Well-Pump System for the Bondo Teachers Training College in Bondo, Kenya

**Problem Statement:**
The Bondo Teachers Training College (BTTC) currently houses over 650 students and faculty and is surrounded by an additional 700 members of a community within a one-mile radius of the school. During the rainy season, the school pumps water from a nearby river to help students with cleaning, drinking, and feeding livestock. For the rest of the year, the river runs dry, leaving the BTTC having to pay for water that is usually contaminated, leaving many sick and causing a financial burden to the school and surrounding community.

**Project Impact:**
- **Reliable Water Source:** By implementing this project, the BTTC and surrounding community will finally have access to a reliable water source year round.
- **Safe Drinking Water:** In addition to providing a reliable source of water for the BTTC and surrounding community, our project will also ensure a clean and safe drinking source. The BTTC and surrounding community will no longer need to drink contaminated water during the dry seasons.
- **Lessons the Financial Burden:** The BTTC and surrounding community will no longer have to pay the expensive fees for having water delivered to them when the nearby river runs dry. This financial burden is usually placed on the school, as the community cannot afford to pay for it, and our project will be able to both lower the financial burden for both entities and simultaneously ease tensions due to financial reasons between the two communities.

**Knowledge and Skills Gained:**
- **Technical Skills:**
  - SolidWorks
  - MATLAB
  - Structural Analysis
  - Budgeting/Accounting
  - Experimentation
- **Non-Technical Skills:**
  - Cultural Competency
  - Critical Thinking
  - Communication
  - Ethics
  - Dependability
  - Collaboration
- **Application:**
  - The technical skills our team members have acquired throughout the project taught each member how we can take concepts learned in the classroom and apply them to real life engineering problems.
  - The soft skills our team members have learned showcased how being a great engineer is more than being able to solve difficult problems, it’s about doing so effectively within a team.
- **Lesson Learned:**
  - The primary lesson learned was the importance of soft skills and combining them with our technical knowledge to function as a successful team.

**Project Timeline**
- **Design Team and Stakeholders:**
  - **Students:**
    - Three project leads
    - 15 members
    - Mix of engineering and non-engineering majors
  - **Industry Mentors:**
    - Two professional engineers with a combined >40 years of experience
    - Both experts in civil engineering pertaining to water distribution
  - **Faculty:**
    - Provided feedback on designs
    - Gave advice based on expertise needed outside of our professional engineers
  - **Bondo Teachers Training College:**
    - Met with our team in July of 2023 to explain their needs
    - Communicated with the team constantly throughout design of the project to give feedback and recommendations
    - Ensured 24/7 protection of our system when implemented
  - **External Entities:**
    - EPICS: Provided feedback during design reviews from other industry professionals
    - Engineers Without Borders (EWB): Provided funding and helped with organizing travel to Kenya

- **Project Impact:**
  - Ensured 24/7 protection of our system when implemented
  - EPICS: Provided feedback during design
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