

Questions:

1. What is the average efficiency of your fuel cell? What is the average efficiency of your electrolyzer? What is the “wire to wire” efficiency of this energy storage system, from electricity in to electricity out?
2. Research charge/discharge cycle efficiency for a battery and compare this with the electrolyzer/fuel cell system. With this in mind, what arguments might there be for choosing a fuel cell vehicle over a battery electric vehicle?
3. If you could improve the efficiency of one component of the system (the electrolyzer or the fuel cell), which would you choose? Why?
4. As shown in the Energy Flow Diagram above, the fan motor itself represents another energy conversion process where electrical energy is converted to mechanical energy, with associated energy losses as heat and noise. How could you modify this experiment to measure the efficiency of this step?

5. In scaling this system up to an industrial level, what changes would you expect to see in relative performance and efficiencies of the various components? What opportunities do you see for recovering "waste" energy from the processes?

Answers: