

Core Loss testing is one of the most important quality assurance tools in the motor repair industry and is virtually a requirement when rewinding a motor. This proven technology is even more critical in today's competitive market as it predicts motor reliability, helps maintain motor efficiency, and reduces motor repair costs.

The Industry Standard Since 1982 - LEXSECO has the knowledge and experience of the Originator of Commercial Core Loss Testing Technology.

LEXSECO Core Loss Testers are used around the world by motor repair companies and maintenance shops of motor users such as railroads, armed forces and utilities. Motor manufacturers also use our Testers for quality control.

Core Loss - Waster of Energy and Destroyer of Motors

Not all power applied to an electric motor is converted to work. Principal sources of waste include winding (I^2R) loss, windage, friction, stray load loss and core loss in the stator, rotor or armature. Core loss, essentially, is the excess energy required to magnetize the core and is due to eddy currents and hysteresis. All cores experience some inherent loss. Increased loss results from physical damages or overheating of the core. Core Loss, dissipated as heat, increases the operating temperature of the motor which causes more heat and can shorten the winding life. A vicious cycle of increasing inefficiency is established leading to higher operational costs and premature motor failure. In DC armatures, core loss can cause commutator sparking and spotting, impeding motor performance. A relatively small temperature increase in the motor winding can significantly reduce the thermal life of the insulation. A significant percentage of motors tested have core loss exceeding statistical acceptability. Some special types, such as hermetic refrigeration and traction motors, suffer especially high losses. Moreover, government efficiency mandates make detecting sources of energy loss increasingly important. Preeminent technical authorities have acknowledged the critical importance of core testing. EASA's **Guidelines for Maintaining Motor Efficiency During Rebuilding** indicates Core Loss Testing as a Recommended Practice.



Core Losses Reduce Profits

Studies have shown that, depending on the load, core loss is the 1st or 2nd leading cause of energy waste in rewind motors and can account for 25% or more of motor efficiency. Core testing not only identifies motors that should be replaced versus repaired, but also reveals repairable problems. The increasing costs of electrical energy and energy legislation make it more important than ever that rewind motors maintain the optimum level of efficiency & performance.

LEXSECO Makes Core Loss Testing Easy

Testing occurs with the winding in place or removed. Winding condition, lamination grade and thickness do not significantly affect test results. Core dimensions and meter readings are fed into the software, which calculates watts/lb. (kg) of core loss. With parameters for "bad", "marginal" and "good" cores, the software generates a detailed core condition report. Localized damage is found by increasing the excitation level to reveal hot spots within the core. **The entire test takes only about 10 minutes!**

TECHNICAL OVERVIEW

LEXSECO Means Quality Equipment

The LEXSECO Core Loss Tester provides high current at low voltage with continuously variable output to simulate operating conditions of the core. Housed in rugged steel cabinets, our Testers are incorporated with surge and overload protection. Every LEXSECO component meets rigid quality standards. **With machines in service over two decades, we have never experienced a transformer failure, a remarkable quality testament.** Our patented Variable Reactance Transformer is inherently current limiting and will not allow the tester to source more than the rated current. When purchased with Cover Plan, the LEXSECO Core Loss Tester comes with a **3-Year Warranty**.

Simple and Efficient to Operate

The LEXSECO Core Loss Testers have a fully automated, auto-ranging metering system. One button is all that is needed to ramp the system up or down. This simple and intuitive operation makes training a breeze.

LEXSECO Flux Meters provides the Highest Metering Accuracy on the Market

The metering system is a key component in most industrial test equipment and should be specifically designed to address the application of the particular equipment. The LEXSECO Flux Metering systems are a result of decades of research in the field of core loss testing and advances in metering technology. The system measures flux, true RMS current, and watts at the highest accuracy level available on the market today.

The system was designed specifically for core loss testing. It provides the most accurate metering available for testing a wide array of HP and frame characteristics. The accuracy specifications are presented as a percentage of the actual meter reading. The system is certified traceable to the requirements of the National Institute of Standards and Technology (NIST). One of the terms listed in the above specification requires additional explanation. The "*% of reading' or % of rdg*" is a very significant term when used in conjunction with instrumentation specifications. It indicates how far the meter's reported reading can vary as a percentage of the reported reading from the actual. The "% of rdg" must be compared to a more standard term "% of full scale " or % of FS" in order to fully understand its significance. The term "% of FS" indicates how far the meter's reported reading can vary as a percentage of the largest reading the meter can display from the actual. Consider the following example of two watt meters (both meters have a five digit display and full scale = 10,000 watts) displaying 180 watts when testing a core:

- Other Meters - (with an accuracy specification of $\pm 0.5\%FS$) The reading of 180W might actually be between 130 and 230W, a range of 100 watts.
- LEXSECO's Flux Meter - (with accuracy specification of $\pm 0.25\% Rdg \pm .2$) The reading of 180W might actually be between 179.35 and 180.65 a range of only 1.3 watts.

Of all metering issues associated with the Core Loss Tester, the most difficult parameter to represent accurately is wattage, as it is derived from two separate measurements, voltage and current and their observed phase relationship. The above example illustrates how one specification can greatly affect your confidence in the reported results.

