

# An Efficient Water Purification Method Using Renewable Energy

Kumar, Prerana (School: Americus Sumter High School)

Renewable wind energy shows promise for other uses beyond electricity for homes. This project proposes a method that will utilize the electricity generated by a wind turbine to move a water wheel and push water through a cheesecloth filter. The cheesecloth filter has the same consistency as a sari cloth which has been used for decades as a primitive water filter. These water filters work to eliminate parasites and bacteria, such as guinea worm larvae and cholera. The wind turbine that was designed to scale generated enough power to turn the water wheel. The purified water collected after the two-step filtration system had a pH that averaged at 6.8. This indicates that the system achieved the engineering goals. The wind turbine and water wheel worked efficiently, indicating that the method used could be beneficial in areas that suffer from a lack of clean water. In this case, the movement of water through the filter is very critical since many viruses, such as the Zika virus, are transmitted through standing water by mosquitoes that lay eggs. This method, after rigorous experimentation, supports the hypothesis that if the electricity generated by the wind turbine is used to power the water wheel, the amount of purified water will substantially increase. This project will allow rural areas in undeveloped nations that do not have access to clean water sources to drink water safely using a sustainable system.