Content Rubric

POINTS

- 1. Title Page
- 2. Abstract 4.0/5.0 (Labeled as design concept I believe? Good wording for this part)
- 3. Table of Contents 0/2.5 (No TOC on the report)
- 4. List of Figures & List of Tables 0/2.5 (No list of figures or tables)
- 5. Report Body
 - a. Sources 0/10.0 (No sources)

b. Design and Manufacturing 35/35.0 (Excellent explanation of D&M, great CAD drawings, I recommend scaling the dimensions up a little bigger. I had to zoom in to make them legible)

c. Sketches, Final drawings, and Pictures 25/25.0 (Great CAD drawings, I recommend scaling the dimensions up a little bigger. I had to zoom in to make them legible)

6. Bill of materials and equipment list 0/10.0 (No BOM or list of equipment)

- 7. Final remarks 0/5.0 None
- 8. Appendix 0/5.0 None
- TOTAL POINTS 64/100.0

- The content rubric was loosely followed. Your section labels had no page breaks and weren't titled the same as the content rubric had, although I am not sure how critical that part is. Nevertheless, the content was solid.
- Your writing style flows good and is fairly easy to follow. You may want to consider being a bit more concise and explain some of the fluid mechanics concepts in more depth so they are easier for the reader to define and understand.
- 3) The design and manufacturing methods are great. Yes, all of the parts are custom and will require a lot of 3D printing, but that's not a big deal because that method would only be used for a small run. If the boss man liked the idea enough to approve it and you were able to run with it, I am sure molds would be made for injection molding or something of the like so that parts could be mass produced very quickly. Your design does make sense and is economical, because initial tooling for injection molding the parts would be expensive but after a mass run it would be cheaper than making them all with 3D printers, similar to metal forging vs. machining billet. Ahead of time I do not foresee anymore than one operational issue, and that is the tubes which direct fluid into the trough. If I understand the design right, the kid using this kit can choose to use 1-4 tubes from the manifold to send water into the water wheel. The trough which holds the water wheel and channels water into a bucket or catch can has no provisions for anything to hold the tubes. As you can imagine these tubes come in a roll which makes them tend to want to curl back up even after pulling it straight. I think you need to either put 4 barb fittings or some other quick method of attaching the tubes to the open channel so that the tubes stay in place.
- 4) I think the CEO would be excited for this design. I can't think of anymore concerns he would have besides what ive mentioned in my review.
- 5) One thing I believe is worth mentioning is the barb fittings. For us as adults, they are easy to use, but for kids they could be difficult to use and press the hose up on. You should definitely experiment with each of your barb sizes and hoses to determine how much force it takes to press them on and make a decision if kids could do it. Having a 5 year old nephew who loves to build and learn, simplicity and ease of use are key for attention span. My nephew will keep trying a few times but if he's not super interested yet (like before seeing the water wheel and light work) then he'll give it a few good tries then either move on to something else or look for another toy, or ask an adult to help which may be okay in your case but some people may be after a solo kit. I do like your idea, and I believe it will surely invoke learning, but you will have to create a very strong set of directions to help the kid understand how to proceed with the experiment, what they are learning about and why it happened.