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## SENSORLESS CONTROL OF AC DRIVES AT VERY LOW AND ZERO SPEED

The elimination of rotor position/velocity sensors in AC drives has been the focus of intensive research for more than two decades. The methods developed to achieve this goal are commonly referred to as sensorless control. Among the expected benefits of sensorless control are cost reduction, increased robustness and size reduction.

Sensorless control techniques that rely on the fundamental excitation have been shown to be capable of providing high performance control in the medium to high-speed range. However, the performance of these methods decrease as speed decreases, very low-speed control and position control is not feasible. To overcome this limitation, sensorless control methods based on tracking the position of rotor asymmetries have been proposed.

These techniques measure the response of the machine when a high-frequency excitation is applied via the inverter, and have no restriction working at very low-speeds, enabling zero speed and position control.

This paper reviews high frequency signal injection methods for the rotor position/speed sensorless control of AC machines. Principles of operation, implementation and limits will be covered.

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