

RIVER ENERGY CONVERTER POWERED SONAR OBSERVATION SYSTEM

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In 2016, a 5kW vertical axis New Energy® turbine was deployed at the Tanana River Test Site in Nenana, Alaska. The primary goal of the deployment was to understand the effect of the River Debris Diversion Platform (Figure 1) on turbine power output. A secondary goal was to demonstrate a “blue microgrid consisting of power electronics, a battery energy storage system, an inverter and two sonars, a Teledyne Blueview® imaging sonar and a Kongsberg® EK60 splitbeam sonar networked through a cpu and powered by the turbine (Figure 2). The sonars ran during the entire 10-day turbine deployment but the blue microgrid was limited to a one-day deployment since it was a proof of concept. Despite low river velocities ($1.3 < u < 1.7$ m/s), the turbine provided sufficient power to operate the load of the blue microgrid (~200 W). Overall it was a short but successful demonstration, that river energy converters are a viable means of powering small electrical loads, typical of environmental monitoring systems.

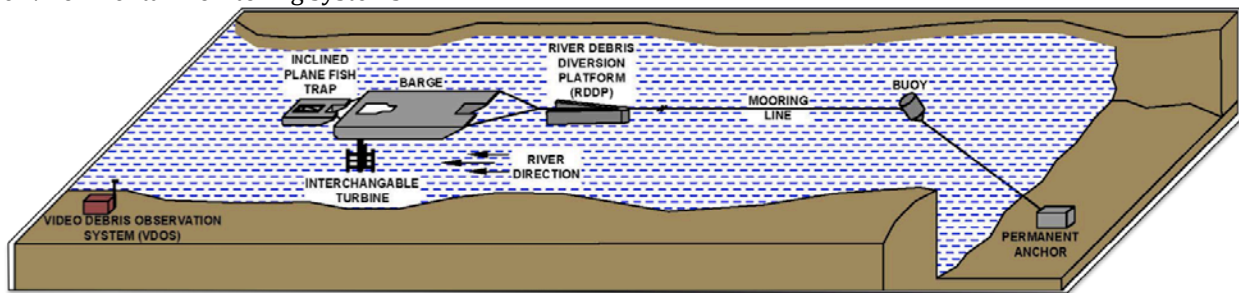


FIGURE 1. SCHEMATIC OF CONFIGURATION OF THE TANANA RIVER TEST SITE INCLUDING THE RIVER DEBRIS DIVERSION PLATFORM.

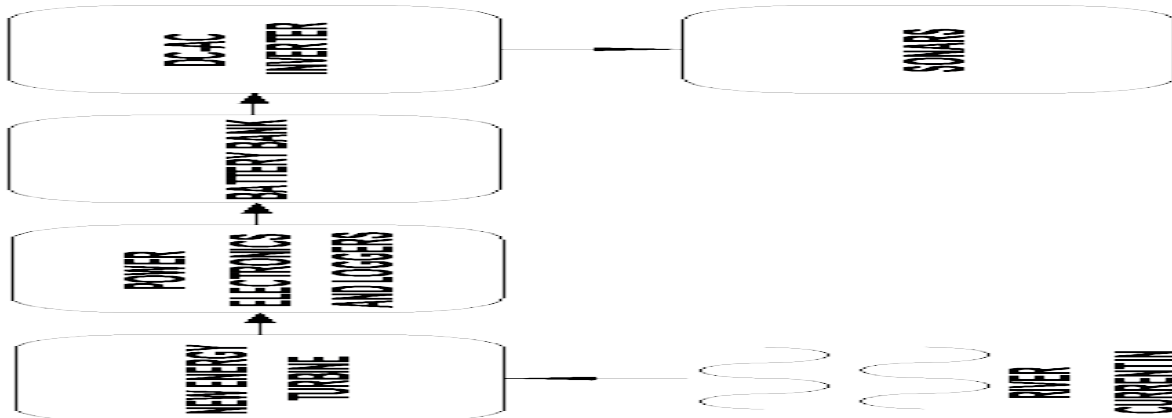


FIGURE 2. SCHEMATIC OF THE BLUE MICROGRID DEMONSTRATED AT THE TANANA RIVER TEST SITE IN 2016.

ACKNOWLEDGEMENTS

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