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Comparison of Proportional-Integral (P-I) and Integral-Propotional (I-P) Controllers for Speed Control in Vector Controlled Permanent Magnet Synchronous Motor Drive

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Abstract : Indirect vector control is known to produce high performance in Permanent Magnet Synchronous Motor (PMSM) drives by decoupling flux and torque producing current components of stator current. The most commonly used controller or the vector control of AC motor is Proportional-Integral (P-I) controller. However, the P-I controller has some disadvantages such as high starting overshoot, sensitivity to controller gains and slower response to sudden disturbance. Therefore, the Integral-Proportional controller for PMSM drives to overcome the disadvantages of the P-I controller. Simulations results are presented and analyzed for both controllers and it is observed that Integral-Proportional (I-P) controllers give better responses than the traditional P-I controllers.

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