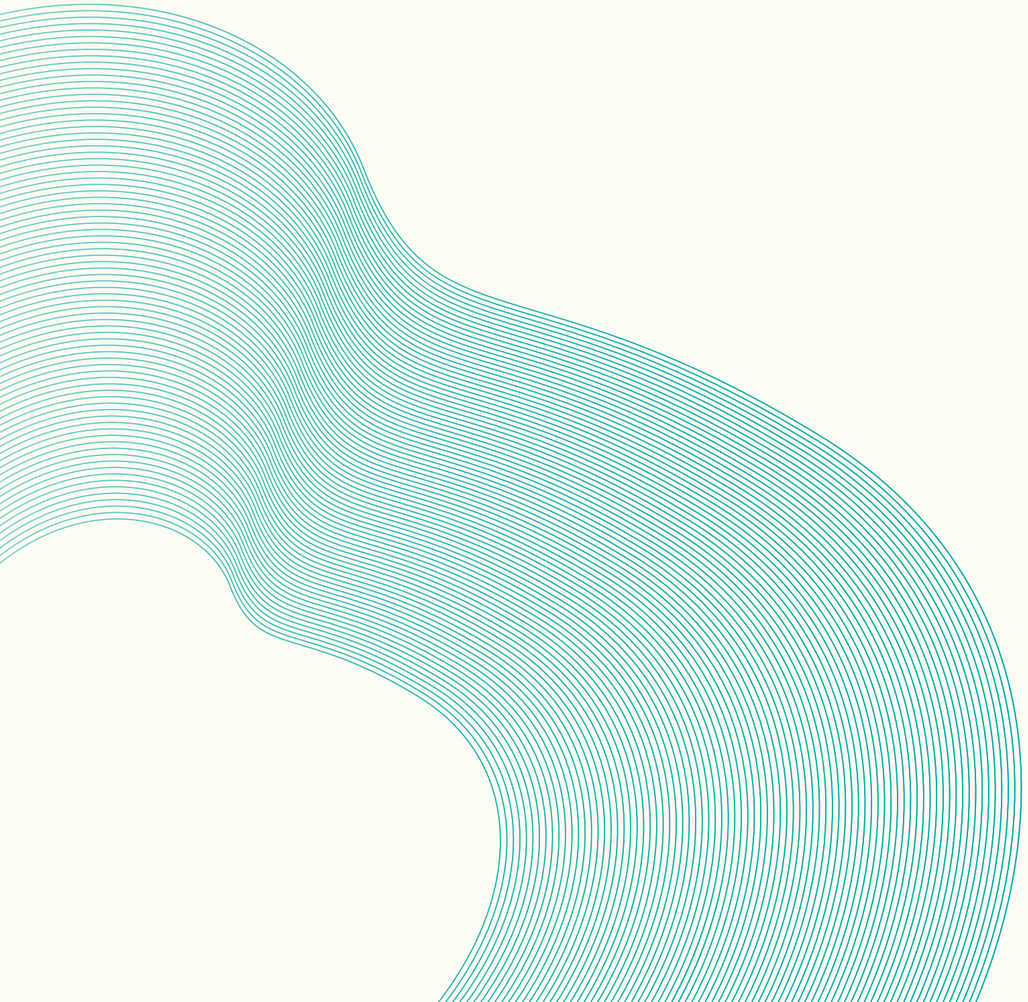
Nice Rice Machine

Team A

Agenda



1. Problem
2. Mission
3. Design Concept
4. User Scenario
5. Business model
6. Prototype
7. Technical specs

Problem

Uganda / Cleaning Process

Problem of Uganda

- Poor infrasturcture
- Low income for farmers
- Lack of technology
- Inefficient agriculture

Problem in Rice cleaning process

- Low efficiency
  - Done by hand
  - time consuming
- Low Cleanliness
- Low selling price

