

I have a list of friends that is all written in a book.  
And every year when Christmas comes, I go and take a look.  
That is when I realize that these names are a part  
Not of the book they're written in, but really, of my heart.

For each name stands for someone who has crossed my path  
sometime  
And in that meeting they've become the reason in each rhyme.  
And while it sounds fantastic for me to make this claim,  
I really feel that I'm composed of each remembered name.

For while you may not be aware of any special "link" Just meeting  
you has changed my life a lot more than you think.

Once I've met someone, the years cannot erase,  
The memory of a pleasant word or a friendly face.  
So never think my Christmas cards are just a mere routine  
Of names upon a Christmas list, forgotten in between.  
For when I send a Christmas card that is addressed to you,  
It's 'cause you're on the list of those I'm indebted to.

I am but the total of people I have met,  
And you happen to be the one that I prefer not to forget.  
Whether I have known you for many years or few.  
In some way you've had a part in shaping things I do.

So every year when Christmas comes, I realize anew,  
The best gift life can offer is having friends like you.

It's the night before Christmas;  
I'm tired!  
Yet with eight cups of coffee,  
I'm wired.  
In the depths of despair,  
Like all parents, I swear:  
"Damn that Claus —  
'Some assembly required!'"

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Wharton, NJ 07885

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**THE LONGO LETTER**

**Switchgear:  
Catastrophic  
failure  
Old time  
electricity  
Peek-A-Boo  
Holiday Notes**

The Largest Independent Electrical-Mechanical Sales and Service Company in the Tri-State Area

**THE LONGO LETTER**

VOLUME 1 ISSUE 3

Our 65th year

WINTER 2010



**Ok, It's not a Christmas tree.**



Joseph M. Longo  
President

The wind turbines pictured above sort of represent Longo Christmas trees since we continue to be active in the wind industry, along with our traditional electrical and mechanical work. The wind industry is settling down a bit after its growth spurt. Things like permanent magnet generators, new gearbox designs and just more improved wind specific components are reaching the market. Some are designed for out-of-warranty turbines and others the OEM market. It seems to be a good sign that the wind industry is making the change from a gun slinger mentality a few years ago to a serious market approach.

our customers and they took advantage of that by initiating projects that might have stayed dormant.

The government here in New Jersey is beginning to get a handle on the massive spending which is a good thing. Of course, it depends on which and whose projects are getting cut, but overall it should be good for New Jersey. Fortunately, our Philadelphia and Pennsylvania business continues to be strong.

My eldest son went off to college this fall, and like many other parents, I am really looking forward to a family atmosphere this Christmas holiday. Wishing everyone a safe and happy holiday, especially those with family members who are not able to be home for the festivities.



Hopefully, the new year will see business elements shake out into some sense of order, so we all can begin planning and doing what it takes to have our companies move forward. Actually, this last year the Recovery Act did provide some stimulus monies to

**YOU'RE GOING TO GET MAIL!**

We have decided it's time we entered the new millennium! So with one click you will have it on your desktop. No more misplaced or stolen copies!

**The Longo Letter is going digital!**

We think you will find it interesting with pertinent articles, links, etc. to a variety of industry information. The only problem we have is addresses, or more correctly, the lack of addresses. We have regular mail addresses, but we don't have everyone's email addresses.

Just to be sure you receive the new Longo Letter we need your email address. If you decide later on it's not for you, you can cancel with a click.

Send it to: [info@elongo.com](mailto:info@elongo.com). We get a lot of email, like everyone, and I want to be sure we don't miss anyone so put in the subject line: **LLemail**.



"Peace on Earth, goodwill toward men? There's an app for that?"



"If you say 'Merry Christmas', 'Happy Holidays' or 'Season's Greetings', it's going to offend somebody. That's why we're advising our people to say 'Bah Humbug!'"

Freddie and John were fortunate enough to have a season ticket to the Jets. They could not help noticing that there was always a spare seat next (B14) to them and they had a friend who would love to buy a season ticket, especially if all three could have seats together.

One half-time Freddie went to the ticket office and asked if they could buy the season ticket for B14. The official said that unfortunately the ticket had been sold. Nevertheless, week after week the seat was still empty.

Then on playoff Sunday, much to Freddie and Eddie's amazement the seat was taken for the first time that season. John could not resist asking the newcomer, "Where have you been all season?" "Don't ask", he said, "the wife bought the season ticket back last summer, and kept it for a surprise Christmas present."



