

# MODELLING OF A PERMANENT MEGNET SYNCHRONOUS MOTOR

## ABSTRACT

Permanent magnet synchronous motor (PMSM) used in servo-mechanical systems is generally called "brushless servomotor or brushless AC servomotor". The power density of a PMSM is higher than one of induction motor with the same ratings due to the no stator power dedicated to the magnetic field production.

Nowadays, PMSM is designed not only to be more powerful but also with lower mass and lower moment of inertia. Due to its high power density and smaller size, PMSM has in recent years evolved as the preferred solution for speed and position control drives on machine tools and robots. In vector control drive, the highly accurate position from position sensor is required to transform the abc variables to the dq variable in the synchronously rotating reference frame aligned with the rotor flux linkage vector.

In this thesis the rotor position is necessary to achieve the vector control drive system of Permanent Magnet Synchronous Motor (PMSM). The resolver sensor detecting the rotor position of PMSM is focused. The outstanding features of this sensor are its robust structure and noise insensitivity. The resolver algorithm is proposed and implemented in the vector control drive system of PMSM. The proposed scheme has been verified by simulation.