Calibration is easily addressed with our flux meter exchange program. *The exchange metering system comes complete with traceable Certificate of Compliance certified in conformity with the National Institute of Standards and Technology (NIST).* The Flux Metering System is a self-enclosed modular component, which provides for a quick removal and installation process. **This program should help you conform to ISO 9001, EASA-Q, and other program standards that require regular and traceable calibration while maintaining your Core Loss Testing with little or no interruption.**

Fully Automated Core Loss Testers

Our Automated Testers are computer controlled systems that will reduce testing time and increase accuracy while allowing for the highest level of testing flexibility with an *any-point manual over-ride*. These testers integrate with our **MP6.0™** Software to automatically excite the core to target levels, produce test results, and then automatically ramp the power back down with a touch of a button. Hot Spot tests are automatically timed! We have accomplished this automation without changing the footprint of our testers and without adding a PLC. Our simple but elegant design insures that our testers will continue to be durable and maintenance free while maintaining an automation upgrade path for older LEXSECO testers.

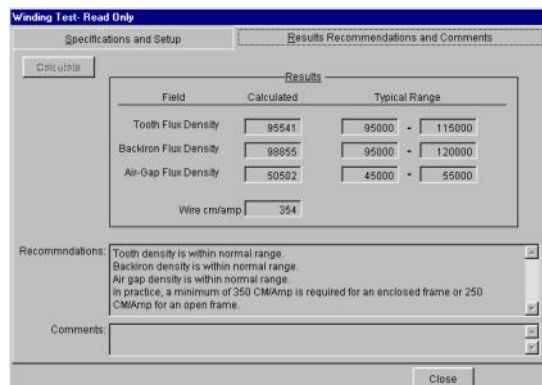
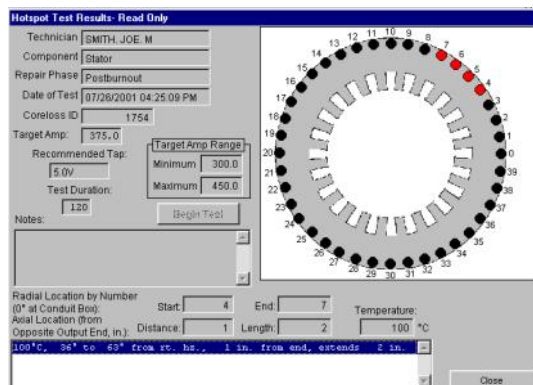
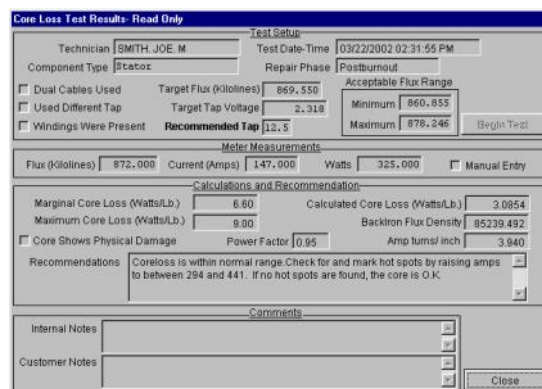
LEXSECO Software is the Standard

The first standardized core loss parameters, developed by LEXSECO represented an appropriate average of the existing base of motors found in the market. LEXSECO realized, however, that acceptable losses should vary with core configuration. To achieve greater accuracy, separate parameters should be determined for each frame type and efficiency type. This recognition lead to the development of the LEXSECO's unique "**Multiparameter,**" or **MP6.0™** software.

Exceptionally versatile and user friendly, **MP6.0™** allows differentiation between NEMA, pre-NEMA, U, T and IEC frames and standard and high efficiencies. Users may also build their own databases with special parameters for the particular equipment they service or manufacture. Plus **MP6.0™**'s Winding Verification program and an array of mechanical and electrical testing fields make our Tester a powerful repair documentation center.

Perhaps our software's best feature is that we continually improve it, and our users benefit from the improvements.

Sample Screens from the MP6.0™ Software





LEXSECO

TECHNICAL OVERVIEW

Specifications	Model 1081H	Model 2025E	Model 2040A	Model 2060B	Model 2125E	Model 2200A	Model 3000B
KVA	10	25	40	60	125	200	300
HP Range**	to 500	to 1250	to 1750	to 2500	to 5000	to 7500	to 10000
Standard Voltage*	1/60/230 - 460V	1/60/230 - 460V	1/60/460V	1/60/460V	1/60/460V	1/60/460V	1/60/460V
Required Circuit Ampacity	60/230V 30/460V	120/230V 60/460V	100	150	300	550	700
Locking Steel Lid	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Circuit Breaker	Standard	Standard	Standard	Standard	Standard	Standard	N/A
Casters (locking)	Standard	Standard	Standard	Standard	Standard	Standard	N/A
Thermal Overload Protection	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Crated Weight	715lbs	845lbs	1295lbs	1450lbs	2225lbs	2750lbs	3955lbs

Equipment Upgrade Programs

Our upgrade program evidences the fact that buying a LEXSECO Core Loss Tester is a wise investment. Recognizing that the LEXSECO Testers are built to last, LEXSECO has created upgrade packages to bring earlier generations of the equipment to the latest standards.

A LEXSECO Core Loss Tester is an investment, which pays dividends for many years after the original purchase. Continuing R & D, largely conducted in our affiliated EASA member motor service company, produces regular advances designed to keep LEXSECO users current with cutting edge technology. Even LEXSECO's earliest clients have been able to upgrade their 1980 vintage Testers to have the latest metering, hardware and software! And, when you buy LEXSECO, you gain access to our staff of trained test engineers who insure you get the most from your LEXSECO Tester. Our engineers consult daily with shop personnel around the world, giving them the benefit of our many years of testing knowledge and experience. We support our products after the purchase, which is one reason LEXSECO clients come back again and again. The knowledge that comes from originating a test equipment concept - an unparalleled quality record - Multiparameter software with regular upgrades - after purchase product

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