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MOTORS AND MOTOR PROTECTION

MOTOR PROTECTION AND THE COMMON CAUSES OF FAULTS IN MOTORS

Motor protection

Motors should be fitted with protective devices to avoid unexpected breakdowns, costly repairs and subsequent losses that may occur because of motor downtime.



Installation protection

Fuses or short circuit relays provide protection of the electrical installation against short circuits in the motor.

Such protection is compulsory and legal and forms a part of the mandatory safety regulations.



External protection

There are several types of overload relays that can be installed before the motor.

The relays monitor one or several parameters. Motor current is the most typical one. When the value exceeds a pre-set limit, it shuts the motor off.



Internal protection

Built-in protection with thermal overload protection helps prevent damage and breakdown of the motor.

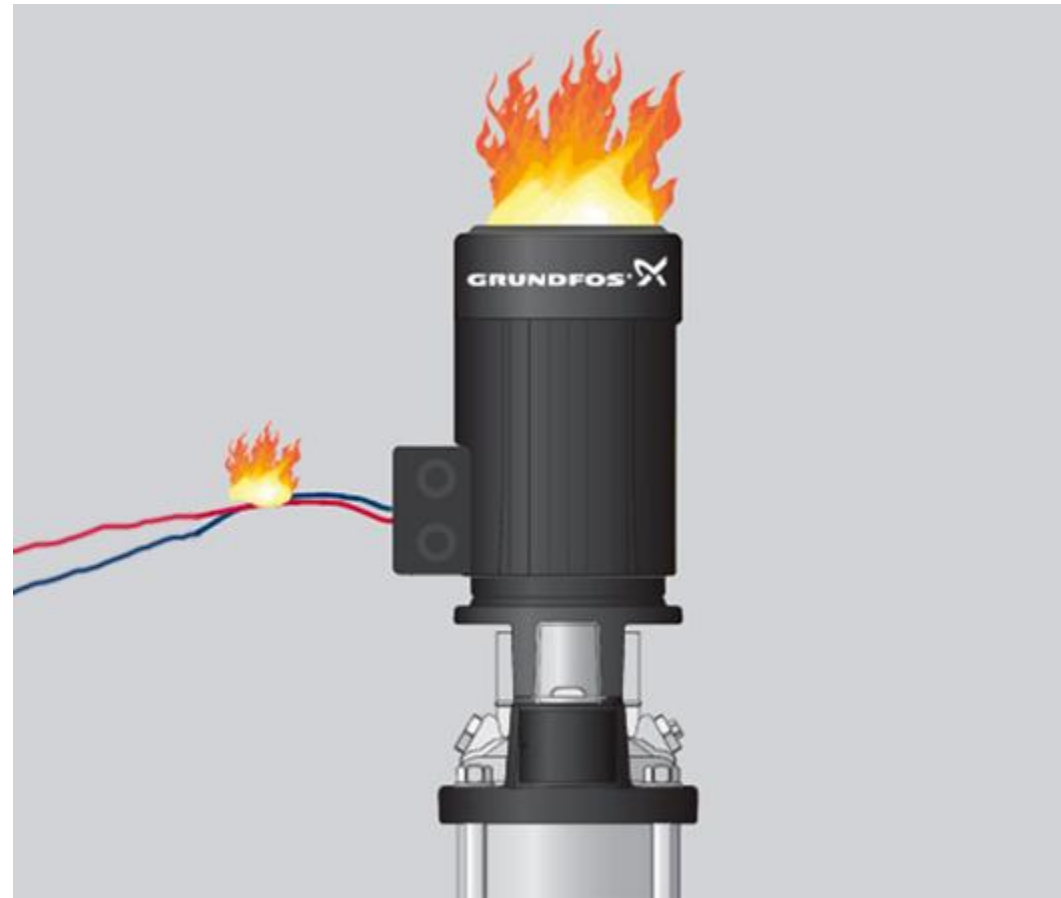
The built-in protection device always requires an external circuit breaker.



Common causes of faults in motors

Some common reasons for motor damage are:

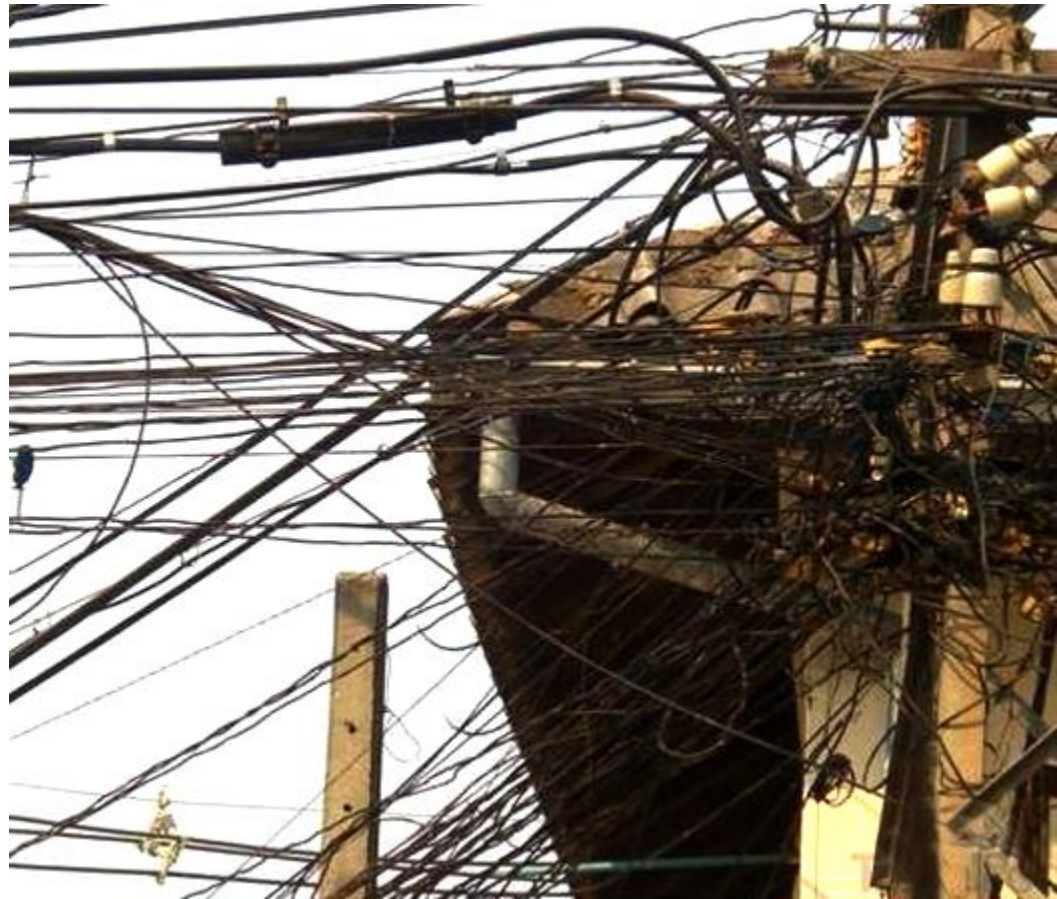
- Problems with the power supply
- Slow increase in the temperature of motor windings
- Fast increase in the temperature of motor windings



Problems with the quality of power supply

Problems with the quality of power supply occur because of:

- Over voltage
- Under voltage
- Imbalanced voltage/current
- Frequency variation
- Power surges



Slow increase in temperature

Slow increase in the temperature of motor windings can be because of :

- Bad power supply
- Insufficient cooling
- Increasing ambient temperature
- Increasing liquid temperature
- Frequent starts with high load inertia

Slow increase in the temperature of motor windings may cause a burned motor.

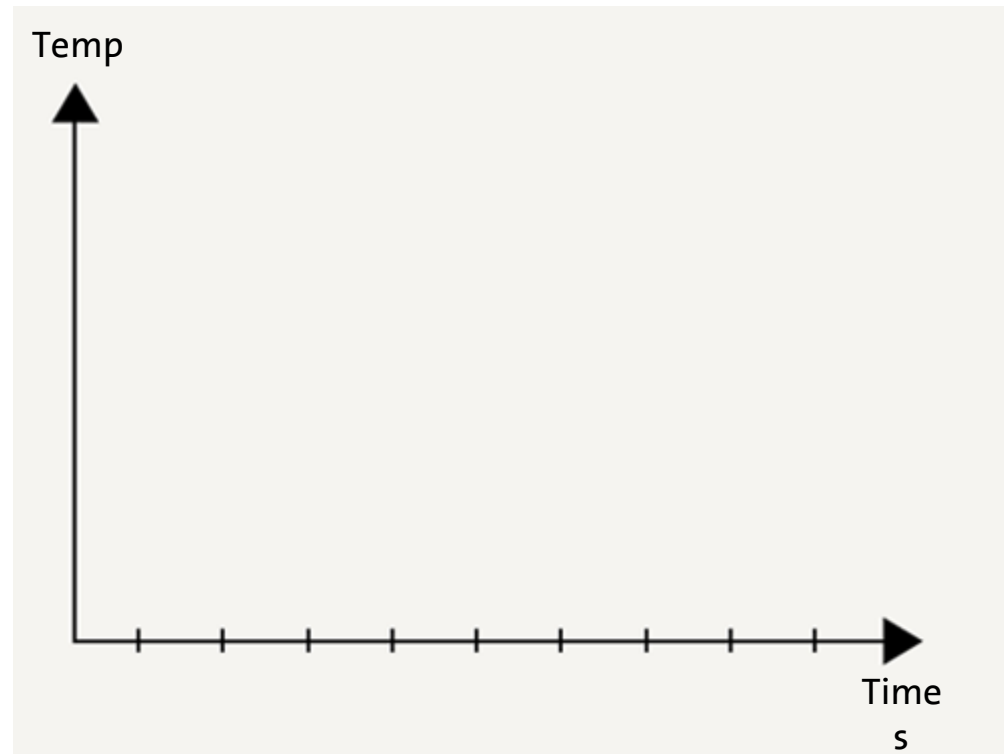


Fast increase in temperature

Temperature of the motor windings may increase quickly due to:

- Locked rotor
- Phase loss

Rapid increase in the temperature of motor windings may cause burned motor windings.





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