



CORE TESTING.

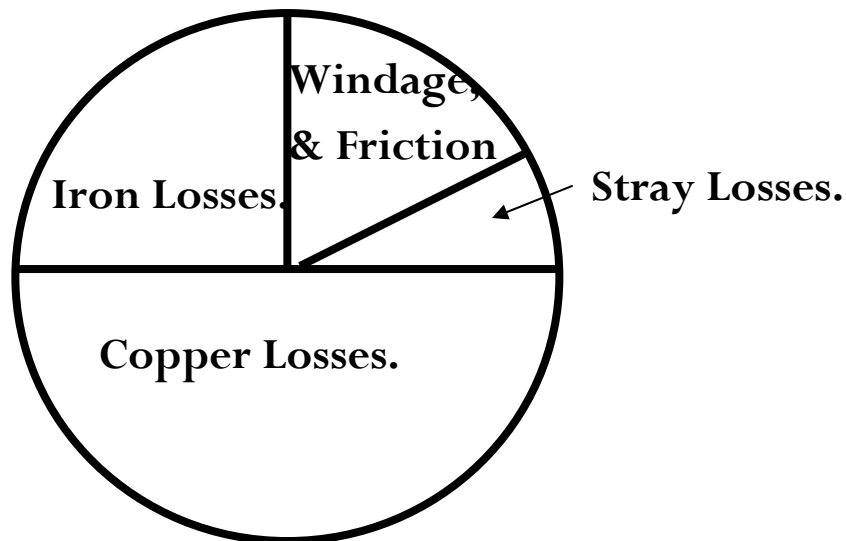
**Core Testing: The Heart of Quality and Successful
Repair of Induction Motors and Armatures.**

Engineering at it's Best.

CORE TESTING.

The challenge for every motor repair firm is two fold: to repair the equipment properly; and to demonstrate to their customers by means of adequate testing equipment and documentation that rewound motors retain their operating efficiency.

Typical Motor Losses.



Copper losses that is both the stator and rotor would no change if the motor is re-wound to the original design.

Bearing and fans are the same as used by the OEM and therefore these losses should be unchanged.

Stray losses would not change as the configuration is per the OEM design.

Iron losses could change as a result of mechanical damage and destruction of the inter-lamination insulation.

The eddy current losses in the core would increase.



The main reason that a motor will lose efficiency during the repair process is core (iron) loss. It is relatively straight foreword to insure that the copper windage and friction losses remain the same as original but measurement and testing of the core is usually very primitively done without repeatability e.g. checking for hot spots and average temperature rise over a time period.



**A number of questions need to be answered namely:
When we repair an electric motor what are we trying to achieve?
What information do we have about the original motor?
Do we know the core losses in a new motor? (We can calculate the total losses from the efficiency and if we have the right test equipment we can measure some of the losses and do a breakdown of the motor total losses).**

The core loss tester does not measure the actual “core losses” as used to calculate the total losses or efficiency of the motor but gives a comparison to known values and or history values.

The OEM of the motor decides on the motor design and therefore all its parameters, generally the repairer tries to give the user a motor back after repair as close to original.



Hot spots should be checked particularly is and mechanical damage is evident.



Do's and Don'ts:

Do:

Quality assurance program, including calibration of test equipment.

Conduct core test before and after stripping.

Repair or replace defective laminations. (re-stack & insulate).

Evaluate the impact on efficiency before changing winding design.

Measure winding resistance.

Measure and record all values during testing. (Amps, Volts, Watts, pf. etc.).



Don't:

Don't overheat the stator core.

Don't use an open flame for stripping.

Don't sandblast core.

Don't short lamination when grinding or filling.

Don't increase airgap.

Don't increase the resistance of the windings.

Don't knurl or peen or use an adhesive on bearing fits.

Don't make mechanical modifications without considering the ramifications.



Motor Rewind Shop

Details:
Phone:
Etc.

Henry du Prez & Associates

171 Ave 40th St.
Brooklyn
New York
Phone: 718 366 7942
Fax: 718 366 7942

Type: **150 A Core Tester.**

Core Tests.

Job No.
Make:
Rate kW: kW.
Rated Voltage: Volts.
Rated Speed: r.p.m.
Rated Current: Amps.
Frequency: Hz
Serial No.

h.p. 0.0
 No. Poles #DIV/0!

MOTOR DIMENSIONS:

Core Length: mm.
No. of Air Ducts: (if any)
Air duct Length: (if any) mm.
Internal Diameter: mm.
External Diameter: mm.
Depth of Slots: mm.

Stacking Factor: 0.95 0.95 0.95
If no Stacking Factor is entered then computer will default to 0.95 as a value.
Back Iron Flux Density: 1.2 1.2
If no density is stated a density of 1.2 Tesla will be used as a default value.

Remarks:

Core Area: (Back Iron.) 0 Sq. mm.

Using the core dimensions and assumed back iron core flux density.

Volts per turn: 0 Volts. 0

Core Mass:

(Yoke only).

Yoke "H" 0 Iron Length: 0 mm
(Circumferential)

Mass: (Yoke) 0 kg.

Power: Watts. (as read on the core tester Watt meter).

Current: amps Iron Loss 0 Watts

Loss per kg. #DIV/0! w /kg.