**Your resource for:**  
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**SPORTS QUIZ**

- In the third inning, one of the bleacher fans is overheard discussing "the tools of ignorance". What is he talking about?  
a. relief pitchers b. the scoreboards c. catcher's gear d. broken bats
- After the seventh inning stretch, your best friend returns to his seat and tells you the home team is "hitting the interstate". Is that a good thing or a bad thing?  
a. a bad thing b. a good thing c. both good and bad d. neither good nor bad
- What happens if you break and sink the nine ball, but you also sink the cue ball in a pocket?  
a. You get a re-rack b. The nine ball will be spotted, and it is ball in hand for your opponent. c. It's an automatic loss d. You spot the nine and keep on shooting
- Where are these soccer teams from?  
Alajuelense - Puntarenas - Carmelita - Santa Barbara  
a. Panama b. Belize c. Costa Rica d. El Salvador

1. c. a bad thing if a player (or team) is "hitting the interstate" he's hitting less than a .200 average (.195 = 1-95, .170 = 1-70) which won't keep you in the "big" for long. 3. b. 4. c.

# Consequences of a Switchgear Failure



## How a Preventive Maintenance Program Can Protect Switchgear From Catastrophic Failure.

### ELECTRICAL PREVENTIVE MAINTENANCE

Preventive maintenance is a schedule of planned maintenance actions designed to prevent breakdowns and failures before they actually occur. Preventive maintenance activities include equipment checks, partial or complete overhauls at specified periods, oil changes, lubrication and other observations. In addition, workers can record equipment deterioration so they know to replace or repair worn parts before they cause system failure. Recent technological advances in tools for inspection and diagnosis have enabled even more accurate and effective equipment maintenance, as well as improved data collection. The ideal preventive maintenance program would eliminate all equipment failure before it occurs.

### VALUE OF PREVENTIVE MAINTENANCE

One of the main misconceptions about PM is that it is unduly costly. This perception implies that it would cost more for regularly scheduled downtime and maintenance than it would cost to operate equipment until repair is absolutely necessary. This may

be true for some components; however, one should compare not only the immediate repair costs but you have to consider costs for lost production time, lost sales and possible ancillary equipment damage from unscheduled equipment breakdown. Also, preventive maintenance will result in savings due to an increase of effective system service life.

Long-term benefits of preventive maintenance include:

- Improved system reliability
- Improved efficiency
- Decreased cost of replacement
- Decreased system downtime
- Better spares inventory management

Long-term effects and cost comparisons have been shown to favor preventive maintenance over performing maintenance/repair actions when the system fails. An effective EPM program will improve equipment efficiency and can reduce utility bills. For example, a loose or dirty connection has increased resistance which results in higher power losses. By simply tightening and cleaning electrical connections, you can lower your energy costs. When considered over a period of time, this simple solution can save considerable money. But, without doing an EPM, problems like these go unnoticed and uncorrected.

### DETERMINING WHEN PREVENTIVE MAINTENANCE MAKE SENSE

Preventive maintenance is a logical choice if the following condition is met:

The overall cost of the preventive maintenance action must be less than the overall cost of a corrective action or failure event. If this condition is met, then preventive maintenance makes sense. (Note:



To be accurate, comparison costs of a corrective action should include all the ancillary tangible and/or intangible costs, such as downtime, loss of production, lost sales, lawsuits over the failure of a safety-critical item, loss of goodwill, etc..)

### GEASLIN'S INVERSE-SQUARE RULE FOR DEFERRED MAINTENANCE

There are formulas/charts that can be used to determine risk/reward ratio for deferred maintenance. These can provide a yardstick by which you can measure your specific costs when comparing EPM versus run to failure.

### SHOULD YOU BE DOING ELECTRICAL PREVENTIVE MAINTENANCE?

You Betcha!

PM is not a new concept. People have been doing precautionary work on motors, engines, and other mechanical systems for decades. But when it is suggested to perform preventive maintenance on electrical distribution systems, it is often met with incredulous looks and the repeated question, "What for? Nothing moves — what could go wrong?"

### PREVENTING ELECTRICAL FAILURE

A great deal can go wrong if an electrical distribution system is not adequately maintained. As electrical loads cycle between high and low demand, thermal expansion and contraction cause connections to loosen. Electrical panels, transformers and circuit breakers that are never cleaned accumulate dust and dirt that deposit on these connections. The loose and dirty connections provide a high resistance path that is directly responsible for more than 30 percent of electrical failures. Another 17 percent of electrical failures are attributed to live electrical components being exposed to moisture. With a comprehensive electrical PM program, these failures — which account for almost half of all electrical losses — can be prevented.

