

# **Four Quadrant Robust Quick Response Optimally Efficient Inverterfed Induction Motor Drive**

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**Circuits and Systems, 1989., Proceedings of the 32nd Midwest Symposium  
on;Publication Date: 14-16 Aug 1989**  
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## **Summary**

A new approach for controlling the speed of an inverter-fed induction motor which operates with variable flux for high-efficiency purposes is presented. An optimal efficiency calculator provides optimum flux and torque producing current, while a supervisory control eliminates the intricate boot-strap effect of the flux-torque loop. A model reference-based adaptive speed controller guarantees quick speed response and robustness of the drive system. Simulation results with a 100-hp motor show that up to 80% savings in controllable losses are achievable at light load, and the motor can reach rated speed in just 750 ms. The control algorithms developed are readily implementable with present-day microprocessors

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