



WESCO Distribution **Runner**



Second Quarter, 2002

What's in a Voltage Rating?

Until recently, it was common practice for manufacturers to rate AFDs at 575 volts, which is a standard utilization voltage for AC Motors instead of the corresponding distribution voltage level of 600 volts. This was done for two reasons. First drives were considered part of a motor-drive system and consequently thought to be downstream at the utilization point (near the motor) in the power system.

Second, due to limitations in the available voltage ratings of the electronic components, rating an AFD based on 575 volts allowed manufacturers to specify wider +/- tolerances on voltage.



More often than not however, the AFD is located far from the motor and is usually operating closer to the distribution voltage level rather than the utilization level. This means that the AFD should realistically be rated at 600 volts rather than 575 volts in order to give a proper measure of its true voltage.



To respond to this need, Cutler-Hammer has introduced the SV9000 Adjustable Frequency Drive, providing a wide voltage tolerance. The SV9000 is a Pulse Width Modulated Sensorless

Vector Drive designed for voltages ranging from 200 through 690 volts AC.

To meet the higher voltage tolerances, the SV9000 uses electronic components with higher than industry standard voltage ratings. Because one of the major causes of AFD failure on 600 volt systems is voltage stress on the electronic components, this wider voltage tolerance means greater reliability and that means reduced down time.

Call WESCO to find out more about the features, performance and reliability of the Cutler-Hammer SV 9000 Drive.



For the complete article please see the Mill Product News, May/June 2000 Issue.

The Runner Goes National!

Welcome Western Canada, and Québec to WESCO Distribution's **Runner**. Those situated in Central or Atlantic Canada will see we have a new look.

The **Runner** is a product news letter distributed to WESCO's customers in Canada. Our goal remains to feature leading electrical products that help you operate more profitably. If your interest is in control, automation, energy management, industrial Ethernet or safety - look to the **Runner** for new product solutions.

WESCO provides outstanding local service with 50 branches in Canada and over 330 branches across North America.



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Arrest Ground Faults with the IPC Turbo Sleuth!



Ground Faults, when not promptly detected are public enemy #1 in a plant.

Not only are they the leading cause of motor failure but they also cause nuisance tripping of protection devices and are a significant hazard to workplace safety. In long cable runs they can be quite costly to detect and as a result they frequently become one of a plants most nagging electrical problems.

Fortunately the IPC Turbo Sleuth can be an economical solution to quickly hunt down and trace ground faults wherever they occur in your plant.

IPC Turbo Sleuth is a portable pulsing ground fault detection system that can be temporarily installed on almost any 480/600V system. Capable of being used without power interruptions on any solidly grounded, resistance grounded or ungrounded system, Turbo Sleuth provides plant-wide ground fault location capabilities in a single device. Completely compatible with both Wye-configured and Delta-configured systems, with its unique Zig-Zag add-on unit, Turbo Sleuth facilitates the rapid location of ground faults.

The IPC Turbo Sleuth connects a resistor to the neutral point of the transformer feed to the plant maintaining full compliance with CEC and NEC. Its function is to limit ground fault current to a non-damaging level under a single line-to-ground fault condition. The IPC Turbo Sleuth provides visual and audible confirmation of the ground fault.

The pulsing system then varies the low level current in the ground fault path. This does not adversely affect any electrical equipment in the plant and allows the user to trace the faulted circuit all the way to the point of the fault.

With the hand held tracing sensor, similar to a clamp on ammeter, the user can follow the pulses from the IPC system directly to the ground fault. After the fault has been cleared the IPC Turbo Sleuth may be removed from the circuit, ready for it's next use.

By allowing the quick detection and correction of costly faults the IPC Turbo Sleuth will pay off its investment with increased uptime, longer motor life, lower maintenance costs and the elimination of potential safety hazards.



Call your local WESCO branch (see back page) to discuss how a Turbo Sleuth might help you manage your most nagging electrical maintenance problem.



Transformers Overheating? Fluke talks about Harmonics!

Your transformers - supplying what appear to be average loads - are overheating. Neutral conductors in balanced circuits are overheating from excessive loads, and circuit breakers are tripping for no apparent reason. But your standard troubleshooting procedures show that everything is normal.

So what's the problem? It's something that's not always easy to find, but a by-product of today's modern electronics - harmonics.

What are harmonics?

