



The project required Longo to replace 55 VFD's that control all the various pumps throughout the complex. The units varied in size from 10 hp to 20 hp.

DRIVING THE MUSCONETCONG

The Musconetong Sewer Authority is an important gate keeper in northern New Jersey. It is at the southern edge of the Highlands, a water sensitive area with some restricted development. This medium sized facility is also a vital resource when it comes to the health of the Musconetong River.

Originally constructed in 1969, the MSA recently evaluated its equipment to ensure it will be able to continue to maintain its high level of service to its surrounding communities and the river. One aspect of the evaluation is to upgrade the variable frequency drives. Today's drives are much more sophisticated providing superior control.

These drives will make the pumps, and facility overall, more efficient. This improved control over its pumps will reduce power consumption. In the end the plant is greener, a benefit to both the taxpayers and the environment.

Longo was fortunate enough to bid on

and win the contract to replace variable frequency drives throughout the complex. By doing them all at once it will end up costing less than if they had stretched it out over a few years.

As part of Longo's Line to Load program, we have the capability to specify, install and program the units, providing one source responsibility. We also have the flexibility to adapt to situations as they arise and not be thrown into confusion if changes are needed. This can be particularly tricky when you are dealing with 32-year old units consisting of the drives themselves and the cabinets that were built to contain them. Things have changed in both the technology and the physicality of the new drives. As a result, there were on-site decisions to be made as to specific components to ensure the technical specifications were maintained and the fit was not compromised.



Geoff Greene, left, a 25 year veteran of Longo's Field Service group, and Wayne Forte, right, Vibration Analysis Technician, are shown setting up one of Longo's unique training and demonstration pieces. When completed, the unit will demonstrate the weakness in placing a fan at the end of an unsupported shaft.

It is a very versatile tool that can be used to show a whole host of vibration scenarios. Bearings, shaft and the driven components can be easily repositioned providing all sorts of alternatives.

When it comes to explaining the various types of vibration problems, there are several techniques available. A diagram, a video or an animation may work in some instances, however the model shown above leaves nothing to the imagination.

At first glance it may appear to be toylike, but it enables our technicians to point out faults to both engineers and nonengineers alike. A little imagination and innovation can make all the difference.

A hockey game broke out in Wharton!!



Martin Brodeur was kind enough to pose for photos in the shop. Here he is with Dom Azzinnari, in our winding Martin Pierre Brodeur, goal tender for the NJ Devils, stopped by the Wharton office. A personal friend of Joe Longo, Mr. Brodeur took a tour of the shop and really surprised and shocked all the hockey fans in the building. He has played his entire National Hockey League (NHL) career with the New Jersey Devils. In his 19-year tenure with the Devils, he has led the team to three Stanley Cup championships.



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THE LONGO LETTER

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How you can contact Longo...

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THE LONGO LETTER

VOLUME 2 ISSUE 1 Our 65th year SPRING 2010



In case you don't remember what it was like.



Joseph M. Longo
President

The long, long winter this year has taken its toll. Physically we have shoveled more snow, blown more snow, driven in and worried about snow. It seemed as if it was going to continue forever.



As everyone thaws out things are getting back to normal. We have been looking forward to a break in the weather to begin installing solar panels in February on the roof of our Wharton Servicenter. We anticipate our panels will be complete and generating by the end of March.

This project seems to have opened up some doors for new a business venture. Two of our customers have approached Longo about providing them a turn key solution

for solar power.

The incentives are very attractive right now and we would encourage you to consider a solar power installation in the near future. There is a 30% rebate, but it expires at the end of 2011! There is also a 100% accelerated depreciation for the cost of the project in year 1. These incentives will not be forever, so if you are thinking about solar power, act now, before it is too late.



Our website is being redone to make it quicker and easier to use. After that we are thinking about a blog to initiate a conversation with any of



you who wish to respond to any of the topics we bring up. It is possible to get all wrapped up in the social media experience, with Facebook and Twitter, but somehow I don't see all of you running to see what Joe Longo just posted on Facebook! We'll keep our emphasis on the work we do and our customers, for now anyway



Improving the team...

Customer service is probably most valuable once a job is underway. Before that everyone is warm and fuzzy because the customer has a good company on the job at a reasonable price and the company appreciates the work. After the job is done it is either a pat on the back or a boot in the pants depending on how things worked out. By that time, customer service has either moved on to other things or is trying to put out a fire after the fact. Many situations can really be boiled down to the classic phrase, "What we have here is a failure to communicate."

