VOL 3 ISSUE 17

Spring 2006

Automation Service News

The Newsletter of Delta Automation Inc.

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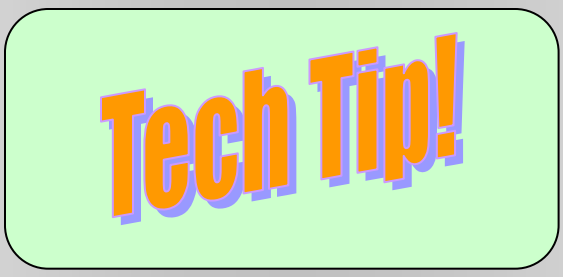


Does Your VFD Have Motion Sickness ?

Keeping your Drive healthy

Did you know that **V**ariable **F**requency **D**rives require maintenance? Simply by initiating a preventive maintenance program, you can ensure many years of trouble-free service from your VFD. Now lets look at what a VFD is and how it works.

A VFD controls the speed, torque and direction on an AC inductance motor. It converts a fixed AC voltage and frequency to a variable output voltage and frequency. Sophisticated control circuits coordinate the switching of power components in the proper sequence. A microprocessor or digital signal processor makes all the logic or decision requirements. With this in mind you can see that a VFD is similar to a computer and power supply. Therefore the same safety and equipment requirements that would apply to a computer and power supply also applies to a VFD.

There are three main rules to proper VFD maintenance, plus more advanced tips:

1. **Keep the unit clean**
2. **Keep the unit dry**
3. **Keep the connections tight**

Advanced maintenance tips:

While performing a VFD PM don't forget to check the fans. Inspect fans for: bearing noise/wear and dirt/dust on blades. Check for proper air circulation.

If possible visually inspect DC bus capacitors for bulging or signs of leakage.

Take voltage readings of the VFD while running. Measure the DC bus. A 480 VAC input VFD should read 600 VDC to 720 VDC across the DC bus terminals. A 240 VAC input VFD should read 300 VDC to 420 VDC across the DC bus terminals. Also measure the AC voltage across the DC bus. A reading of more than 4 VAC is an indication of a problem with the VFDs input Diode Bridge or DC bus capacitors. If you read such a voltage please contact Delta Automation for service at 888-PC DELTA. This condition will cause failure of the VFDs power components and can result in motor damage.

Take voltage readings on the VFDs output with a start command present and zero speed reference. You should read approximately 40 VAC from phase to phase. A higher reading (over 60 VAC) is an indication of a leaking IGBT module. This condition will cause a failure of the VFD and can result in motor damage, please contact Delta Automation for service at 888 PC DELTA.

Don't forget about your spare VFDs. Keep them in a dry, clean environment. Place them in a PM cycle where they are powered up every six months to keep the DC bus capacitors at peak performance. Otherwise the capacitors will loose charging and filtering ability. A capacitor is much like a battery, it should be placed in service as soon as possible otherwise it will loose performance and shorten its useable life. Delta Automation can perform this regular maintenance check as well as testing all drive functions and operations.

Regularly monitor the drive temperature. Some VFD manufacturers make this reading available on the keypad/ display. Make checking this part of the maintenance cycle.

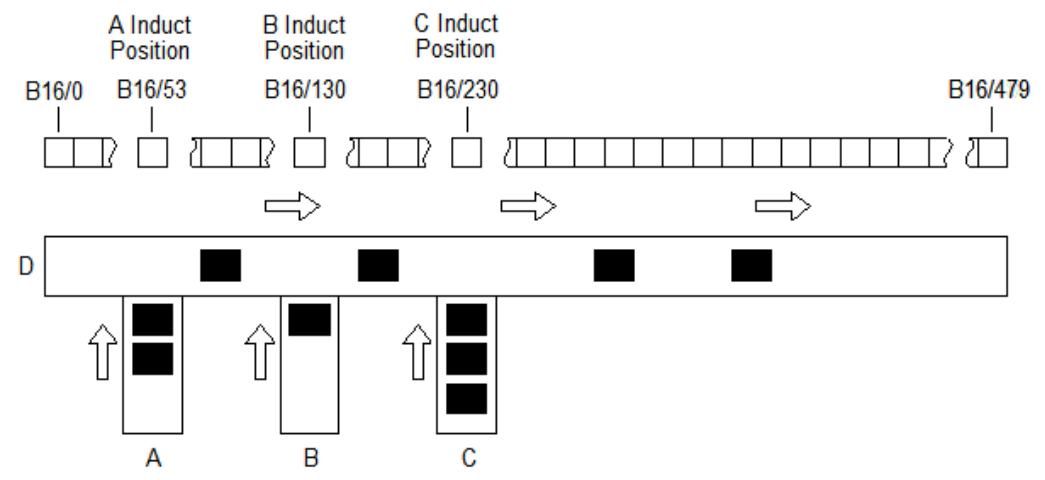
You would not place your computer outside, on the roof, in direct sunlight with temperature extremes in excess of 110 degrees F. or below freezing. A VFD is basically a computer with a power supply, it needs to receive similar treatment. Some VFD manufacturers claim 200,000 hours, almost 23 years of MEAN-TIME-BETWEEN_FAILURES (MTBF). Maybe if you properly maintain your VFD it will deliver such impressive performance.

