

# Optimising energy efficiency through maintenance

The process of carrying out maintenance on motor driven systems does not begin when a motor fails or is shut down for a service. Instead, maintenance must be initiated long in advance.

The best time to think about maintenance and replacement is while the motor driven system is still running smoothly. It is in this phase that operators have sufficient time to conduct all sensible and necessary analyses and deliberations that would allow them to act quickly in case of a sudden standstill. Modern maintenance concepts gather data (permanent or temporary) on the operational status of motor driven systems during regular operation and allow operators to assess the system's energy use. This information can then be used to draw conclusions regarding the typical load curve and ideal operating point as well as evaluate the sizing of the individual components (e.g. motor, frequency converter, pump/ventilator, etc.).

This approach allows operators - together with external experts, if necessary - to optimise a motor-driven system's energy use and replacement early on, giving them sufficient time to test or review different alternatives and receive quotes from suppliers. The finalised concept can then be filed and later immediately retrieved if and when necessary. In certain time-sensitive cases, it is important to purchase and stock a thus identified replacement motor or to set up permanent electronic condition monitoring. It is imperative to be clear about which drives are of strategic importance in an industrial process. The failure of a strategically important motor, whether small or large, can have a major impact on the production process and even bring an entire production line to a standstill, thus causing significant secondary damage and costs. Once these motors have been identified, operators can begin planning replacement measures.

Performing such thorough assessments and predictive planning is advantageous in every way. It allows operators to:

- optimise the energy use of motor-driven systems during unavoidable interruptions;
- order necessary components with long delivery times in advance;
- continually modernise the machinery;
- check and, if necessary, adjust or correct the operating profile of motor driven systems;
- avoid unnecessary purchase or maintenance costs (easier handling, cheaper material usage, etc.);
- ensure that their systems produce less waste-heat due to the decrease in energy losses, which in turn has a positive effect on the motor driven systems' lifespan and reduces the costs associated with air-conditioning and cooling (e.g. in the food processing industry).

Today, a number of maintenance companies provide services and expertise that go well beyond replacing bearings and lubricating machine components. From temporary measurements to permanent condition monitoring - a wide range of affordable technologies are now available to help operators to better understand their systems, optimise energy consumption, save costs and efficiently plan operational interruptions.

