ENGINEERING
TOMORROW

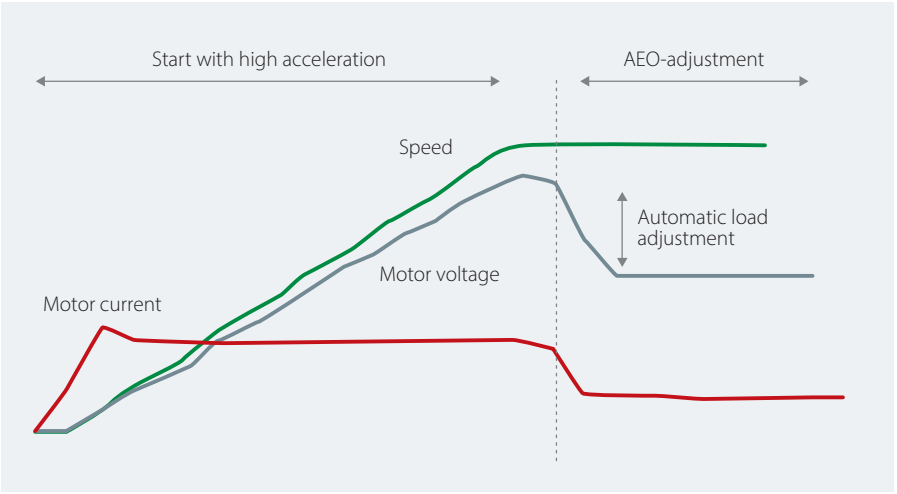
Fact Sheet | VLT® AutomationDrive FC 302

Software enhancements for optimized drive performance

A range of software enhancements have been introduced to optimize the performance of the VLT® AutomationDrive FC 302.

More robust energy optimization

Automatic Energy Optimization (AEO) is a unique control feature. It allows the VLT® AutomationDrive FC 302 to automatically ensure – without the need of user interaction – that the voltage and frequency relationship is always optimum for a motor's load. This guarantees peak motor efficiency under all operating conditions.



The existing AEO functions for asynchronous motors (ASM) have been optimized and made more robust. They are usable in both Constant Torque (CT) and Variable Torque (VT) applications both in VVC+ mode and Flux mode. Finetuning can be performed with parameter 14-41.

New Automatic Motor Adaptation algorithm

Automatic Motor Adaptation (AMA) is a test procedure that measures the electrical characteristics of a motor. It ensures that your AC drive is always perfectly adapted to the attached motor and changing loads.

The algorithm – AMA II – is a new torque calibration method.
It determines much faster the resistance and induction values for asynchronous motors and permanent magnet (PM) motors.

Improved flux control open loop

Flux control provides high shaft performance. VLT® AutomationDrive FC 302 features the new, optimized current-oriented flux open-loop control for asynchronous motors and surface-mounted permanent magnet (SPM) motors. Changeover points, necessary in the previous control method, have now been eliminated.

Integrated Motion Controller IMC

Positioning and synchronization is traditionally performed by servo drives and complex motion controllers. However, many of these applications do not actually require the dynamic performance available from servo drives. With integrated motion functionality the VLT® AutomationDrive FC 302 offers a cost effective, high-performance alternative to complex motion systems in single-axis positioning and synchronizing applications. VLT® AutomationDrive FC 302 IMC controls induction and PM motors with or without out feedback with no need for additional hardware.

Enhanced motor support

VLT® AutomationDrive FC 302 provides permanent magnet non-salient (SPM) and salient (IPM) motor support (in open loop VVC+ mode, also covering over voltage control (OVC) and Flying Start (FS).

Intuitive maintenance

Preventive maintenance functions in the VLT® AutomationDrive FC 302 ensure worry-free operation while reducing maintenance costs and unplanned downtime. They can be used to schedule proactive maintenance alerts based on running time of the drive and triggering alerts. These are visible on the LCP and are transferable over fieldbus.

Feature	Benefit
Automatic Energy Optimization (AEO)	
Inverter	– Reduces magnetization of the motor in static operating conditions which saves energy
Improved AEO algorithm	– Improves dynamics (response to load steps) and increases start-up torque
Automatic Motor Adaptation algorithm	
Enhanced measurement of equivalent motor data	– Faster and more reliable commissioning of all motors (for example, IE3) – Optimized performance – AMA runs with standstill motor
Calibrated to temperature	– Ensures perfect motor data in the drive
Flux control open loop	
Omission of switchover point	– Absorption current is reduced during start-up cutting the amount of energy used – Shocks to the load during acceleration/ deceleration are reduced
Integrated Motion Controller	
Motion control functionality integrated into the AC drive	– Save cost and time for extra components
No encoder and no encoder wiring required	– Lower purchase cost due to fewer components – More robust installation – Reduced electrical and mechanical installation time
No complex motion controller required	– Easier and faster set-up – No advanced programming required – Lower purchase cost
Configuration via parameters	– Achieve a safe result – Save time – Avoid complexity – Minimize risk of errors associated with advanced programming
Home synchronizing	– High level of accuracy maintained continuously in systems with slip – Renewal of calibration on every cycle
Homing on torque limit	– Save purchase, installation and maintenance cost of extra equipment – No sensor required

Real-Time Clock support

Access to Real-Time Clock (RTC) from supported fieldbuses.

The Real-Time Clock makes it possible to add a time stamp to recorded events. Real-time stamps for data logging enable improved failure analysis.

Service log

The 'Service log' is a feature that allows you to log more data by a selected trip. With more and better data available, the customer/OEM and Danfoss can provide better support.

By setting the RTC, the log will contain the correct time and date of the trip.

After a trip, data can be copied to VLT® Motion Control Tool MCT 10 where a graphical view of the last 4-5 seconds before the trip can be analyzed in a scope view.