

Many residents living in least developed countries rely on 12 Volt deep cycle batteries to supply their household electricity. A centrally located gas generator is often used to charge the batteries for the community. The deliverable for this project was to create a "build manual" for a micro-wind generator made from readily available and locally sourced parts. Typical electric charging sources include fossil fuel generators, micro hydroelectric systems, and photovoltaic systems. These solutions are problematic as fossil fuel systems are cost prohibitive, photovoltaic systems are difficult to produce, and micro hydroelectric generators require moving water. For this project, a popular car alternator was reconfigured into a permanent magnet generator. Polyvinyl chloride (PVC) piping was used to create the turbine blades. A prototype was constructed to characterize the design and used to finalize the build manual details. A battery charging system that incorporates this micro-wind generator can provide the average household electricity demand of 200 Whr per day reported for least developed countries. The micro-wind generator produced using this build manual enables impoverished communities to extend their day via a low cost sustainable solution.