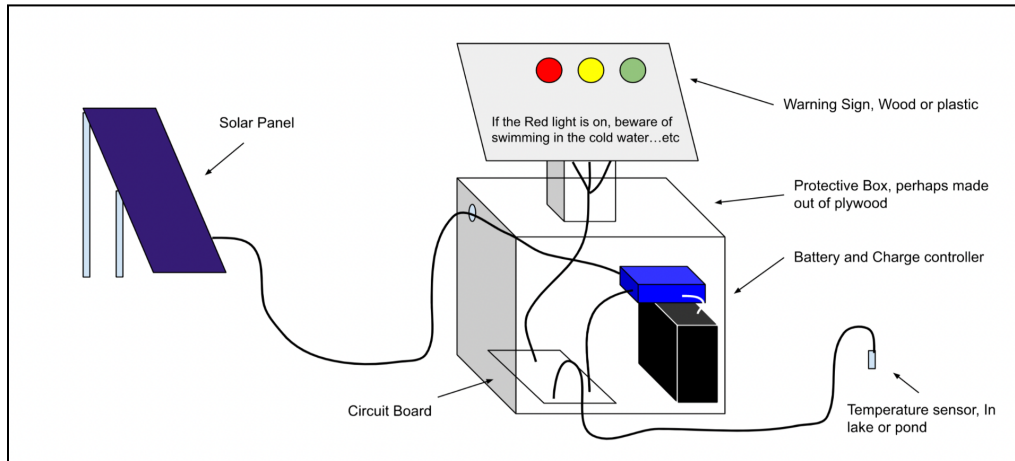


What is a design drawing and why do you need one?

What is a design drawing?

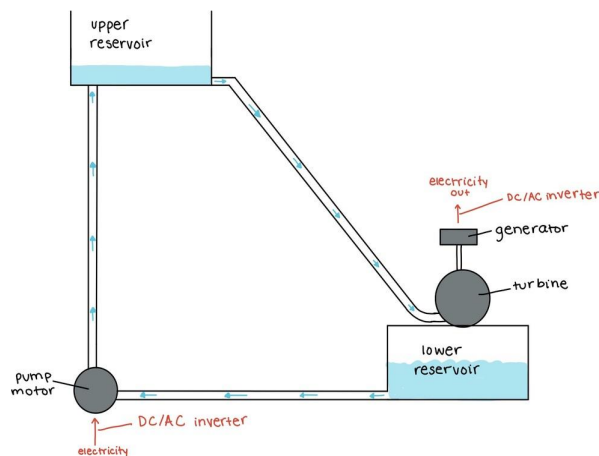
A design drawing is an illustration of a model or a prototype used to develop and communicate ideas about a developing design

Example of a digital design drawing



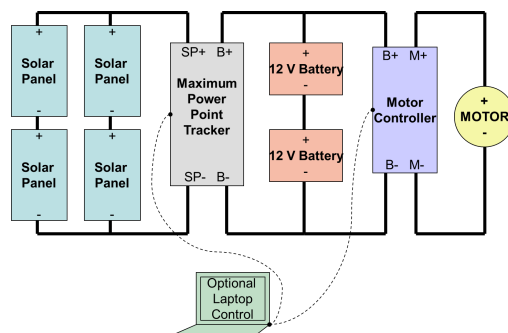
Engineers often draw the system or design they propose to build before they build it. These drawings help engineers think through the entire system they will build before they start building, which is a way to make sure you don't forget important steps or equipment while you are planning. **Design drawings help engineers plan what equipment they need. And, during the design process, they help engineers avoid mistakes.** They don't need to be pretty or detailed but should capture the major components. The components are usually labeled and may show expected functionality.

Design drawings often are hand sketches or computer schematics. Depending on your project, you might have one or several design drawings – for example, one for the physical layout, one for the water flow, and one for the electrical layout.



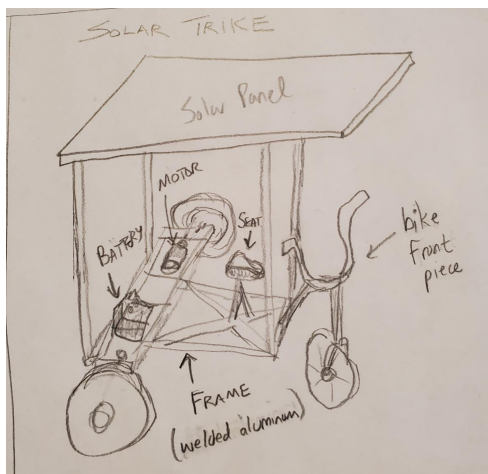
Here (left) is an example of a drawing one student made, when she was designing a pumped hydroelectric energy storage system. This drawing helped her think through how stored water from the upper reservoir would flow down to the turbine generator, which turns the kinetic energy from the water into electrical energy. She also used it to think about how electricity would flow out of the generator (to a light, for example) when it was needed.

Later in a project, you might also want to sketch your electric circuit. Mapping your circuits is a good way to check that your circuits are complete and will work. (Some groups will only need very simple circuits). An example electric design diagram for a solar-powered boat is shown at right.



You only need a drawing that is as complex as your design, and some very effective designs are very simple. However, when you are building, having a clear design sketch can help you keep your project construction and your circuits straight.

As an example of a project design drawing through to a completed project, here is a sequence for a university student's solar power vehicle project. Early design drawings are often sketches as shown here in the upper left.



Your **drawing is successful if it shows all the major parts of your device, and how they connect.** It should help you compare designs, choose materials, or guide you as you build your project.

Once you've created a design drawing you're ready to create a prototype. Check out our guide to prototypes on our website. <http://greenwayinstitute.org/learning-hub/>