



LONGO
Electrical-Mechanical, Inc.

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THE LONGO LETTER

September 2000



Process is Important *... It Does Make a Difference!*

Electrical and mechanical apparatus, when running well and smoothly, are wonderful things to witness. If you think about what it has taken to develop and perfect them, you can really appreciate the tremendous effort it has taken to get to where we are today.

Machines, like people, have finite lives. And yet, with proper care and maintenance, they will go on (or "live") for far longer periods of time. It then remains to define a program to assess the condition of a machine (electric motor, pump, fan, blower, circuit breaker, transformer, et al), over time, in the interest of maximizing its utility (use). . . . *makes sense!*

The process begins with a thorough inspection and testing (for people—a physical). That *sounds* easy. Let's consider the case of a physical examination for a person. Obviously, it can be done by a single doctor in his office using the normal equipment and tests, *or* it could be done in a clinic by a team of specialists having immediate access to literally every conceivable device. Given that it is his life, one would probably choose the latter

if he had the choice.

Longo's model, with its systems and structure, closely approaches the latter scenario. That is why clients who run facilities where their equipment *must* perform 24 hours a day, 7 days a week, select us as their vendor. They want to be assured that *every* test has been done *and* that *every* element of the mechanicals is in order.

Is this worth the slight difference in price? Many feel that it is! *Quickfixes and shortcuts have no place at Longo*, just as none of us would want that done to us personally. Let's look at some of the detail!

Laminations are the heart of electrical apparatus (motors, transformers, etc.) This is an excellent example of the benefit to you of the comprehensive testing we do. Savings of a few percent in rewinding costs could easily result in your paying



Selecting door prize winner at recent tradeshow, where new Svedala submersible trash pumps were featured.

dearly over time for the electrical power losses (money) in this sneaky power consuming component of electrical machines.

Extensive testing, using sophisticated equipment, assures our clients that all these elements are addressed. Our engineers (22) are continuously upgrading our systems to provide the superior jobs discerning buyers are now demanding. ***Yes . . . there is a difference!***

Today, even better prediction of failures virtually eliminates unscheduled shutdowns and possible calamities (surprises). A *dedicated* group of engineers and certified technicians at Longo provides these services to a broad spectrum of users.

You've heard it said before:
An ounce of prevention is worth a pound of cure!
Pay now . . . or pay later!

LAMINATIONS

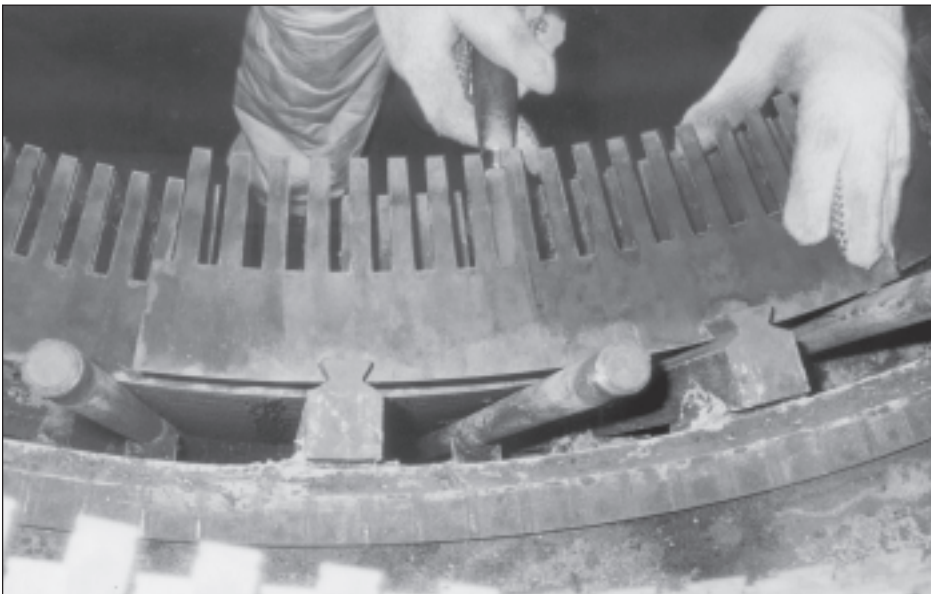
What Are They? What Do They Do? Why Are They Used?

