Variable Speed Drives

Why preventative maintenance is important for preventing downtime and disruption

AxisControls
CONTROL PANELS & PLC AUTOMATION SYSTEMS

An age-old adage suggests that in business you must 'speculate to accumulate', and the same can be said for investing in preventative maintenance for your variable speed drives. By integrating a range of simple, logical maintenance steps into your control and automation system you can have years of trouble-free usage; before you even need to consider upgrading.

Actioning regular maintenance of your variable speed drives is important. It allows you to highlight any issues the drive might be having, but also establish solutions to any issues that the drive is experiencing in a preventative way, rather than reactively.

Variable speed drives are known to have several common problems; although many modern VSD manufacturers have developed new designs to negate these issues. These include; the use of input reactors to filter out harmonics that can damage the usability of variable speed drives, alongside output reactors that have been developed to reduce power spikes that could cause a breakdown in motor insulation. To achieve this, new designs of DC bus filters reduce the possibility of power spikes that could overload and shut down the use of the variable speed drive. Finally, most new variable speed drives on the market feature a cooling design to keep the cabinet cool; preventing overheating.

With all variable speed drives, there are three key rules for ensuring a longer life expectancy;

* Keep it clean - Most VSDs feature the NEMA 1 design, with side vents for cooling. This means that they are more susceptible to dust contamination, which can cause a lack of air flow.
* Keep it dry - Control boards within VSDs can corrode and fail prematurely if subjected to moisture or condensation.
* Keep connections tight - Heat cycles and mechanical vibration can lead to sub-standard connections. Bad, or worn, connections can lead to arching and nuisance over-voltage faults, clearing of input fuses, and damage to protective components.

In order to perform preventative maintenance to your variable speed drives, you should conduct the following types of inspection at least once every 3 months, and a complete inspection annually;

* Visual inspection of the VSD and its environmental conditions
* Inspection of the connections
* Inspection of the ribbon and fibreoptic cables
* Functional inspection of the fan and cooling mechanism
* Electrostatic discharge protected cleaning of the VSD
* Inspection of the 'Emergency Stop' circuit
* Inspection of the prevention of unexpected start up circuit
* Inspection and storage of the parameters
* Functional testing of the VSD under normal working conditions

There are three main reasons to consider performing preventative maintenance on your variable speed drives, and other machinery. By performing preventative maintenance, you are minimising the risk of costly machine failure. By ensuring that drives are in full working order throughout the year, you can reduce the possibility of production shutdowns that cost both time and money.

Ensure production and maintenance teams peace of mind with planning and protection that anticipates production outages, breakdowns and errors. This allows your team to put plans in place for when issues arise, so your team can respond without losing too much production time.

Finally, preventative maintenance throughout the year can prevent costly maintenance and replacement bills, whilst also extending the life expectancy of your machine. Lower maintenance costs, combined with a longer life expectancy, leads to overall reduced costs.

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