

製造ラインの概観

コアロステスト(Core Loss testing: 磁損テスト)はモータ修理工業における最も重要な品質保証手段(quality assurance tools)です。そのためモータコイルを巻き直すときに事実上必要となります。この実証済みの技術は、モータの信頼性を予測し、モータの性能を維持するのに役立ち、モータの修理と保証に関わるコストを減少するので現代の競争市場で益々重要です。

LEXSECO が商業的コアロステスト技術の知識と経験を有した 1982 以降は業界標準です。

LEXSECO Core Loss Testers(コアロステスター)は世界中のモータ修理会社および鉄道輸送、軍隊および電力会社などのモータのユーザのメンテナンスショップで使用されています。モータのメーカーも製造過程の品質管理のために当社のテスターを使用します。

コアロス(磁損)は電力の無駄遣いでありモータの破壊者です。

電気モータに適用された電力がすべて仕事に転換されるわけではありません。消耗の主な源には、巻線損失(winding I^2R loss)、風損(windage)、摩擦(friction)、漂遊負荷損(stray load loss)および固定子(stator)、回転子(rotor)または電機子(armature)の中のコアロス(磁損)が含まれます。コアロス(Core loss)磁心(core)を磁化するために必要とされる余剰(余分な)エネルギーであり、渦電流とヒステシスに起因します。すべての磁心(cores)には本来備わったいくらかの固有の損失があります。磁損の増大は磁心の物理的損傷または過熱による結果です。熱として消散したコアロス(磁損)は、モータの作動温度を上昇させる。そしてそれがより高い熱の原因となり、巻線の寿命を短縮させる可能性があります。増大する非効率性の悪循環が定着し手高い操作コストを招き、モータの時期尚早な故障の原因となります。直流電動機の電機子(DC armatures)、コアロス(磁損)は、整流子をスパークさせと汚点をつける(commutator sparking and spotting)原因となりモータの性能を妨げます。モータの巻線の中の比較的小さな温度上昇でも著しく、絶縁の熱寿命を縮小させる可能性があります。

テストされたモータのかなりの割合で統計上の合否判定基準を超えたコアロスがあります。Some special types, such as 密閉冷蔵のモータ(hermetic refrigeration)およびけん引モータ(トラクションモータ:traction motors)のようないくつかの特殊なタイプは、特に高い磁損を被ります。さらに、政府の効率性に関する政令(government efficiency mandates)がエネルギー損失の発生源を検出することをますます重要なものにしていきます。EASA(European Aviation Safety Agency: 欧州航空安全機関)のガイダンスは、モータの復元時にモータの性能を維持するためのコアロステスト(Core Loss Testing)を推奨技法(Recommended Practice)と表示しています。





コアロス(磁損: Core Losses)は収益を減らします。

研究によると、コアロスはコイルの巻き直されたモータのエネルギー浪費の一番目か二番目の主な原因であることが示されています。そしてその損失は、モータの効率の25% もしくはそれ以上の割合を占めます。コアロステストはモータについて修理する代わりに交換すべきであることを識別するだけではなく、修理可能な問題点をもまた明らかにします。電気エネルギーの増大するコストとエネルギー立法により、コイルの巻き直されたモータが効率と性能の最適レベルを保持することがこれまで以上に重要になります。

LEXSECO はコアロステスト(Core Loss Testing)を簡単なものにします。

コアロステストはコイル巻きが行われた状態またはコイルの取り外された状態で行われます。積層の品質等級と厚みはテスト結果に著しい影響は与えません。磁心のサイズと計測器の読取値(Core dimensions and meter readings)は are fed into the MP 7™ software の中に取り込まれて、コアロスの watts/lb. (kg) を計算します。With parameters for “bad” (悪い)、“marginal” (ぎりぎり最低限)、および “good”(良好な)磁心 (cores)に関するパラメータを使って、MP 7™ software は詳細は磁心の状態報告 (core condition report)を作成します。局部損傷 (Localized damage)は励起準位 (excitation level)を上昇させることにより発見され、磁心 (core)内部のホットスポットを明らかにします。テスト全体で約10分かかるだけです。!



