



SEED PRESSING AND BIODIESEL PRODUCTION IN BURKINA FASO

The Burkina Faso Team: a subset of the Energy Group's Biodiesel Project

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The Biodiesel Project

- **Objective:** Create and maintain a process for sustainable energy that is not only ecologically effective, but also economical and practical
- **Methods:** Seed Pressing
Biodiesel Production
- **Client:** Matt Walsh, SIM

SIM
Serving In Mission

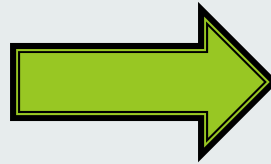


Mahadaga, Burkina Faso

Application

- **What:** Oil extraction
- **How:** Jatropha seed pressing
- **Why:**
 - Jatropha oil → lamps and cooking stoves
 - Biodiesel conversion → fuel oil for generators and vehicles
 - Production byproduct → soap production

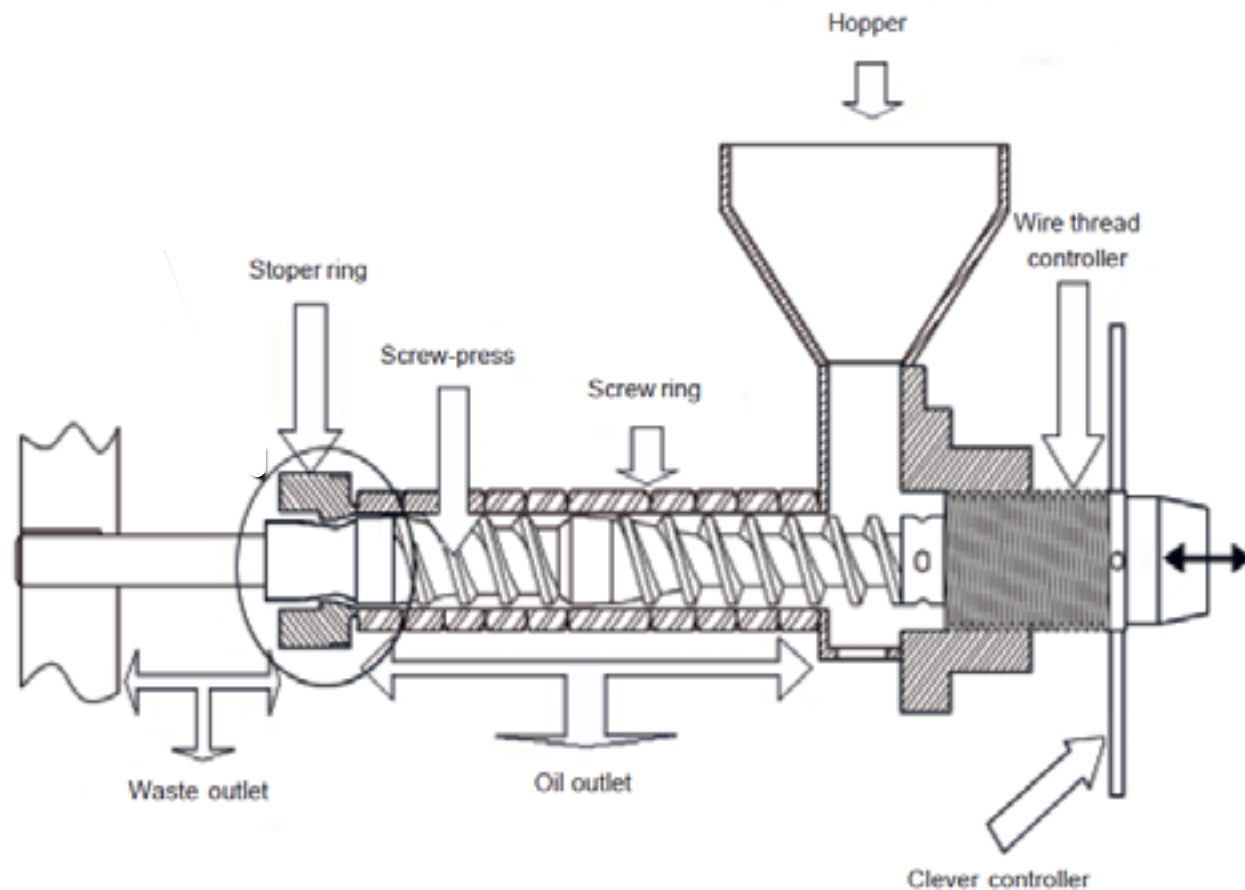
Jatropha Oil Extraction



Seed Pressing



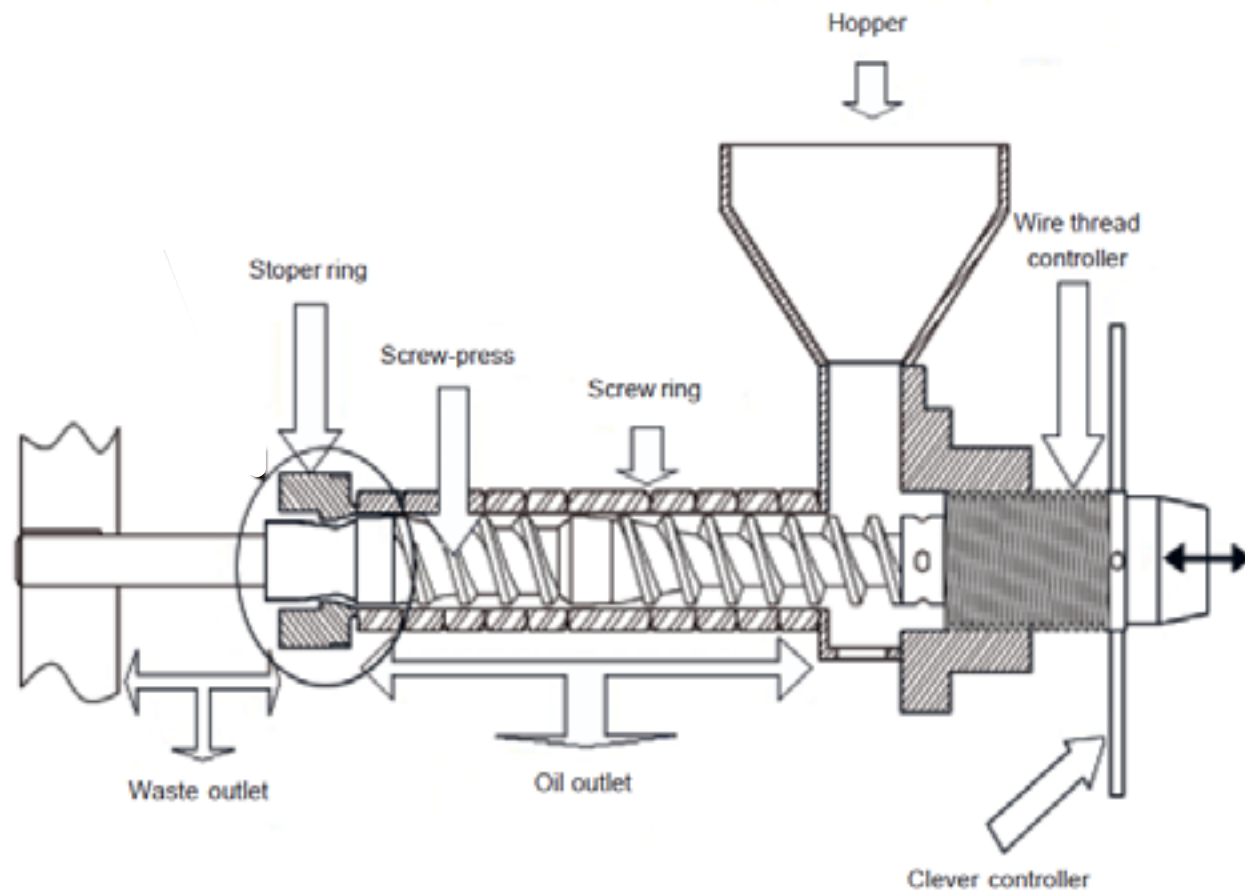
Seed Pressing







Seed Pressing



Press Cake



History

- Press & engine September 2012
- Planned a site team visit for January 2014
- Michael Hahn August 2013





Site Team Visit Goals

- Determine why the press is not running properly
 - Pressing Techniques?
 - Parts?
 - Seeds?
- Leave the press operational