References:
ABB VFD Maintenance by Dave Polka
Yaskawa Troubleshooting Manual GPD525/G5

Conveyor Avoidance Algorithm

A Simple Pacing and Collision Avoidance Algorithm

THE TASK – A cross conveyor (D) and three induction conveyors (A, B, and C). The three induction conveyors receive a boxed product at differing rates. The induction conveyors must release product onto the cross conveyor with minimum spacing between products while avoiding collisions with products already inducted onto the cross conveyor (downstream inductions B and C only). The control system is based on an Allen Bradley Micrologix 1200 PLC.



THE SOLUTION:

1. Create a shift register B16/0 through B16/479 (the cross conveyor D is 480 inches long therefore each bit in the shift register will map to one inch along the length of the conveyor).
2. Determine the distance along the cross conveyor D where each induction conveyor A, B, and C will induct product onto the cross conveyor. Assign (map) a shift register position to each of the induction conveyors.
3. The cross conveyor travels at 100fpm (1in/50mS). Create Sequential Timed Interrupt (STI) that fires every 50mS (every 1 inch of cross conveyor travel).
4. In ladder code, create a tracking algorithm to be executed by the STI. When each STI fires the algorithm:
    a. Places a pacing mark (a one) into the shift register at position B16/0 every 36 STI scans.
    b. Shifts each bit in the shift register to the left once each STI scan.
    c. The pacing marks, which enter the shift register at B16/0 each 36 inches of travel (the desired spacing between product centers), travel down the shift register.
    d. When a pacing mark appears in front of an induction conveyor it represents and opportunity to induct. If the induction sees a one in its mapped position in the register (and has a product to induct) it should induct a product and CLEAR the pacing mark, thereby denying the mark to a downstream induction, preventing bundle collisions.

Autem Software for multiple PLC brands

The Autem Pro 5 PLC diagnostic software is a most valuable tool for use in identifying and locating intermittent or hard to find problems in PLC systems. Many OEM's provide a simple contact histogram with their programming software package. Usually it is a pretty basic package that only communicates with that particular line of controller. However, the Autem Pro 5 has many more advanced features that will make troubleshooting easier, if not down right pleasant!

Are you aware that the Pro 5 package can communicate to *multiple* PLC's at once….**EVEN DIFFERENT BRANDS of PLC's** , at once?

Just one package to set up and troubleshoot any PLC system in your plant!

Access many different PLC's across different networks and display the I/O or register information on the same screen adjacent to one another for timing or sequence references!
Archive the data to be analyzed later, or even have the data acquisition begin upon a user defined event in any of the monitored PLC's, or at a pre-set time of day.
Forget to monitor an important point? No problem! Add it "on the fly" without interrupting the existing data stream.
Need to view register contents in Engineering units? Again, no problem!
Contact Delta Automation, Inc. for more information or a Demo!

WEG Drives & Motors

Delta Automation, Inc. and WEG Electric Corp. are happy to announce that Delta Automation, Inc, has become an authorized service center for their line of industrial AC drives, soft starts, controls, and motors.
Additionally, Delta will be a **stocking distributor** for many of these products as well.
WEG has been well known as a world leader in motor manufacturing for quite some time, in fact, just last month WEG produced its' **100 Millionth motor**!
WEG's line of AC drives and soft starts has some advantages over the competition. Such as most drives and soft-starts will work with all voltage levels from 220 to 575.
This makes product selection simpler and spares stocking a much more cost effective solution.
One line of WEG's soft-start products have the same "footprint" as most contactor/starters making the update to a soft-start virtually effortless. No addition panels or expensive rewiring required.
All of their products are easily programmed, and the units have two displays. One large bright LED panel for immediate status information that can be read from across the room , and a smaller LCD panel for more detailed data such as motor current or frequency settings.
Also, WEG has a complete line of food grade "wash down" drives and motors. The "Shark" lines' all stainless construction makes installations and locations of equipment a much simpler job.

Contact Delta Automation, Inc for more information!

Important Info

Panelmate 1000 Repairs Continue

The most common failures to the Panelmate 1000 product line that we here at Delta Automation, Inc. see is the power supply section of the unit. The root cause comes from several sources. Industrial plants have surges and spikes on their incoming power constantly. Although the power supply is somewhat protected with a fuse across the AC line voltage, other parts of the power supply normally fail as well. The power supply is a proprietary packaged IC component. It produces three DC voltages. This packaged component is no longer available on the open market and it is very hard to find a good one in salvage equipment. One of Delta Automation, Inc's. bench technicians has designed a replacement power source to remedy this problem. The replacement power source is installed on the circuit board of the Panelmate 1000 and is transparent to the customer once the unit has been re-assembled. No longer do these valuable assets need to be junked. Send all of your HMI products to Delta Automation, Inc. when the need for repair is required.

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For after hours

Emergency Service or Parts

Call our main number 888-723-3582 or digital pager 1-888-969-1308

Extension 55

Leave a message and someone will respond within fifteen minutes to answer your call.

www.deltaautomation.com

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