UDT-A-01
May 19/06

specially gapped and wound device; EI core, M-19 steel - as per Jensen's recipe
60 Hz mains; 40t Primary, 2@60t Secondary, 15t Feedback; 22AWG wire

MEASURING INSTRUMENTS:

Tektronics TDS5034B	digital phosphor oscilloscope, with clamp on current probes and passive voltage probes. (operated at 10MS/S) 4 input channels; 4 math channels; 8 measure channels; True Power capa True Power via mean[Vinstant x Iinstant] gated over 2 AC cycles Coil Heating via mean[Irms^2 x DCR] gated over 2 AC cycles
2each Extech MM560	Precision digital multimeter 50,000 count, 0.03% accuracy DC dynamic resistance via V/I
Valhalla 2101	Integrating 4 quadrant True Power Meter single channel Vrms, Irms, and True Power readout for cross check

DC RESISTANCE EVALUATION: **copper temperature coefficient: 0.00393**

	DC current	DC voltage	resistance	temp degrees C
Primary Circuit DC Resistance	1.665	1.006	**0.6042**	21
Secondary Circuit DC Resistance:	1.816	1.832	**1.0088**	21
Load DC Resistance	0.354	8.886	**25.1017**	21

Resistance Calculator:

temp C	R
25	0.6137
21	1.0088
21	25.1017

ambient conditions: *21 degrees C* *55 percent Relative Humidity*

RUN NUMBER:		**1**	**2**	**3**	**4**	**5**	**6**	**7**
Instrument		**TEK**	**Valhalla**					
Load		**25ohm**	**25ohm**					
HYSTERESIS EVALUATION:	Units:							
UNLOADED PRIMARY VOLTAGE:	Vrms	10.300	10.160					
UNLOADED PRIMARY CURRENT	Irms	3.083	3.060					
NET HYSTERESIS POWER	watts True	4.556	4.600					
LOADED EVALUATION								
PRIMARY VOLTAGE	Vrms	10.060	9.900					
PRIMARY CURRENT	Irms	3.009	2.980					
TOTAL INPUT POWER	**watts True**	**8.533**	**8.900**					
OUTPUTS:								
Primary DC R	OHMS	0.6042	0.6042					
Secondary DC R	OHMS	1.0088	1.0088					
Load DC R	OHMS	25.1017	25.1017					
SECONDARY VOLTAGE	Vrms	9.971	9.940					
SECONDARY CURRENT	Irms	0.397	0.415					
SECONDARY OUTPUT POWER	**watts True**	**3.948**	**3.890**					
ADDITIONAL OUTPUTS:								
HYSTERESIS OF CORE	watts True	4.556	4.600					
PRIMARY COIL HEATING	watts True	5.477	5.366					
SECONDARY COIL HEATING	watts True	0.159	0.174					
TOTAL ABSOLUTE OUTPUT	**watts True**	**14.140**	**14.029**					
COP(absolute)		**165.7%**	**157.6%**					
EXCESS WATTS	watts True	5.607	5.129					
COP(useful)		**46.3%**	**43.7%**					
Load check:	check	3.956	4.323					
(True Power at load vs load I^2R)	difference	0.008	0.433					
Load check variance	percent	0.209%	10.019%					
(load check verifies DC R values: if DC R is correct then variance is zero)								
Primary Power Factor		0.282	0.302					
Secondary Power Factor		0.997	0.943					

NOTE:
VALHALLA HAS ONLY 1 OR 2 SIGNIFICANT DIGIT RESOLUTION ON SOME SCALES. THIS ACCOUNTS FOR VALHALLA LOAD CHECK VARIANCE AT 10%