 - Consistently pressing Jatropha seeds without jamming
- Assess production capabilities in Mahadaga

Research

- Press Parameters
 - RPM
 - Restriction size
 - Depth of screw
 - Ring order
 - Feed rate
- Seed Treatments
 - Hull content
 - Moisture content
 - Cooking

Proposed Solutions

- Designed two prototypes
- Planned a new ring order
- Ordered new parts
- Developed seed treatment plan



Site Team Visit Challenges

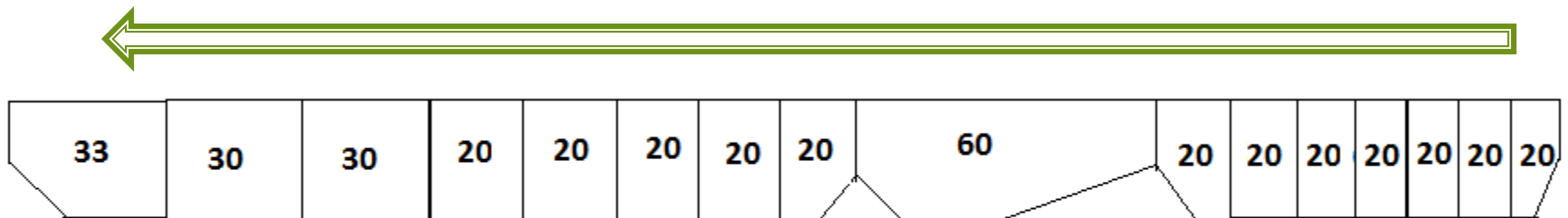
- New problem
- Conducted 30 tests
- Press jamming
- Little oil yield
- Tensioned engine
- Limited seed supply
- Tested cottonseed

Proposed Solutions

- ✗ Prototype rings
- Seed treatment
 - ? Moisture
 - ? Pre-heating
 - ✗ De-hulling
- ✓ New parts
- ✓ New ring order

Findings & Accomplishments

- Operational press
- Correct ring order
- Optimal screw depth



Findings & Accomplishments

- Designed and produced new oil and press cake trays



Findings & Accomplishments

- A lot of experience pressing and unjamming the press



Findings & Accomplishments

- A vision for future work in Mahadaga



Future Work

- Methanol production
- Oil filtration
- Small press
- Hand press
- Cottonseed
- Seed moisture content



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Questions?