

## Schneider Electric Innovation increase Medium Voltage Motor Control Performance

Schneider Electric is leading the Digital Transformation of Energy Management and Automation in Homes, Buildings, Data Centers, Infrastructure and Industries. Innovation is a key part of our strategy and we continually invest in our products to meet our customer's changing needs.

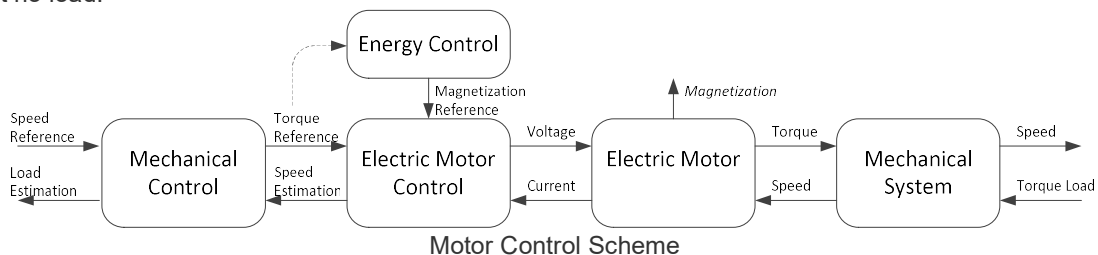
The Altivar Process range of variable speed drives is the next generation of variable speed drives, designed to deliver IIoT benefits. As **smart, connected device** with built-in intelligence to gather data and share information into the enterprise level, the **Altivar Process can reduce your total cost of ownership, improve efficiency and better energy management.**

A demonstration of this innovation within our Medium Voltage Drives range is the **patent awarded for the innovation around increasing motor control performance** by means of accurate estimation of the magnetization saturation of the motor.

### Current solutions:

Variable Speed Drives embed advanced algorithms to control electric motors and connected applications. Mechanical control algorithm has the objective to regulate motor speed to a set-point by calculating a reference torque. Electric motor control algorithm has the objective to provide accurate and performant torque on the rotor shaft optimizing electrical energy. It has a freedom degree corresponding to motor magnetization. One of the important features is the motor magnetic saturation curve. Exact knowledge of motor model parameters, and in particular the magnetic saturation curve, improves the dynamic and static shaft behavior and the energetic performance of asynchronous motors.

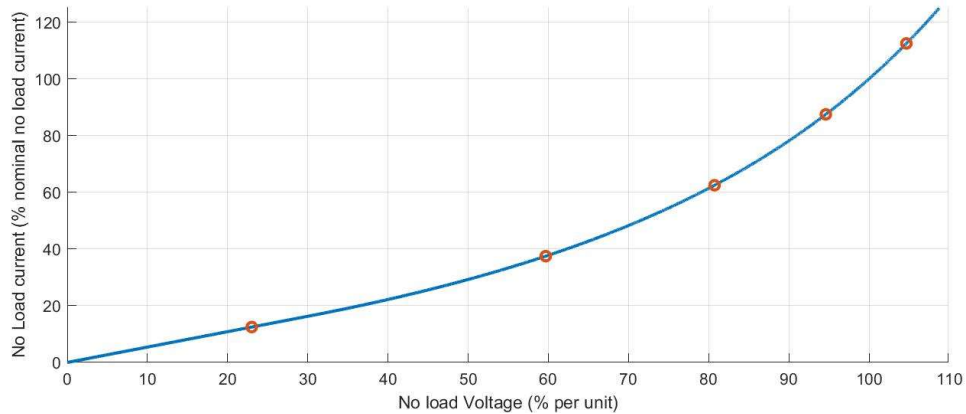
As this feature is usually not available from motor datasheet, the VSD can estimate it. Some identification methods at standstill already exists. These methods are highly dependent on the measurement chains accuracy as well as stator resistance. Some rotating methods exist as well but require the motor to be at no load.



### Meeting the challenge:

The new method is identifying magnetic saturation model parameters in rotation with a mechanical control of the load. During the procedure, the flux and torque are decoupled by control algorithms, so the identification is operational up to the maximum load torque **without need to decouple the driven equipment** from the motor. The saturation curve is identified by varying the current of the flux between its minimum possible value and its maximum possible value under the constrain of a load torque. Several iterations can be done to achieve best result. **This method is simple, robust and easy to implement** in an industrial variable speed drive. The measurement has just to be done once during commissioning.

### Result of Patented magnetic saturation estimation current vs voltage, at constant speed/no load condition



### Benefits

With Schneider Electric's patented "Magnetization autotuning" approach, the magnetic saturation curve can be estimated in rotation and delivers a more accurate motor modeling. This has consequence to outperform existing solutions and results in high dynamic load response and optimized energy performance accuracy.

In fact, with the new method the drive can do a better estimation of the motor model parameters and this will bring several benefits on electric motor control:

- Improvement of the mechanical dynamic and static performances, especially at very high torque and high speed
- Improvement of the torque control accuracy of the torque on the full speed range
- Optimization of the energetic performances

All this will give you the benefit of optimized utilization of your drive installation and will help reduce total cost of ownership (TCO) by global energy optimized operation.

### Want to learn more about our high-power Drives?

Visit: <http://www.schneider-electric.com/drives>

[ATV6000](#)