Laminations, the parts that when stacked (assembled), are the recipients of windings (wires), are the magnetic heart of an electric motor or generator. When steel is magnetized by alternating current (AC), the steel heats up due primarily to eddy currents. These are electrical currents that circulate within the steel. The thicker the lamination is, the bigger the circulation path resulting in greater current, heating and power loss. Laminations are therefore

made thin, almost always less than 1/32 inch. The lamination material is stamped out to the exact shape required for a stator or rotor, as the accompanying photographs illustrate. Damaged laminations, e.g., due to a ground fault, may have to be removed by unstacking, repaired or replaced with new, and then restacked (reassembled). If the damage is severe, the entire core must be repaired or replaced, as is being done in some of these photos.



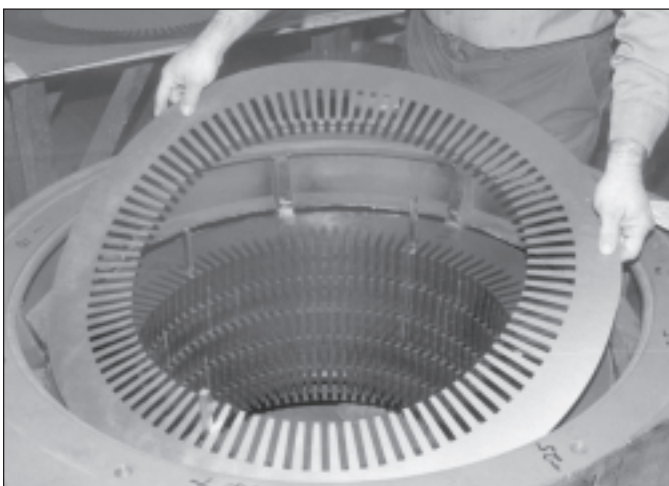
A single punching, which is one of several hundred stacked, then compressed to accommodate the windings which make the magnetics when energized.



In this photo a technician is removing one of some 14,000 sections. Sectional laminations are used on larger machines.



A new section of lamination for a very large rotor. Notice the circular holes, which provide cooling for the iron.



A new replacement lamination is being installed in a motor frame.

**Detail Handling
Begets Better Sleep For All!**

TESTING

Your Motors deserve TLC!

One of the prime objectives of testing is to confirm that the intended result was achieved. Most often a no load run test (photo 1) of a motor is sufficient to verify a satisfactory rebuild. Parameters that are typically measured and recorded (with calibrated instruments of course) include voltage, current, vibration, and bearing temperatures. A more rigorous test, to prove motor capability, is the load test (photo 2), which includes the no load test parameters and then some. The motor is connected to a dynamometer (photo 3) that has metering to measure and record the torque and speed, then convert them into horsepower to determine the exact load level. The dynamometer acts as a precisely controlled artificial load device for the motor. The motor is tested at a number of partial load points, as well as full load. The partial load points aid in determining performance characteristics, and the full load test ensures that the motor matches its nameplate ratings of horsepower, speed and current.



Photo 1 - A very large synchronous motor being run-tested.

Photo 2 - A 350HP, 1200 rpm motor, here attached to a dynamometer for load testing & verification of performance.