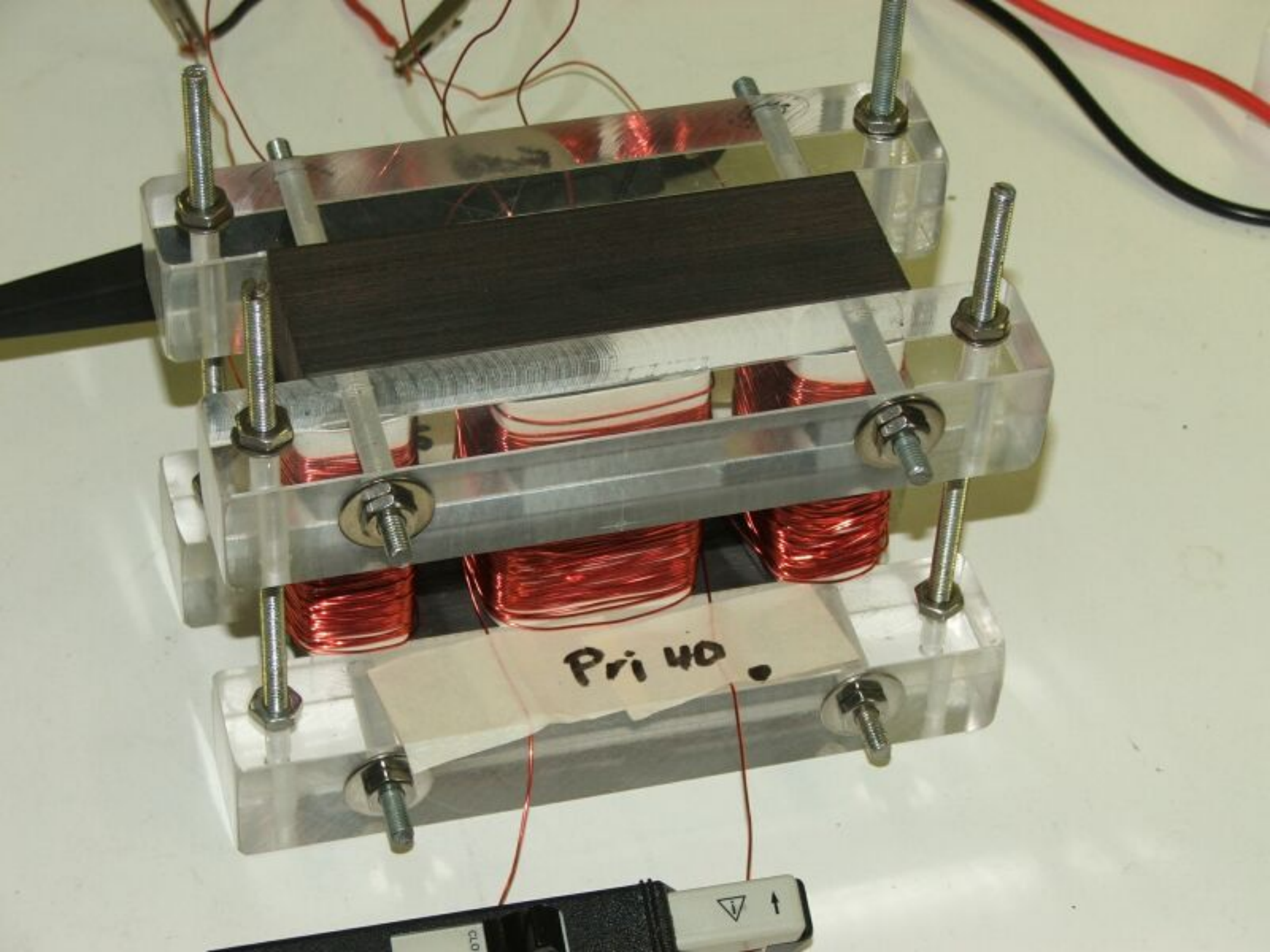
EITHER WAY, THIS IS UNASSAILABLE EVIDENCE OF O/U!!!
YOU CAN DISCOUNT THE HYST PWR COMPLETELY, AND STILL RETAIN O/U