Power Factor: #DIV/0!

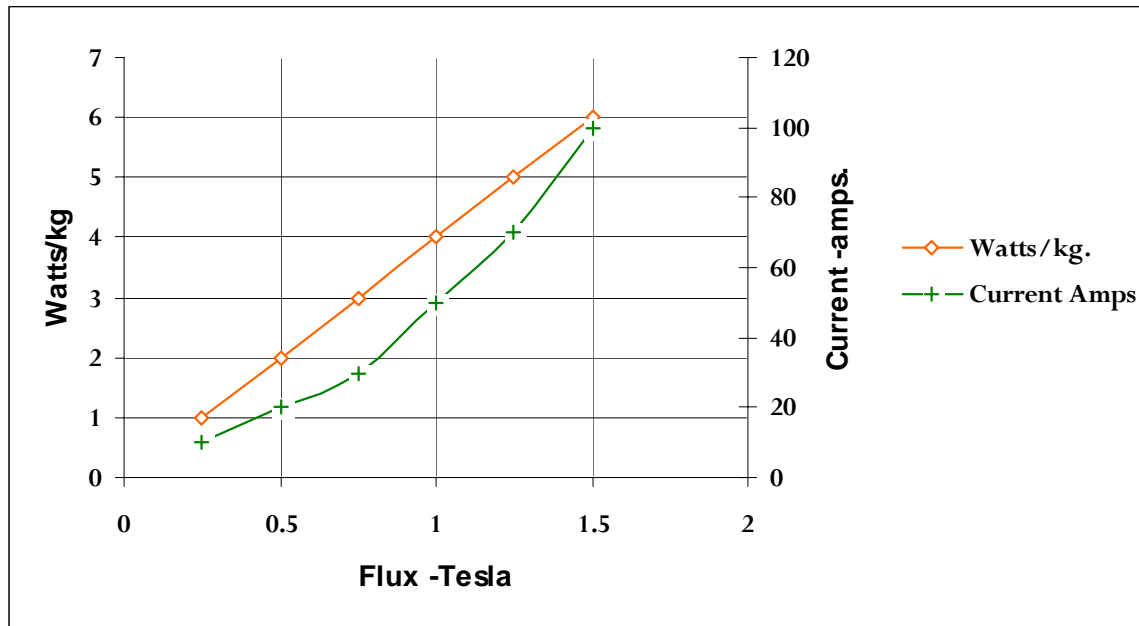
W/kg.		
upto 5	Good	Check for mechanical damage
5 to 8	Acceptable	
8 to 12	further tests Acceptable	
Above 12	Reject.	

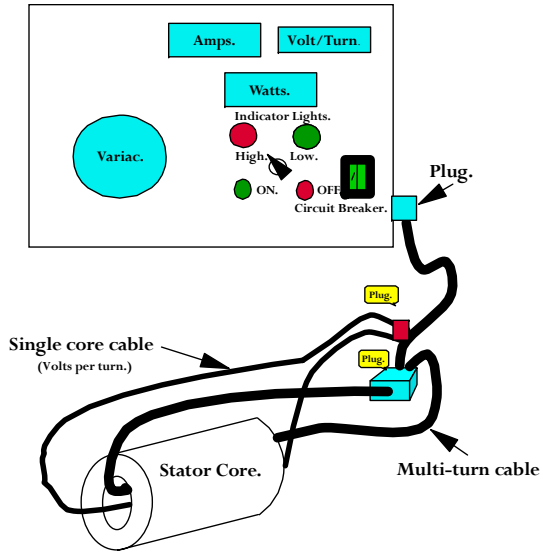
Result: #####





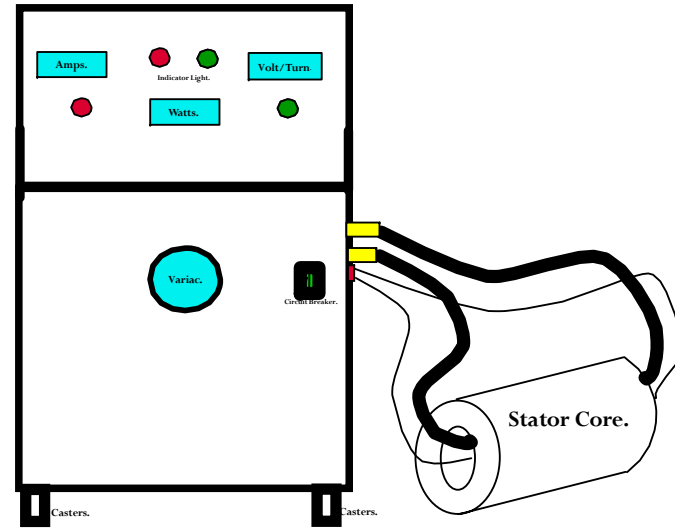
If a graph of watts/kg & current vs. flux is required the program is available to do this.



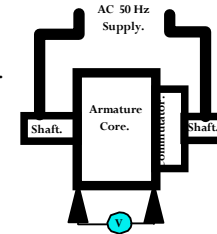


Program included to calculate the volts per turn and back iron weight.

Model 150 A plus.



Alternatively DC Armature test.



Models 500, 800 and 1600



