Integrating Wind Energy in the Mechatronics Education

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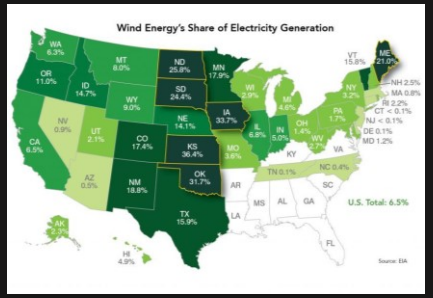
Introduction

Although sustainable manufacturing takes a considerable share of research, it still lacks priority in education. In the mechatronics program at UTC, students take courses in electric power systems, electric machinery, mechanical and control systems. The curriculum however, lacks courses in renewable energy generation and storage.

Methods

- Curricular modules are developed on using wind energy and integrated in the Mechanical Principles, Electric Machines and Maintenance courses
- Hands-on experience through wind energy trainers will be provided to the students of the Mechatronics program.



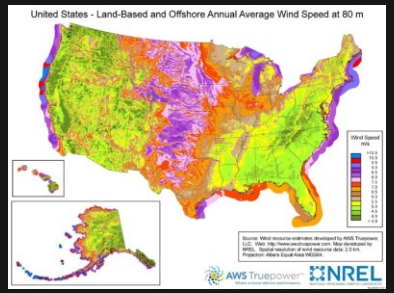


Figure1. Left: Share of the wind energy of total electric energy by state. Right: Average annual wind speeds in the United States. ***Source: D. Silverman, US Wind Energy Generation Led by Republican Midwest States, 2019***

Discussion:

- -Studies show that the Wind energy use in Tennessee is lower than average in the U.S. compared to states that have similar average wind speeds (See figure above).
- - In this project, Wind Energy Education is Integrated in the Mechatronics Program in UTC which serves the East Tennessee region.
- - Training kits made by Horizon Wind Energy are purchased to give students hands-on training on renewable energy.
- - Training kits include hydrogen storage modules, wind turbine modules, and solar panel modules.

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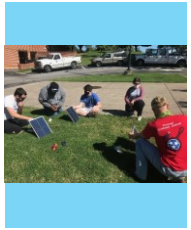
The Horizon Renewable Energy Education Kit will be used by the project PI for renewable energy training in the Mechatronics Program. (Image source: Horizon Renewable Energy Education)

AMERICAN CLEAN POWER

Tables, Figures & Graphs



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https://www.repoweringschools.org/

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