

Homework #2

Problem #1:

An electric generator is connected to a stream, and it produces an average electric power output of 5 kW. This power is used to charge a battery. Heat transfer from the battery occurs at a constant rate of 1 kW.

- (a) Determine the total amount of energy stored in the battery in 10 hours of operation.
- (b) The the water flow rate is 200 kg/s, and the conversion of kinetic energy to electric energy has an efficiency of 50%, what is the upstream velocity of the water? Where does the rest of the energy go?

Problem #2: 2.42

Problem #3: 3.26