

	A	B	C	D	E	F	G	H	I	J
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1	Wind Tunnel Turbine Testing- No-Load RPM										
2											
3	Coil Resistance R_G				(repeat this even if it was done before)						
4	Test Lead resistance, R_{TL}				(short end of test leads together, approx. 1.5 ohms)						
5	Coil+ Leads Res, R_T				(leads connect to turbine)						
6	Load Resistor - R_L			varied							

7										
8	Test Procedure									
9	1 Measure all resistances except R_G and R_{TL}									
10	2 Place the wind turbine in the tunnel and secure the turbine base									
11	3 Connect the test leads to wind turbine and measure R_T									
12	4 Adjust the wind tunnel speed to fins the CUTIN speed									
13	5 Record the actual wind speed, frequency and turbine voltage									
14	6 Compare the voltage generated with the drill press test									
15	7 Create an Excel spreadsheet plotting the RPM vs. Voltage data									

17										
18						<u>Formulas</u>				
19										
20						eq-1 $P_T = (V_L^2 / R_L) (1 + R_G / R_L)$				
21										
22						eq-2 $RPM = F * 30$				
23						FOR 4-POLE GENERATOR				
24										
25						eq-3 $V_{L-Cal} = V_{NL} (R_L) / (R_L + R_G)$				
26										

		Nominal wind speed (MPH)	Actual Speed (MPH)		Freq. (Hz) F_L	RPM Calculated	Voltage (V-rms) V_L			
27	SPEED									
28										
29	LOWEST									
30	(CUTIN)									
31		9								
32		10								
33		11								
34		12								
35		13								
36		14								
37		15								
38		16								
39		17								
40		18								
41		19								
42		20								