### Failures Based on Hartford Steam Boiler\* Claims Data

- Loose connections / parts 30.3%
- Moisture 17.4%
- Line disturbance (other than lightning) 10.4%
- Defective / inadequate insulation 9.9%
- Lightning 8.1%
- Foreign objects / short circuiting 7.3%
- Collision 3.9%
- Overloading / inadequate capacity 2.4%
- Accumulation of dust, dirt and oil 2.2%
- All other causes 8.1%

### \*Leaders in Equipment Breakdown & Machinery Insurance

According to the IEEE\*, EPM reduces failures to one third of those where no EPM is conducted. This tells us that electrical failures, for the most part, can be avoided. But what does an EPM program entail? There are five points to consider:

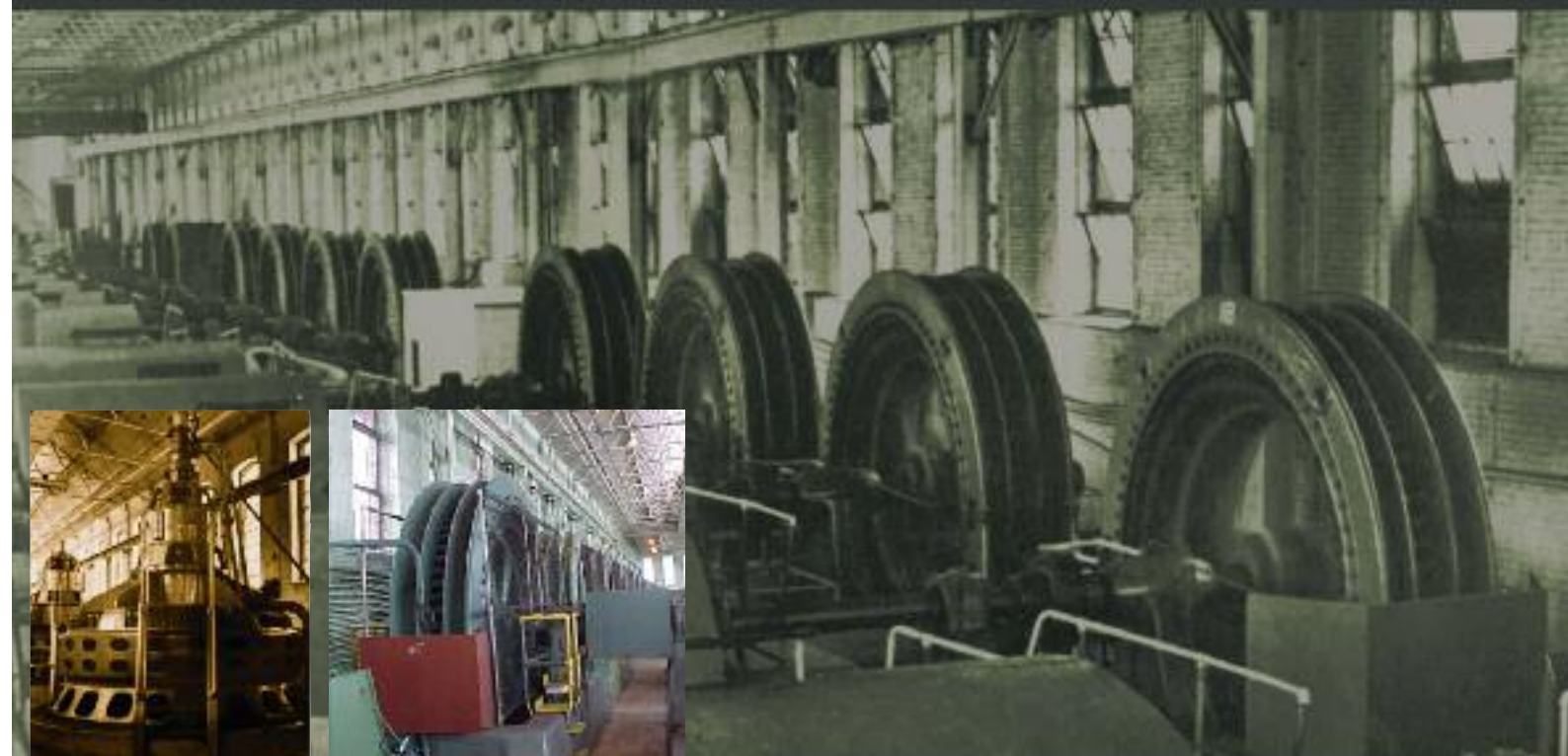
### \*Institute of Electrical and Electronics Engineers

