

## Blue Team Product Contract

Product Description: Human-powered device for creating charcoal briquettes

Intended Customer: People in Haiti who have access to bagasse

Market: Charcoal Production

Customer Need: Machine	Product Attributes	Engineering Specifications
Affordable for customer of poverty-level	Low cost	Total cost of materials and assembly is less than US\$100 for 5 families. (Pays for itself within a year).
Can withstand normal wear and tear. Should operate without need of substantial repairs for 5 years.	Made of strong, weather-resistant materials. Sturdy construction	Metal must be at least 0.5mm thick. Design factor of 5.
Easy to operate.	All parts have obvious usage. Easy to understand functionality. Able to be operated comfortably.	Required torque should be no more than 5 N-m. Clear loading and output locations. Handle is comfortable. Hopper height should not exceed 0.75 m. 5-95% human factors
Robust enough to withstand a range of material inputs	Can process bagasse of varying consistencies	Works with up to 5% impurities (unburnt sugarcane, unmixed material, uncrushed bagasse)
Low maintenance	Easy to disassemble, clean, reassemble	Complete disassembly/assembly takes 30 minutes with common tools. Cleans with water and a damp rag
Safe operating machine.	Has a stable base. Will not cut user. Machine operates only when user turns the handle.	Screw enclosed by housing, exposed only in hopper. Handle is the only exterior moving part. No sharp edges or burrs. Screw speed does not exceed hand rotation speed.
Repairable by local metalworkers in Haiti.	Uses materials and methods that are readily available to user.	Materials include rebar, steel oil drums, steel rods and pipe, corrugated sheet metal, concrete, axles, exhaust pipe, scrap metal and plastic. Methods include blacksmithing and electric and gas welding.

Customer Need: Briquette	Product Attributes	Engineering Specifications
Burn characteristics should meet or exceed current wood charcoal briquettes.	Produce at least the same amount of heat as similarly sized wood briquette	Easily lit with 5 mL of kerosene or diesel fuel. Provides enough heat to boil water for 80 minutes. Cylinder disk shaped with bias cut ends
Briquettes that can be used in all applications where existing charcoal is used.	Fits within a typical Haitian cooking stove.	Stove is hemisphere with diameter $\approx 0.3$ m.
Burns at least as cleanly as wood charcoal.	Produce no more smoke than wood charcoal. No toxic materials used.	Fire should be smokeless within five minutes of igniting. Made from Cassava root, Bagasse, and water (all organic materials).
Strong enough to withstand environmental and transportation conditions.	Smooth surface and shape and high density	Should maintain shape and performance when submersed in water, packed into an 18" diameter by 48" tall bag, subjected to torrential rain, and exposed to a week of direct sunlight.
Easily transported to and from the market.	Lightweight with small size	Briquettes sized from 1" by 2" to 2" by 4"
Consistent output size.	All briquettes undergo same forming process.	Critical dimensions (length, diameter, hole size) should be within 10% tolerance.