplication section 7d multiplies the current command and the current amplitude modulation signal so as to obtain torque controlling current command. The phase controlling section 8 receives the torque controlling current command and the phase command given from the exterior as input, carries out phase controlling operation so as to output final current command. The current controlling section 9 receives the detected rotor position, motor current and final current command as input, carries out current controlling operation so as to output voltage command for supplying to the inverter 3. The apparatus realizes improvement in controllability, improvement in voltage utilization rate, decrease in noise, sufficient suppression in vibration, and improvement in efficiency, with little affection of the motor characteristics.



G00002