### •QUALIFIED PERSONNEL

It is extremely important that the people who perform your EPM program be properly trained to work on the specific equipment being maintained or tested. This includes understanding the functionality of the equipment, both electrically and mechanically, and having a thorough knowledge of electrical safety practices and procedures. Special training is required for high-voltage equipment and protective relay devices, so this should not be overlooked.

To be continued.....

# A functional museum?



Today it's not unusual that the minute you buy some new equipment it's obsolete...and that is not even counting the personal electronic devices that change and update by the minute while you sleep!. Fortunately, or maybe unfortunately, our industry is very stable, even to the point of being a bit bizarre. This point came into focus with the repair of generators from the York Haven hydroelectric plant on the

Susquehanna River in Pennsylvania.

These generators, these **exact** 20 generators, have been in service since 1904. There is a mix of 7 vertical and 13 horizontal generators that have been rebuilt and serviced over the years, but the generators and the gearboxes have been churning out 20,000 KW for over 107 years, It is hard to imagine any other industry or equipment from 1904 that is still running in its original configuraton.

These were built to a very robust standard. The overall plant and the systems had some teething problems initially but they were all sorted out. Considering the level of sophistication at the time, this feat is truly amazing. Seat of the pants engineering with no electrical engineering text books or references were available. One surprising aspect of this new plant and the new industry was competition. The competition didn't come for other electric producers,

but from the oil lamp. It seems this smokey appliance became an integral part of Americana and replacing it with this mysterious new fangled electricity was not a snap decision.

In the beginning and over the years York Haven had its own repair facility where they could tear down and rebuild these generators. Insulation was hand wrapped and much of the machining required was done in house. Over the years the plants changed hands and eventually the in-house shops were shut down.

It has been 100 years and hopefully we have learned a few things in the intervening years. While these generators and gearboxes have been serviced over the years there eventually comes a time...You would assume that installing fresh, new, state of the art equipment would significantly improve the power output. Wrong.

Due to the confines of the physical plant, the output will not improve that much. The equipment will shrink in size and some of the mechanical losses will be abated, but the 100 year old generators and equipment are amazing and have done well. It will be interesting to see if new equipment is installed and if it will maintain its capabilities for the next 100 years.

Top background: The original plant interior. Top left: an original vertical turbine. Top right/bottom: the plant as it appears today

## INFRARED TESTING

# A window into the heart of your electrical circuitry.

Most of you customers are well aware of the benefits of infrared testing, but not everyone has been able to take advantage of this prevention technique. It is often nearly impossible to gain access to the services involved due to the voltage or the inability to schedule convenient down time.

Now there is an answer ...Longo offers the UL Approved\* Infrared Inspection Window, a solution to these potentially hazardous situations. By installing this permanent window you will no longer need to open or remove hatches exposing servicemen and technicians to dangerous voltage situations and possible lethal accidents. Scheduled maintenance programs can proceed regardless of production or data processing schedules.

### Benefits:

- The Infrared Inspection Window enables permanent access for the inspection of the equipment inside the enclosure, in a safe and simple way and without disturbing your operations
- Inspections may be performed at any time during normal operations and give instant and accurate results.
- The window is transparent
- Testing either by NEMA or ULStd.50 use with both long and shortwave infrared camera systems. The window units come in 2" or 3" diameters. The installation is fairly simple; however placement is critical and locations are determined by specific calculations for each cabinet.

### Applications:

- HIGH VOLTAGE GENERATORS, SWITCHBOARDS, MOTORS, TRANSFORMERS.
- MOTOR CONTROL CENTERS
- SUBSTATION SWITCHBOARD ~
- BUSBARS
- CABLE SPLICES

If you are in a situation where your facility just hasn't been able to take advantage of infrared thermography, this could be the answer. It is a window of opportunity to ensure peace of mind when it comes to potential hazards to equipment, lost production and overall safety.

**For more detailed information and a survey of your facility to determine what your specific needs are, call 973-537- 0400, ext. 733**