技術概要

LEXSECO とは高品質装置(Quality Equipment)を意味します。

LEXSECO Core Loss Tester は、磁心(core)の作動状況をシミュレーションするために、連続可変の出力をもつ低電圧で高電流を提供します。丈夫なスチール製キャビネットに収納された当社のコアロステスターは急激な電圧変化と過負荷を保護して内蔵されています。すべてのLEXSECO のコンポーネントは頑丈な品質基準を満たしています。当社の特許取得された可変リアクタンス変圧器(Variable Reactance Transformer)は本質的に電流制限を行い、このテスターに対して定格電流以上の電流供給を許しません。20年以上に亘りマシンは使用されていますが、我々はこれまで変圧器の故障や目立った品質上の問題を経験したことがありません。LEXSECO Core Loss Tester はメーカー推奨の一式プランでご購入頂いた時には、3年間保証が付きます。

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 NIST 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.

Wattage is the most difficult parameter to represent accurately of all metering issues associated with the Core Loss Tester It is derived from two separate measurements, voltage and current and their observed phase relationship. The example above 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 **MP 7™** 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 to prevent overheating of the core!

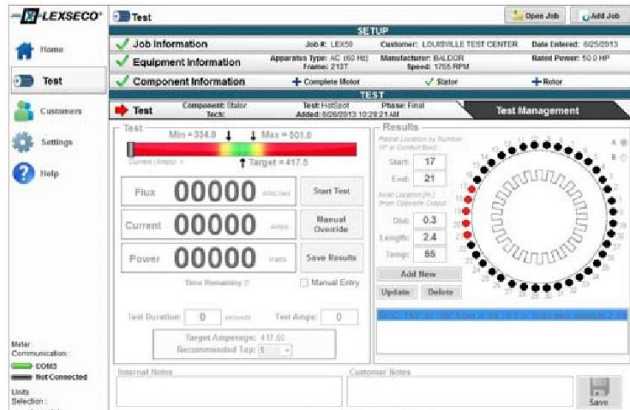
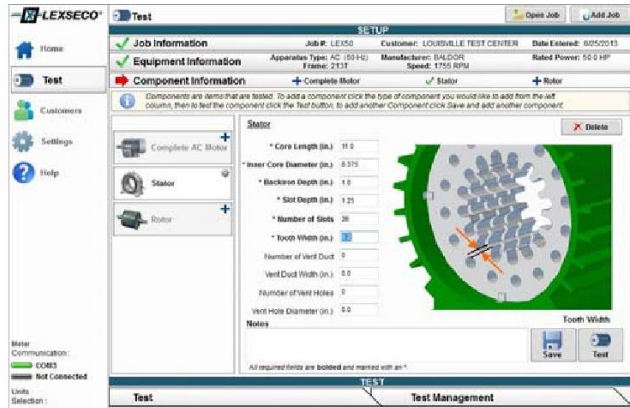
LEXSECO Software is the Standard

The first standardized core loss parameters LEXSECO developed represented an appropriate average of the existing base of motors found in the market. LEXSECO realized, however, that acceptable losses vary with core configuration. To achieve greater accuracy, separate parameters should be determined for each frame type and efficiency type. This recognition led to the development of the LEXSECO's unique "**Multiparameter**," or **MP 7™** software.

Exceptionally versatile and user friendly, **MP 7™** 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. The **MP 7™**'s Winding Verification program and an array of mechanical and electrical testing fields make our Tester a powerful repair documentation center.



MP 7™ Softwareによるサンプル図表



www.lexseco.com

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技術概要

Specifications	Model 1081	Model 2025	Model 2040	Model 2060	Model 2125	Model 2200	Model 3000
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

* Other voltages available upon request ** HP Range is approximate only

Equipment Upgrade Programs

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

A LEXSECO Core Loss Tester is an investment that pays dividends for many years. Continuing R&D, largely conducted in our affiliated EASA member motor service company, produces regular advances that keep LEXSECO users current with cutting edge technology. Some of LEXSECO's earliest clients have been able to upgrade their 1980 vintage Testers to have the latest metering, hardware and software!

When you buy LEXSECO, you gain access to our staff of trained test engineers who ensure 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 support. These are the reasons LEXSECO sets the standard.

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Publication No: E51296