About two years ago we added an engineer to our Field Service team-someone who could expedite work on site whether it is getting parts and equipment so the technicians don't have to stop what they are doing or going over procedures and scheduling with the customer. We recently added a second project engineer, primarily electrical, since our experience has been so positive and our customers are requiring more and more drives and controller expertise. We are not a "clipboard" type of company, so these men are both hands-on when it comes to onsite work. Overall, this type of addition to our company makes us more responsive, whether working on equipment or working with our customers.

NOT JUST ANOTHER PRETTY FACE

We are upgrading the Longo website to make it simpler and quicker to find information you want. Whether you need a pump repaired or a new fan motor installed we can get you there. We have also put a fresh face on the website which better reflects our company and how we work.

Since we don't sell or price equipment on the website we have quick links to a RFQ (Request for Quote). You can ask us about pricing for a specific item or contact us if you have a particular situation you need help with. Of course, you can always do it the old fashioned way and give your nearest Longo Servicenter a phone call to discuss whatever we can do to help. You can find all the necessary information on our Contact page.

LONGO
LINE TO LOAD
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LONGO, founded over 65 years ago, has been ISO 9001 approved since 1995, delivering superior electrical and mechanical service and support for our customers. We sell and service a complete line of motors, pumps, fans, air compressors and drives to ensure smooth effective power usage...from Line to Load.

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We have kept all our tech literature and our case histories for you to browse through and pick up information. Our Employment section is also up for those who might have the qualifications to join Longo. During the

year we will be planning new Longo things to keep you abreast of what is happening with us and our jobs.

Consequences of a Switchgear Failure, cont.

•REGULARLY SCHEDULED INSPECTION, TESTING, AND SERVICING OF EQUIPMENT

An EPM(Electrical Preventive Maintenance) program should be performed on a regular basis. The period between inspections depends on the environmental conditions, the importance of the equipment and its loading and use. However, as a general rule, EPM should be performed at least once every three years — and more often for critical components.

The first step in an EPM program is a complete thermographic inspection of all electrical equipment prior to the scheduled outage. This survey is a non-invasive method of identifying high temperature excursions which indicate potential problem areas due to loose or dirty connections, load imbalances, or improper installation of equipment. This initial step helps in determining the resources you will need during your scheduled outage to perform EPM. A thermographic inspection should be done during peak-load conditions by a certified, experienced thermographer.

All circuit breakers and disconnect switches should be repeatedly opened and closed during the shut-down period to ensure proper operation. Protective relays and circuit breaker trip devices need to be tested and calibrated on a regular basis. Different test sets are often required for various equipment depending on the manufacturer and the age of the devices. To ensure safe and accurate testing, the people doing this work must have the proper testing and safety equipment, experience, and training to perform these functions.

Oil-filled transformers, circuit breakers and disconnect switches should have samples of the insulating oil screen-tested as a means of identifying potential problems with those components. Transformer oil should also undergo dissolved gas analysis to identify specific adverse conditions present inside the unit. Equipment insulated with SF6 gas should be inspected and leak-tested to ensure the integrity of the gas system.

SOUND JUDGMENT IN EVALUATING RESULTS

It is imperative that the person reviewing the test reports have a thorough understanding of the test data in order that the right decisions can be made on how best to correct the conditions found. For example, the results of transformer oil testing may indicate the need to take action such as reclaiming or replacing the oil. The decision as to which alternative to take needs to be made by someone who has the training and experience to make this judgement call.

PERFORM THE NECESSARY WORK

Once you have examined the reports and determined what is needed, what is next. It does little good to have the testing and inspection done to identify problem areas if you have no intention of fixing the problems. After all, EPM testing is performed to find problems that need to be addressed, not to discuss them and do nothing about them. Preliminary testing and inspection help to focus your resources on the critical tasks, but ultimately you need to have a scheduled outage to perform the necessary work. The fundamental concept of EPM is simple:

- Keep it clean, dry, and tight.
- Be sure to inspect all equipment for evidence of deterioration
- Exercise mechanisms to ensure proper operation
- Clean and tighten all electrical connections and equipment enclosures.

CONCISE AND COMPLETE RECORD-KEEPING

This is the most overlooked aspect of EPM. A clear and updated data base will help keep the EPM program cost-effective by ensuring that all the work is being done on schedule. In addition, tracking of test results over time can often identify a potential failure and it is even possible to provide a time to failure time line. This peek into the future enables you to plan for repair or replacement.

EPM IS COST-EFFECTIVE

It is cheaper to make repairs before equipment fails. When a single electrical unit fails, particularly protective devices like circuit breakers or relays, there is usually subsequent damage to other components in the breaker system, even extending to production areas. Often the damaged equipment cannot be repaired and must be completely replaced. New replacement equipment is not always readily available and the repair may require extensive modifications to make the system whole again.