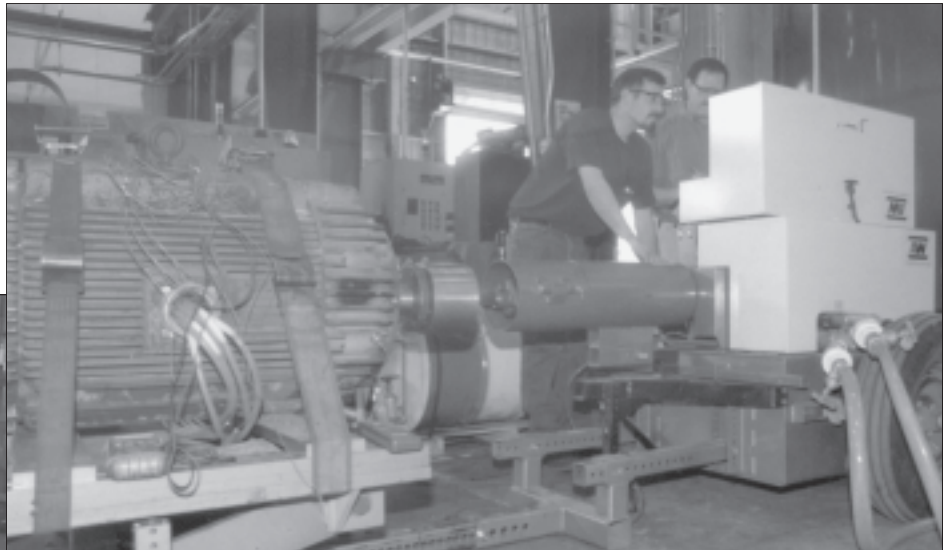
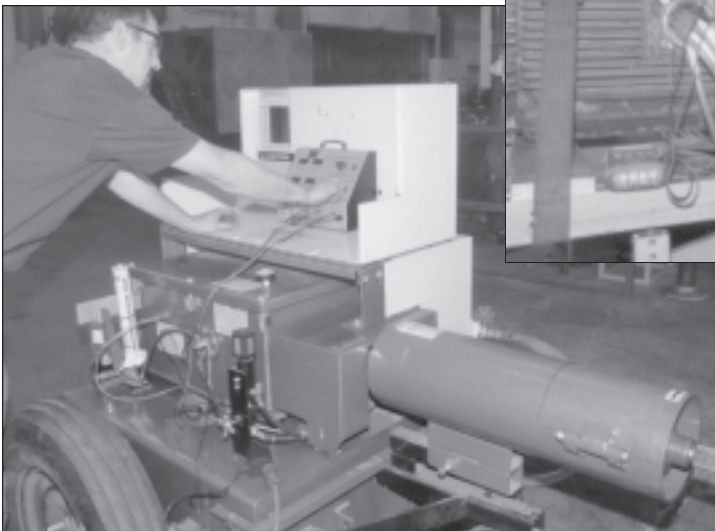


Photo 3 - Digital instrumentation provides data for review & analysis by our engineers.



When your equipment is on line 24/7, it's comforting to know you can sleep!

Infrared & VIMSM

Technology today offers the tools to *address and correct the cause before experiencing the effect.*



Vibration Information Management (VIMSM)

Safeguard all your rotating machinery by monitoring changes in vibration levels.

Vibration is a by-product of an ailing machine or operating condition. Vibration analysis is a non-destructive test and does not affect machine operation or interfere with production.

A Condition Monitoring Program is an excellent diagnostic and Predictive Maintenance Tool.



Thermographic Imaging (Infrared Survey)

Monitoring the operating condition of your electromechanical equipment, by evaluating thermal anomalies from the image produced by an infrared imager, will assist in locating potential problems, and determining the severity of their condition. Repairs can then be scheduled instead of waiting for failures, fires or outages to occur.




Computer Technology

State-of-the-art hardware and software collect and evaluate data and accurately maintain historical records. Our highly skilled Vibration Specialists and Thermographers prepare reports which are easy to read, and provide recommendations to assist you in making any required repairs.

Predictive / Preventive Maintenance services are provided by a dedicated group. These services are *not* a sideline. For more information or to schedule service, Call Trudy Giordano, 973-537-0400, x733.

Certified Technicians:

Vibration Institute 



ACADEMY OF INFRARED THERMOGRAPHY

SPORTS QUIZ

1. Can you name the NFL player who in 1992-93 became the first to score at least 25 goals for two different teams in the same season?
2. Which was the winningest team in the NFL in the 1950s?
3. What is Buff Donelli's claim to fame?
4. What two Heisman Trophy winners went on to have careers in football and baseball?

ANSWERS

1. Dave Andreychuk scored 29 goals for Buffalo and 25 for Toronto.
2. The Cleveland Browns were 88-33-2 & won 3 NFL titles in the 1950s. The Giants were 2nd at 76-41-3 with one title.
3. He scored the only goal in the U.S. team's only game in the 1934 World Cup, a 7-1 loss to Italy.
4. Vic Janowicz and Bo Jackson.

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"WE ADDRESS
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AS WELL AS
THE EFFECT"[®]