

# **Model-based loss minimization for DC and AC vector-controlled motors including core saturation**

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## **Abstract-**

**A generalised d-q loss model for electrical motors is presented in this paper. It is shown to be applicable to permanent magnet synchronous motors, reluctance synchronous motors, induction motors and DC motors. A model-based loss-minimization algorithm of easy implementation is proposed based on the loss model. In addition, the generalised algorithm includes core saturation. The paper reviews the loss-minimization schemes previously presented in the literature for specific types of motor. It shows how all these can be obtained from the generalised model and algorithm presented here. Results are compared with those reported in the literature for a specific type of motor.**

**Index Terms-** Dc motor, induction, loss, minimization, permanent magnet, reluctance

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