Harmonics are especially prevalent where there are large numbers of PCs, adjustable speed drives and other types of equipment that draw non-sinusoidal current. This causes harmonic currents in the load which results in distorted waveforms. These waveforms are harder to detect using traditional troubleshooting procedures.

Harmonic currents can cause problems at various locations throughout a facility, but finding the problem can be relatively easy - once you know what to look for and where to look.

Finding harmonics.

A harmonic survey will give you a good idea whether or not you have a harmonic problem and where it is located. A *True-rms digital multimeter** should be used to perform the initial testing. While an "average responding" meter gives correct readings for pure sine waves only, a True-rms meter will provide correct readings for distorted waveforms as well.

A few basic guidelines to follow when looking for harmonics are:

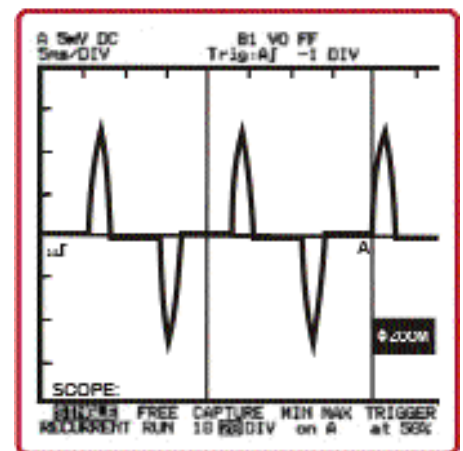
- ♦ Take a load inventory of the types of equipment in your facility.
- ♦ Locate transformers, wiring and connections feeding those loads and check for excessive heating.
- ♦ Use a True-rms meter to check transformer currents.
- ♦ Survey the sub-panels that feed the harmonic loads and measure the current in each branch neutral.
- ♦ Compare the measured value to the rated capacity for the wire size used.
- ♦ Measure the neutral-to-ground voltage at the receptacles.

After you have determined that harmonics are present, you can make a more in-depth analysis with a *power quality analyzer**. This type of instrument will help you determine what actions need to be taken to solve a harmonics problem. Remedies can include balancing loads, or limiting loads on transformers (i.e. derating).

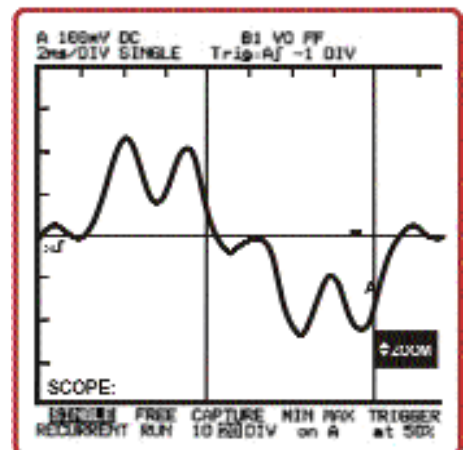
Implementing these measures, however, requires the skills of a power quality expert, who can analyze the problem and design a plan tailored to your needs.

**These products and more are available at your local WESCO branch.*

Single phase non-linear load current waveform



Three phase non-linear load current waveform





TECO-Westinghouse Does the Math!

Electric motors present some of the toughest supply chain challenges a plant can face. Performance issues like reliability, emergency support, selecting the right type of motor for the application, technical support, and service on rewinds need to be balanced against cost issues like energy savings, motor life, first cost and inventory investment. TECO-Westinghouse and Wesco combine their logistics and motor expertise with a world class cost position to help you optimize your motor equation.

TECO-Westinghouse comprises the experience of Westinghouse, a leader in the motor industry since 1888 and TECO Electric and Machinery Company Ltd., a multinational conglomerate with over

45 years of motor experience. Manufacturing and modifications facilities are located in Round Rock, Texas; Hamilton, Ontario; Taiwan; Malaysia and China. In North America there are 11 regional warehouses stocking a vast array of motors up to 2000 HP so they are always nearby and ready to deliver.

WESCO is in an excellent position to leverage TECO-Westinghouse's capabilities to create a customized Motor program for any single or multi-site operation. We are the leading provider of supply chain programs for electrical products in both Canada and the US. Our supply chain programs are flexibly designed to deliver cost reductions that meet the specific needs of your facility. We have helped North America's leading companies tabulate over \$85M in supply chain cost savings.

Whatever your motor problems are, TECO-Westinghouse and WESCO have solutions.



A full line of induction, synchronous, and DC motors and generators are available from 1/4 HP to 30,000 HP.

Contact a branch near you!

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