The control of permanent magnet synchronous motor drive based on the space vector pulse width modulation and fractional order PID controller

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Publication date

2022/5/6

Journal

Periodicals of Engineering and Natural Sciences (PEN)

Volume

10

Issue

3

Pages

79-85

Description

This study explains a new way to speed control for PMSMs based on the FOC and SVPWM techniques employed in the building of the permanent magnet synchronous motors (PMSMs). When it comes to current control, two inner and one outside feedback loops were used. Feedback control with FOPID controllers is used to optimize the performance of PMSM motor design. FOPID parameters were optimized using genetic algorithms in MATLAB/Simulink simulations. Good dynamic and static qualities are demonstrated through simulation results. There is also a comparison of PMSM PID and FOPID controllers included.