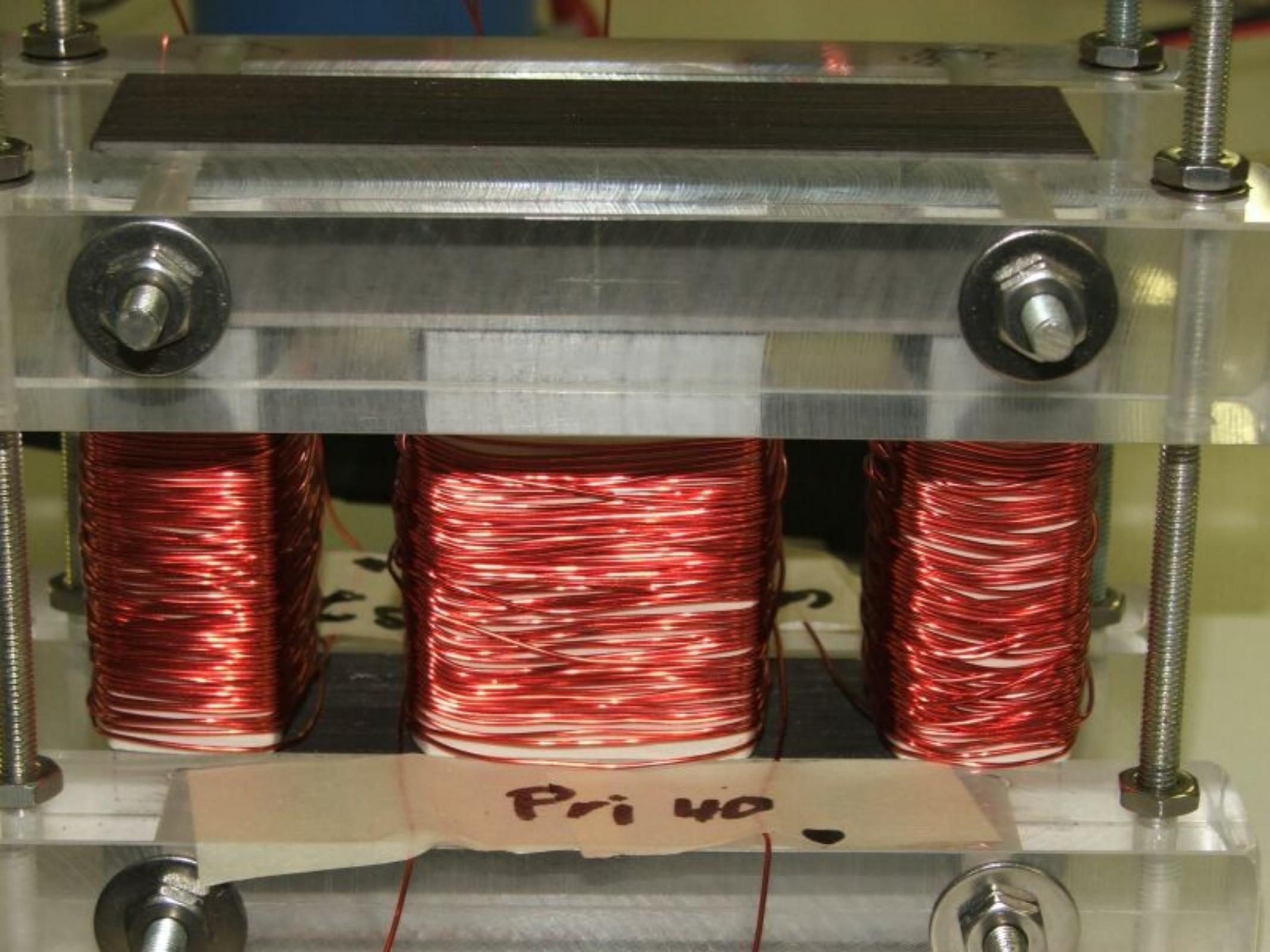
(you cannot challenge the Joule heating values nor the input and output power, the only potential challenge is the core hyst/eddy power)

(since there must be some core loss, the actual COPabsolute must go up from the values below)

with Core Hyst removed:

112.3%	**105.9%**
TEK	**Valhalla**


Pri 40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