Failed equipment results in costly unplanned outages when replacement equipment cannot be easily found. Instead of having a planned system outage for EPM at the most convenient time, equipment failures are almost always happening at inopportune times. Repairs become very costly due first to the initial emergency repairs and then because of the added cost of the permanent repair or replacement.

If you have been taking your electrical distribution system for granted, it's probably time for you to implement an EPM program. But don't wait until after the first electrical failure happens — you may not have a system then. In order to find out more specific information on your systems and how EPM can work for you call Longo at 973-537-0400, extension 734.

Slippery when wet...



Crushers come in all sizes and shapes. Some are even portable, instead of bringing the car to it, you bring the crusher to the car!

THE INVISIBLE CONNECTION...
Out of all the thousands of uses for electric motors one of the more fascinating ones is powering "The Crusher", where automobiles end up when they have reached the end of their life. The movies love these machines with plots of last minute escapes or disposing of bodies hidden in the trunk! The one most commonly seen is where the car (or in some cases cars) is flattened like a pancake. Another type takes the pancaked cars and squeezes them lengthwise and sideways to form a cube (coffee table?). And then there are the destroyers. This one has a series of hammers or weights attached to a spinning shaft that beat the car into hundreds of pieces and another kind has blades that slice through everything (except engine blocks) and turn the car into metal confetti. Which ever you choose it takes an extremely powerful and durable motor to run these monsters.



Once we were setup and pressurized we waited and we waited...nothing. The initial pressure, 15,000 psi, was a little low. When we corrected that up to the prescribed 45,000 psi it worked just fine!
be aware of, otherwise the bearing itself can be damaged. A differential of 85 degrees C between the bearing and the shaft is usually sufficient to remove or mount a bearing. When the differential approaches or exceeds 125C the bearing itself can be damaged.

One of our customers owns several automotive recycling facilities and needed one of their motors serviced. The motor we received was a huge Schorch crusher motor. Schorch motors are designed specifically for this industry. These are popular around the country, particularly in Texas which seems to have a very large automotive recycling business. The motor is massive in not only power, but in physical size as well. This one weighed in at 45,000 lbs and produces 9,000 hp. The business end of the motor has a drive gear mounted to the motor shaft and the weight of this drive gear alone is in excess of 2500 lbs.

Once the rotor was removed the next step was to remove the drive gear. At first glance it appeared that the drive gear was mounted via thermal expansion since there were no bolts holding it in place on the shaft. This meant it would have to be heated (expanded) to be removed from the shaft. The use of heat to expand bearings, etc. is a common technique. However, there are parameters that you have to

To mount a drive gear or bearing it is a simple matter to heat the item and then place it onto the shaft. The reverse is not so simple. With a drive gear this large, creating a heat differential sufficient to remove the gear is very difficult. The shape and bulk of the drive gear would more often pass the heat to the shaft before a significant differential can be achieved.

Following contact with the manufacturer, we determined that the correct technique to remove the drive gear from the shaft was by hydraulic coupling. This is a method of fastening a bearing or drive gear to either a straight or tapered shaft. The amount of interference holds the gear on

to the shaft due to the friction between the two. Installing or removing an item from the shaft involves the introduction of hydraulic fluid between the shaft and the gear to allow the gear to move on the shaft.

Depending on the item to be mounted on the shaft, there can be two or three ports for the hydraulic fluid to enter the ports and grooves between the two. In order to get the fluid into this space extremely high pressure is needed. 25,000 psi and up. The actual time for the pressurized fluid to make its way into the space can be up to an hour. It is essential that the entire surface of both the shaft and the inner surface of the gear drive be completely coated. Once the fluid permeates between the two the drive gear will come off. A very large nut and washer/plate were secured to the end of the shaft to prevent any pressure was applied. The reason is to prevent the bearing or gear drive from flying across the room!

Mounting the drive on the tapered shaft and the interference creates an extremely large amount of potential energy. When the hydraulic fluid, under extreme pressure, reaches the entire mating surface, the release of that energy is intense and instantaneous. Enough to fire a 3800 lb drive gear 30 feet and through an overhead garage door. Any literature on the subject warns that regardless of the precautions taken no one under any circumstances should anyone stand in the path of the drive gear once the pressurizing begins.

The reason or concept behind this form of attachment is supposedly simplicity and ease of use. It might be in a perfect world, but we don't see that very often. Additional pressure was supplied to our drive gear until it reached in excess of 45,000 lbs psi and it popped. Not only did the drive pop forward but the huge rotor moved as well. The nut and washer held and they were both moved to the end of the shaft and it was re-pressurized to complete the removal of the gear.