

Wind Turbine Testing

Energy & Power Innovation Centre



FUNDERS:

Ontario Centres of Excellence

INDUSTRY PARTNER:

DRAM Electric Co. Ltd.

TIMELINE:

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RESEARCH TEAM:

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KEY STATS:

Wind energy is one of the fastest growing major sources of new electricity around the world

Context: Wind technology is becoming increasingly attractive as a responsible use of financial and natural resources. Capturing wind energy in an efficient turbine design for residential use is an untapped market, which would allow Canadians to power their homes using this form of clean energy.

Industry Challenge: DRAM developed a vertical axis wind turbine. They lacked the resources required to perform experiments to acquire data and build a mathematical model to determine the relationship between the exposed surface areas of the blades to the turbine's output torque and power with respect to wind speed.

Solution: Several versions of the wind turbine were developed and data was captured for analysis; the data was then used to produce a software-based prediction tool that will help us to further improve the design of the turbine. The data also highlighted major design changes needed to improve the performance of the turbine.

Impact of the Project: DRAM now has the resources needed to improve the wind turbine design with the goal of developing an effective and efficient prototype. Further experimentation is possible using the customized wind tunnel at the Stoney Creek campus. Once realized, the wind turbine can be an alternative localized electrical generation power source for residential electricity needs or for commercial infrastructure such as highway lighting.

Mohawk's Role: Mohawk constructed a customized mid-size wind tunnel to facilitate prototyping and testing of the wind turbine design, as it simulated real-world testing conditions of wind speeds that the turbine would operate in. Without the data from the project, the direction that the design was going towards would have resulted in failure.