Cameron Yost

Professor Stacie Ringleb

MAE 434W

March 17, 2015

 Learning to Learn Assignment 6: Self Review

Questions for each paragraph: What is the main topic of this paragraph? How does this paragraph function in the argument/arrangement of the paper? How is this paragraph connected to the one above? How is this paragraph connected to the one below?

1. Main Topic: Application of humidified air into a Tesla Turbine.

Function: Geothermal and Solar Collectors are examples of Tesla Turbine with humidified air.

Connection Below: Lays foundation to further elaborate on the existing research with dry air.

1. Main Topic: Existing research on Tesla Turbines with dry air.

Function: Humidity increase would increase two desirables: internal pressure and vortex flow.

Connection Above: Provides reasons why humidified air is more suitable to dry air.

Connection Below: Starts the list of benefits which lead into the efficiency.

1. Main Topic: Humidified air can increase the efficiency.

Function: High efficiency is a desirable, practical variable for the Tesla Turbine.

Connection Above: Humid air will provide high efficiency as well as an increase in the internal pressure and vortex flow.

Part 2:

After completing this analysis, briefly reflect about what you learned. What sections of your paper will you revise? How? Why?

 The first paragraph will be the section I will revise because it does not have a good transition into the second paragraph. Also, I could use an anecdote which relates to the topic to grasps the reader’s attention.

Cameron Yost, Tesla Turbine

Professor Stacie Ringleb

MAE 434W

March 5, 2015

 Introduction Rough Draft

 The tesla turbine has potential for a practical, cost-effective alternative from the conventional bladed turbines. Some specifications of the tesla turbine which affect its performance, such as quality of inlet air, have not been thoroughly researched. Most research involves dry air, which does not represent the best applications of this turbine, since the tesla turbine can be implemented with geothermal energy and solar collectors [3]. Both of these applications, as well as many others, produce steam or humid air instead of dry air. Therefore, design considerations of the tesla turbine implemented with steam or humidified air are crucial to the practicality of this device.

 To estimate the outcomes of humidified air or steam in a tesla turbine, the dry air experiments must be referenced. Shaft output torque, a vital design consideration of the turbine, relies on the internal pressure of the device [5]. Heated steam in theory would increase the internal pressure and therefore the output torque. However, dealing with humidified air that is not heated initially hypothetically would not increase the internal pressure as drastically. Also, increasing the humidity in theory would complement the vortex flow: a desirable characteristic which would further increase the output shaft torque [5].

 Another design consideration of a humidified air injected tesla turbine is the efficiency. The tesla turbine has a higher efficiency than the standard turbines [1]. Furthermore, the tesla turbine can perform at a higher efficiency with wet air in oppose to dry air [3]. Since efficiency can make the device more cost effective for practical uses, wet air is overall more suitable for the tesla turbine.

Works Cited

[1] S. Sengupta, A. Guha, “A theory of Tesla disc turbines.” Proceedings of the Institution of Mechanical Engineers, Part A: Journal of Power and Energy, 226 (5) , pp. 650-663. 2012. [Online]. Available: Engineering Village, <http://www.engineeringvillage.com.proxy.lib.odu.edu/search/quick.url>. [Accessed January 24, 2015].

[2] M.J. Lawn Jr., W. Rice, “Calculated design data for the multiple-disk pump using incompressible fluid.” Journal of Fluids Engineering, Transactions of the ASME, v 96 Ser I, n 3, p 252-258, Sep 1974 [Online]. Available: Engineering Village, <http://www.engineeringvillage.com.proxy.lib.odu.edu/search/quick.url>. [Accessed January 24, 2015].

[3] R. Crowell, “Generation of electricity utilizing solar hot water collectors and a tesla turbine.” Proceedings of the ASME 3rd International Conference on Energy Sustainability 2009, ES2009, v 1, p 613-620, 2009, Proceedings of the ASME 3rd International Conference on Energy Sustainability 2009, ES2009, 2009. [Online]. Available: Engineering Village, <http://www.engineeringvillage.com.proxy.lib.odu.edu/search/quick.url>. [Accessed January 24, 2015].

[4] V. Romanin, V.P. Carey, and Z. Norwood, “Strategies for performance enhancement of Tesla turbines for Combined Heat and Power applications.” ASME 2010 4th International Conference on Energy Sustainability, ES 2010, 2 , pp. 57-64 2010. [Online]. Available: Engineering Village, <http://www.engineeringvillage.com.proxy.lib.odu.edu/search/quick.url>. [Accessed January 24, 2015].

[5] A. Emran, “Tesla turbine torque modeling for the construction of a dynamometer and turbine.” Tamir, University of North Texas, May 2011. [Online] Available: Engineering Village, <http://www.engineeringvillage.com.proxy.lib.odu.edu/search/quick.url>. [Accessed January 24, 2015].