Replacing and recycling variable speed drives

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Service Notes

Upgrading can be seamless if drive replacement follows the right procedure

About 40% of new drives are estimated to be replacing existing drives. This is a significant market, yet one that receives far less attention than the market for new applications.

The most common reason why drives are replaced is non-availability of spares in a breakdown situation, however replacement can also be considered on other grounds. There is a number of areas where new drives outperform old ones:

- ***Higher efficiency*** - for instance, a new ABB industrial drive has an efficiency of 90.9% in the 75 kW size. Compared to the nearest equivalent drive from the 1980s, with an efficiency of 80.7%, this can save nearly £1,000 per year in energy
- ***Smaller size*** - a new drive delivers much more power, size for size. A modern ABB drive can in some cases be just one-third of the size of a drive only a few years older
- ***Greater reliability*** - lower component count means new drives last longer and help reduce downtime
- ***Latest technology*** - users with new drives can benefit from recently introduced features, for instance flux optimisation, which can reduce the energy consumption in pump and fan applications by 10%
- ***Low purchase cost*** - the drive will represent a much smaller investment now than when the application was new, giving a shorter payback time

Age of existing equipment

Manufacturers, generally, tend to keep spares for 10 years for their products, as this is an ISO 9001 requirement. After this, spares can become difficult to get hold of. If a drive for a critical application is 15-20 years old, then

Although ABB's drives are designed for a long, trouble-free life, it is useful to test your equipment from time to time. New technologies offer considerable savings and reduce the environmental load of your operation.

ABB's drives can be recycled and ABB is prepared to comply with the European Union's policy of obliging producers to arrange the disposal and recycling of their products when it is applied to the electronics industry.

replacement should be considered to prevent extended downtime in a breakdown situation.

How the replacement drive scheme works

Replacing the drive - step by step

Drive replacement can be broken down into seven stages (see above).

The first stage involves assessing the site and the application, as well as, possibly, undertaking an energy appraisal to determine the savings in energy in addition to the installation costs. If the application justifies a replacement drive, stages two and three involves considering any specific engineering that is needed to ensure the application performs optimally.

Stage four involves the removal, disposal and recycling of drives and motors.

The final stages ensure that the installation and commissioning are carried out appropriately.

Installation of the new drive

When assessing an application for drive replacement, it is always safest to treat the application as a new installation and base the installation on the torque requirement of the load. Requirements may have changed while the old drive has been in operation and the conditions dictating the sizing of the drive in the past need not necessarily apply now.

Essentially, it should be possible to use existing cabling, however first check that the motor cables are screened to ensure EMC compliance. Strictly speaking, the current EMC regulations would not apply to an old installation, however it is good practice to take this opportunity to upgrade the installation. If in doubt an ABB representative should be consulted.

Recycling

According to the proposed European directive on Waste Electrical and Electronic Equipment (WEEE), manufacturers will become obliged to take back and recycle used electrical and electronic equipment.

Currently, ABB's drives are recycled in accordance with the Environment Act of 1990 in the UK, which stipulates how different materials should be disposed of. Up to 90 per cent, by weight, of ABB's drives can be reused or recycled. Some parts, such as electrolytic capacitors, are classed as hazardous waste and must be disposed separately. The remainder of the drive can safely be recycled.

In the UK, ABB has an agreement with a recycling company, RID, which will collect the drive either from the premises of the partners of ABB Drives Alliance, or in the case of large drives or large quantities of smaller drives, direct from the end user.

Once the drive has been removed for recycling, ABB issues a certificate that can be used for environmental audits by end users complying with ISO 14001.

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