Improving the efficiency of your motor driven systems
ABB's drive and motor solutions

ABB's drives, motors and control technologies help to lower energy use, either by reducing power consumption and losses, improving productivity or through better management of equipment.
Many of these investments pay for themselves in energy savings in a matter of months. In addition to the cost benefit to your bottom line, many energy efficiency solutions can sharpen your competitiveness and improve your environmental performance.

The energy saving potential in industrial motor-driven applications is enormous: electric motors driving machines, compressors, fans, pumps or conveyors in virtually every sector account for nearly 70 percent of industrial electricity use.

And, only around 10 percent of the world's motors are controlled by variable speed drives which adjust the motor's output to meet demand. The remaining 90 percent either run at full speed, or rely on inefficient mechanical control systems, for example a throttling valve.

ABB Variable Frequency Drives

ABB Variable Frequency Drives reduce the output of a motor-driven application, by controlling motor speed down to match the actual demand needed by the application. This often cuts energy consumption by 50 percent and in some cases by as much as 90 percent.

Many of ABB's drives have built-in energy calculators to monitor energy consumption and savings in kWh, local currencies and CO_2 emissions. They can also interconnect to a variety of ABB process control systems, allowing you to include energy efficiency in your performance dashboard.

In addition to energy savings, ABB drives provide more accurate control, which can improve productivity and quality. And, removing mechanical control systems reduces maintenance costs and extends system life expectancy. ABB's product range, from 0.18 kW to 72 MW, is the widest available from any manufacturer, offering drive solutions for every need.

The total installed base of ABB drives saved 310 million MWh in 2011, equivalent to the yearly consumption of about 75 million EU households. In terms of CO_2 reduction, these savings equate to 260 million tons, more than the yearly emissions of over 65 million cars.

ABB Energy Efficient Motors

Using ABB high efficiency motors not only reduces the electricity costs but also improves the process reliability, lowers the maintenance costs and total cost of ownership and enables a longer lifetime of the motor.

The purchase price and maintenance costs for an electric motor are less than 10 percent of its total cost of ownership. Over 90 percent of the cost is the electricity needed to operate the motor over its lifetime. Given that many motors are in service from 25-30 years, it is important to look at total lifetime costs, instead of simply the procurement price.

IE4 super premium efficiency motor-drive package

ABB's new super premium efficiency package features an energy efficient magnet-free synchronous reluctance motor (SynRM), meeting IE4 efficiency levels. Since the rotor has no windings, it suffers virtually no power losses and its temperature remains lower than in conventional rotors, resulting in cooler running and higher efficiency. The uniquely

cool running rotor keeps the motor bearing temperature very low thus increasing bearing system reliability. Additionally, IE4 SynRM motor winding temperature rise is well below class B. These factors take motor reliability to an unprecedented level.

The package includes a matched motor and variable frequency drive (ACS850-04 and ACS880-01) with dedicated software range from 11 to 315kW. Through its combination of best-in-class efficiency, reliability and standard dimensions, ABB's IE4 motor-drive package perfectly meets these demands in all motor-driven applications such as fans, pumps and compressors, challenging existing technologies in industry, power generation and water segments.

BALDOR Cooling Tower Direct Drive Solution

Our energy efficient variable speed direct drive for controlling cooling tower fans greatly improves reliability by eliminating moving parts while also running quieter.

The power-dense technology for cooling tower applications is based on a direct drive RPM AC motor with permanent magnet rotor technology. This motor-drive package is designed to replace conventional mechanical gear or belt drive speed reduction designs and provides the additional energy savings of variable speed drive control.

ABB Energy Efficiency Appraisals

In a quick, methodical energy appraisal an ABB engineer or one of ABB's authorized channel partners identify relevant applications where energy can be saved immediately. During a walk around the facility, the engineer will spot and monitor typical variable torque motors and drives applications that may be running inefficiently. The subsequent data analysis includes energy usage, areas of potential savings, annual savings and payback time (if an investment is made), CO_2 emissions reductions and detailed recommendations for fitting drives and/or motors. On the basis of the recommendations made during the energy appraisal, ABB identifies the correct drive and motor for the respective application and supports with the installation and startup or commissioning.

Once the new equipment is fitted, ABB can help tracking and verifying actual savings against the predictions shown in the energy appraisal report.

Service, retrofit and preventive maintenance

ABB offers a series of services and maintenance tools to help you get the most from your motor driven system during its entire life cycle. Next to professional ABB-certified commissioning, ABB or an authorized channel partner can carry out motor and drive maintenance assessments and develop long-term improvement plans.

ABB's unique motor services give you an early warning of developing problems before failures occur. This service focuses on areas such as bearings, rotor winding, stator winding insulation and overall mechanical condition. The ABB MACHsense remote condition monitoring solution for motors and generators continuously monitors key parameters while the equipment is running and issues an alarm if a problem is detected. Customer personnel also get online access to important data and key condition parameters.

In addition, ABB's Life Expectancy Analysis Program (LEAP) provides precise information on the condition and remaining life of the stator winding and enables the development of optimized motor and generator maintenance plans. Drive upgrades are designed for improving performance and extending the functionality and lifetime of the drive to provide end users with the best possible return on their investments while maximizing energy saving potential.

All ABB services and preventive maintenance share the main objective of lowering operational costs, improving productivity, enhancing safety and reducing energy use and environmental impact.

How can ABB help?

The ABB service team can help you identify opportunities to save energy in your motor driven systems, and then implement solutions that can ensure the full savings potential.

If your facility has pumps or fans that are controlled by a valve/damper, or motors with no speed control, please contact us to learn more about what solutions are best for you.

For more information please contact:

www.abb.com/drives
www.abb.com/drivespartners
www.abb.com/motors&generators

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