Mission

Easy to Use Machine

- To know how to use intuitively
- Low dependency on electrical power grid

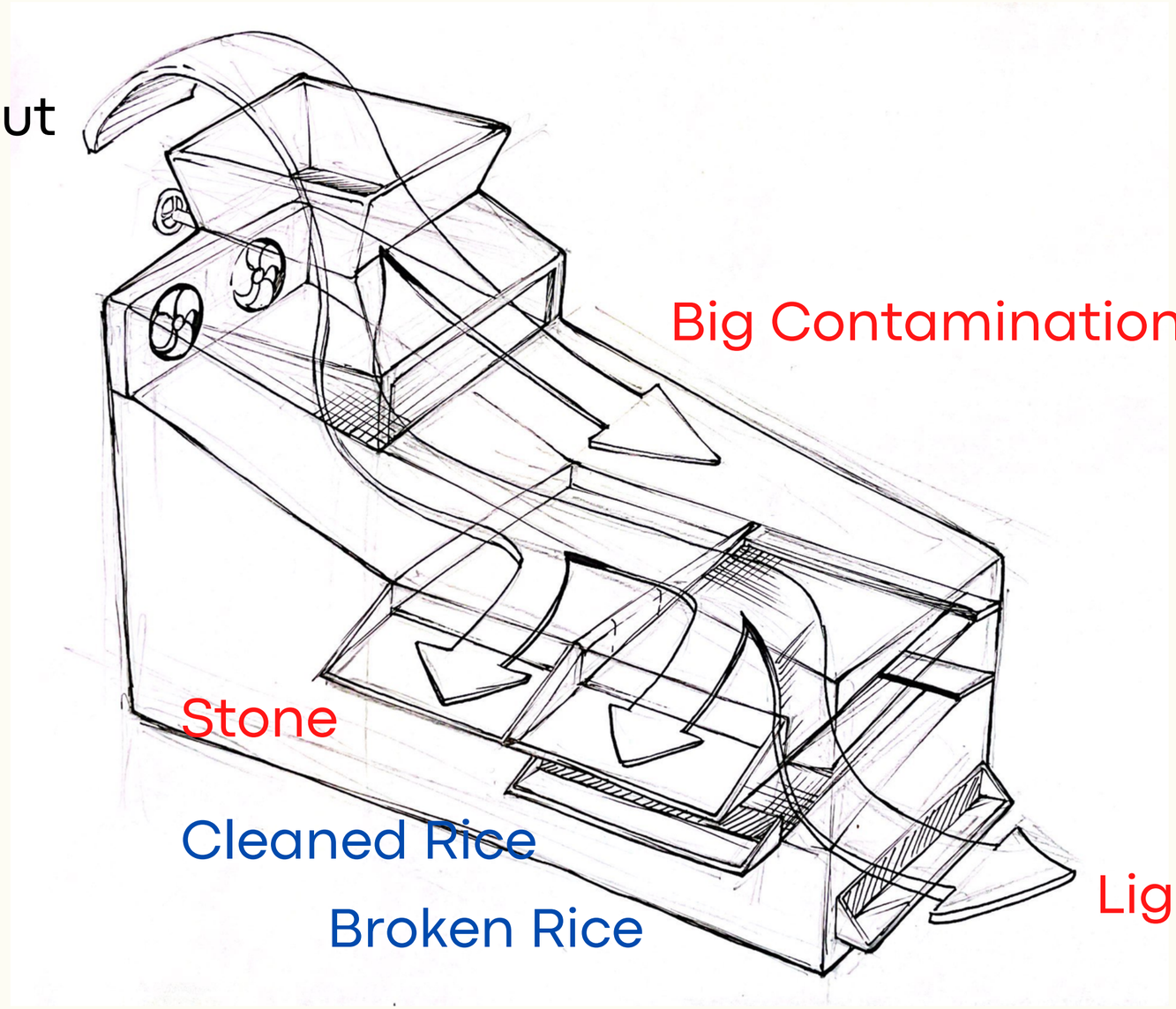
High Cleanliness & Efficiency

- aim for 99% cleanliness of cleaned rice
- 600kg/hour

Safety

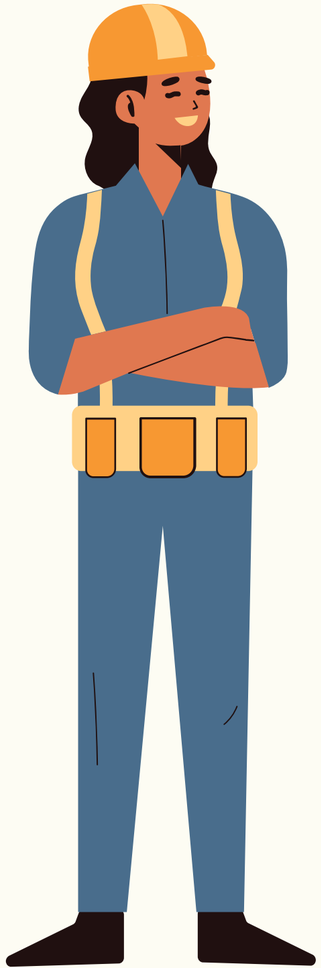
- No sharp edge of machine (housing)
- Operating parts are not exposed to the outside

Design Concept



User Scenario - Persona

Operator of the machine



Brian, 29 y.o.

170cm

Technical operator

Goals

Provide safe food

Want to improve his economic situation

Information on the work environment

Works mostly on customer's farms

Contact with customers

Abilities

Knows exactly how his machine works and how to keep it going

Can work with (power) tools

Tasks

Transports the machine to the farmer

Sets up the machine for the farmer to use

Fills the rice in inlet of the machine

Controlls the functionality of the machine

Checks the machine when there is a problem

User Scenario - Persona

Farmer

Michaela, 54 y.o.

