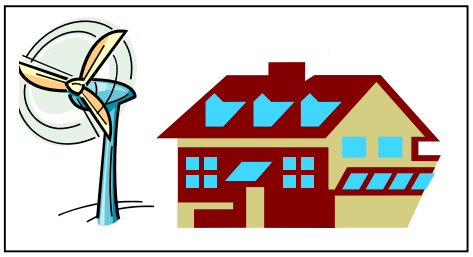
1234 Research Parkway
Technology, MI 98765
"State-of-the-Art Power"

M E M O R A N D U M

TO: *WindDrive* ™ Development Group
FROM: C. Radcliffe, Controls Group Supervisor
DATE: March 1, 2010
SUBJ: Modeling and Experimental validation of the *WindDrive* ™ Drivetrain System for a Periodic Input.



1. This week the group will model the 2nd order response of the *WindDrive* ™ drivetrain to a periodic input (sinusoidal input).
2. You will operate a prototype torsional mass-spring-damper system to test the capability and properties of the modeling technology. You will investigate the effects of sinusoidal input on the stability of the torsional system. You will measure system parameters and measure the physical response of the torsional prototype system.
3. This laboratory evaluation of the torsional prototype system will help you evaluate the applicability of this technology to the design and development of our new *WindDrive* ™ home power generator. The prototype is designed to simulate the full scale application. You should document all areas in the new system which may be analyzed by the technology you experience in this exercise.
4. Many real life arbitrary non-periodic inputs can be approximated as a combination (superimposition) of individual periodic inputs. The response thus can be found as the superimposition of the responses to the individual component inputs. An example of practical application is in deflection dynamics of drivetrain systems like used in the *WindDrive* ™ system.
5. In reporting the results of your investigation this week, you should specifically focus on a discussion of where this modeling technology could be applied to the analytical design of our new standard in residential wind powered electric generator performance and efficiency for the 21st century.