On September 26, 2008 LSSU Prototype Development Center (PDC) undertook a project to test the RPM of a new generator patented by Richard Rogala under the terms of the attached proposal. Refer to US Patent 7,327,061 dated Feb. 5, 2008 for more detail.

Since this unit was a prototype the various test runs required lubricating and adjusting alignment of the device all of which were performed by the inventor, Richard Rogala. Starting of the device required manual assistance to begin the rotation of the generator. The drive motor developed substantial heat and was allowed to cool several times during the test process. No temperature readings were taken.

Using a Fluke model 45 digital meter some initial electrical measurements were taken. The open circuit output voltage varied but was measured at approximately 17.8 VAC nominal.

The generator prototype has two output coils. One coil was arbitrarily chosen to connect a Daystrom Weston Shunt with an output rating of 50mV per Amp. An offset of 0.17mVAC was noted without power applied and two generating mode current readings were taken as 26.34mVAC and 25.44mVAC. The readings varied but a nominal current of 0.514 Amps was recorded after compensating for the offset.

The primary objective of the client was to have rotational speed readings in revolutions per minute taken under the conditions of open circuit output and shorted output conditions.

Since the prototype generator was only to be available on the testing date, the PDC developed a plan for measuring the rotational speed using a wheel to be attached to the hub which would use evenly spaced holes as a photo-interrupter. Upon set up of the prototype it became evident that the mechanical arrangement would not have sufficient space to mount the photo-detector. In addition the available hub was on the drive motor and the drive motor connected to the generator by way of a belt onto a smooth surface of the generator. The RPM measured in that fashion could not be assured to be the rotational speed of the actual generator mechanism. An alternate method was chosen to take the RPM measurements. A strobe light was used to take the readings. The available Ferret model 88 Digital Strobe/Timing Light provided output rates in increments of 10 RPM. Four unique marks were evenly placed on the generator end wheel at approximately 90 degree increments. When operating the strobe light at 4 times the rotational speed all four of the unique marks appeared to overlap and remain in a fixed location due to the nature of the stroboscopic lighting. This method allowed for an effective resolution of 2.5 RPM increments. Three measurements were taken. With the electromagnets disabled the digital reading was 3310 RPM corresponding to an actual speed of 827.5 RPM. Having the electromagnets enabled and no load on the output the digital reading was 3030 RPM corresponding to an actual speed of 757.5 RPM. Finally with the electromagnets enabled and a short circuit on the output the digital reading was 3120 RPM corresponding to an actual speed of 780 RPM.

Field OFF	Open Circuit	827.5 RPM
Field ON	Open Circuit	757.5 RPM
Field ON	Short Circuit	780 RPM

No measurements were taken of the power required by the drive motor to rotate the device. No measurements were taken of the power required to excite the two electromagnets used to establish the field for the generator. As such, the Prototype Development Center can make no statements regarding the efficiency of the generator. Without additional input measurements the Prototype Development Center can make no statements regarding the causes or meaning of the particular rotational speed measurements observed.

The prototype generator produced a non-sinusoidal voltage wave shape which would need to be addressed if the unit were to apply power to the commercial power grid. Even though it was not covered by the scope of the project the test technician speculated on several possible avenues to take to change the output wave shape.

Report submitted by:

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