Mechanized Percussion Well Drilling

Mast Superstructure and Temporary Casing Tools

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Introduction

The goal of the Mechanized Percussion Well Drilling project is to develop an engine powered system that reduces the labor required to manually drill wells, while retaining portability and low capital investment. Percussive well drilling technology is currently used by our client in Burkina Faso, West Africa, to drill wells that provide access to water during the dry season for agricultural purposes.

During the 2015-2016 school year the team worked to improve the current technology by designing a mast superstructure, equipment to drive and pull casing, drill bit attachments, a jar, and by testing our current system.

Mast Superstructure

During the fall of 2015 the team decided to transition the superstructure from a steel tripod to a steel mast. The benefit of this decision allows a single operator to perform all steps of the drilling process by positioning him or her beside the hole. The system was conceptualized, designed, and reviewed and is ready to be manufactured during the summer and fall of 2016.

Temporary Casing Tools

The Burkina Faso well drillers have been experiencing significant difficulties with temporary casing during drilling. The team concluded that systems to drive and pull casing can eliminate these problems and reduce labor.

Conclusions

- **Goal:** Create a mechanized drilling system that reduces the labor required by manual well drillers, while retaining the benefits of low capital investment and portability.
- **Progress:** Designed a mast superstructure and equipment to drive and pull casing. Begun manufacturing the casing equipment.
- **Plans:** A prototype of the mast and casing equipment will be manufactured and tested before the site team trip to Burkina Faso in the summer of 2017.

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Clients

**Matt Walsh with Open Door Development, SIM**

Matt Walsh was the first Collaboratory Manager. He is now a missionary with SIM in Burkina Faso, West Africa.

Open Door Development

ODD is an SIM community development ministry based in Mahadaga, Burkina Faso. Their mission is to share the gospel by equipping the local church for community service and by ministering to human needs. ODD was officially founded by Dale Johnson and Matt Walsh, in 2012.