3 General project planning information

3.1 EMC measures

3.1.1 EMC directive 2004/108/EC

AC motors, AC brakemotors and MOVIMOT® drives from SEW-EURODRIVE are components for installation in machinery and systems. The originator of the machine or system is responsible for complying with the EMC Directive 2004/108/EC.

For specific information on MOVIMOT® drives, refer to the "Drive System for Decentralized Installation" system manual.

3.1.2 Line operation

SEW-EURODRIVE AC (brake)motors satisfy the EMC generic standards EN 50081 and EN 50082 when used in accordance with their designated use in continuous duty. No interference prevention measures are required.

3.1.3 Switching operation

For switching operation of the motor, please take suitable measures for suppressing interference from the switchgear.

3.2 Inverter operation

3.2.1 Installation note

For the duty cycle of AC motors of series DR.., refer to the installation and EMC instructions provided by the inverter manufacturer.

Please also observe the information in chapter "Drive selection – controlled motor" (→ 🗎 179) and the following project planning guidelines.

3.2.2 Brake motors on the inverter

Install the brake cables of brakemotors separately from the other power cables, maintaining a distance of at least 200 mm. Joint installation is only permitted if either the brake cable or the power cable is shielded.

3.2.3 Connection of a speed sensor to the inverter

Observe the following instructions when connecting the tachometer:

- Use a shielded cable with twisted pair conductors only.
- Connect the shield to the PE potential on both ends over a large surface area.
- Route signal leads separately from power cables or brake cables (min. distance 200 mm).

In this regard, please also observe the information in chapter "Drive selection – controlled motor" (→ 🗎 179)

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3.2.4 Connection of a PTC thermistor (TF) to the inverter

Install the connecting lead of the positive temperature coefficient (PTC) thermistor TF separately from other power cables, maintaining a distance of at least 200 mm. Collective installation is only permitted if either the TF cable or the power cable is shielded.

3.3 Safe switching of inductances

Note the information in the following sections for switching of inductances.

3.3.1 Switching of motor windings with a high number of poles

If the cable is installed unfavorably, switching of low-speed motor windings can generate voltage peaks. Voltage peaks can damage windings and contacts. To avoid this, install the incoming cables with varistors.

3.3.2 Switching of brake coils

Varistors must be used in order to avoid harmful switching overvoltages caused by switching operations in the DC circuit of disk brakes.

Brake control systems from SEW-EURODRIVE are equipped with varistors as standard.

- Use switch contacts in utilization category AC-3 according to EN 60947-4-1 for switching the motor and the brake.
- Use switch contacts in utilization category DC-3 according to EN 60947-4-1 for switching the brake with DC 24 V.

3.3.3 Suppressor circuit on the switching devices

According to EN 60204 (Electrical Equipment of Machines), motor windings must be equipped with interference suppression to protect the numerical or programmable logic controllers. Because problems are primarily caused by switching operations, we recommend installing suppressor circuits on the switching devices.

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3.4 Energy-efficient motors

Due to their higher costs and inertia of the rotor, energy-efficient motors are not suitable for all applications. Important requirements for an economically and ecologically suitable application are:

- High number of daily operating hours
- Majority of operation with high capacity utilization
- Few starting and braking operations
- Combination with gear units that also feature a high efficiency

3.4.1 Application Examples

For example, a garage door drive that is operated twice a day and reaches the output speed by using a helical-worm gear unit should not be an energy efficient motor. The additional costs cannot be justified.

The indexing mechanism that operates a slider or cam follower 60 times per minute should not be an energy efficient motor. The starting energy increases due to the higher rotor mass.

In such applications, an energy efficient motor actually consumes more energy than a standard motor.

But a conveyor belt that transports material in the cement plant all day long, cooling tower drives, agitators, drives in wastewater treatment plants, etc. benefit significantly from using an energy efficient motor and save the plant operator money.

The energy consumption of electric drives with asynchronous motors can be considerably reduced if all existing means such as process optimization with electronic control end energy efficient motors are used in a meaningful way and in combination.

By using all design options for building an energy efficient motor, the DR.. motor offers an excellent platform for saving electrical energy.

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