157cm

Farmer

Goals

get a better selling price for the rice

safe income

Social environments

family of 8 (3 working adults)

interaction with neighborhood

Abilities

Primary school education

Information on the work environment

exclusively outdoors

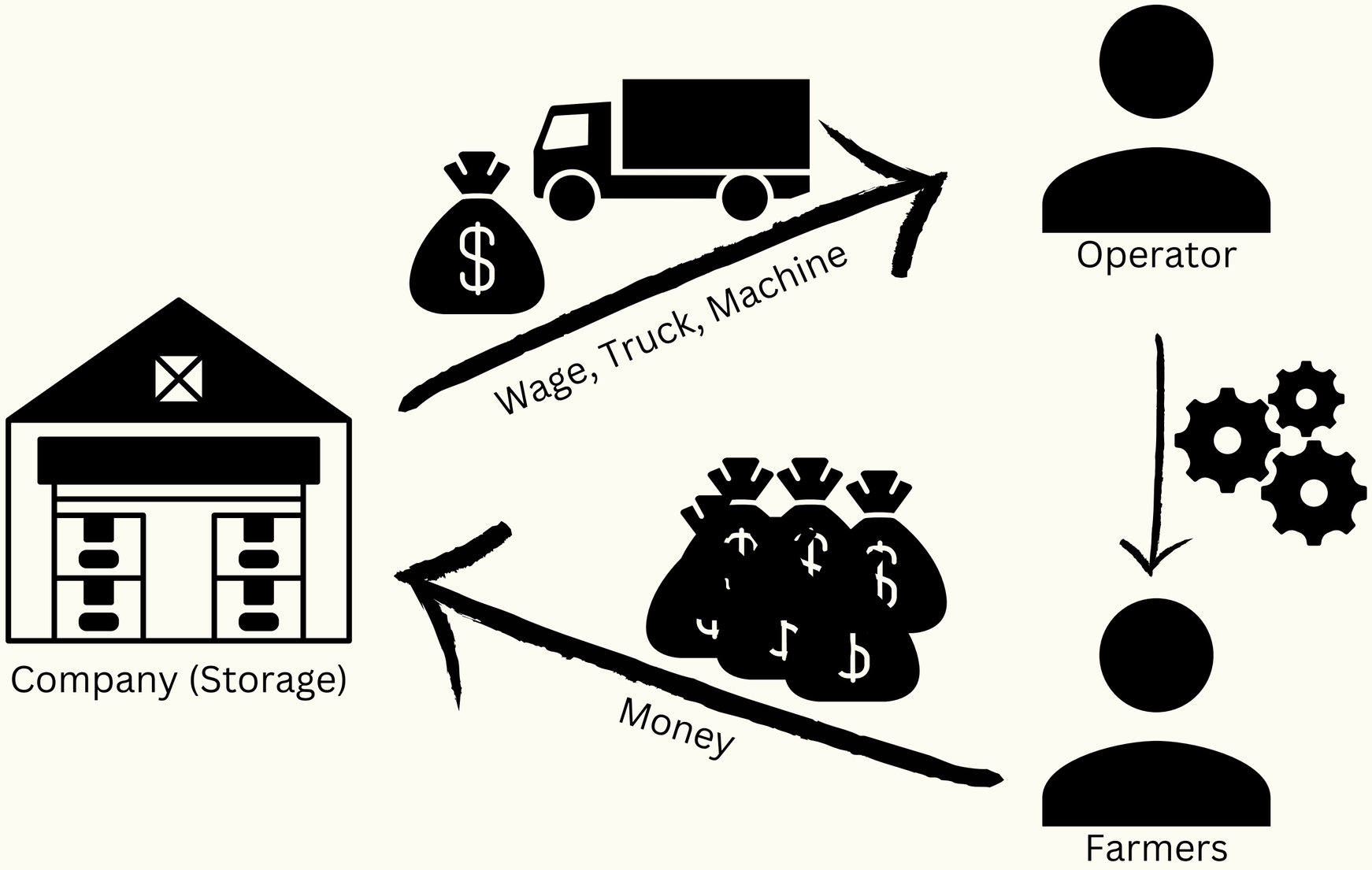
Tasks

Brings the rice to the machine

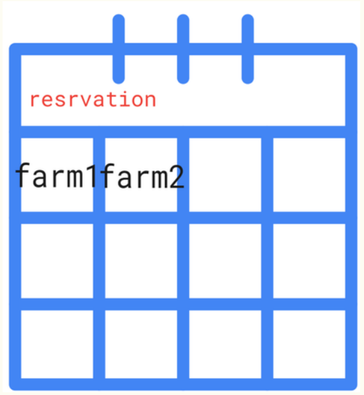
Check the quality of the cleaned rice

Remove the filled rice bags

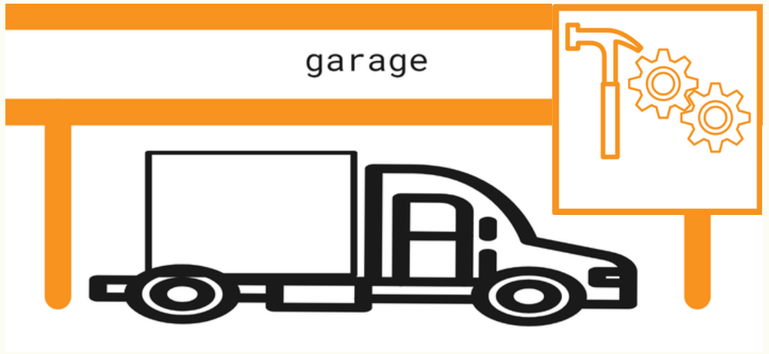
User Scenario



User Scenario

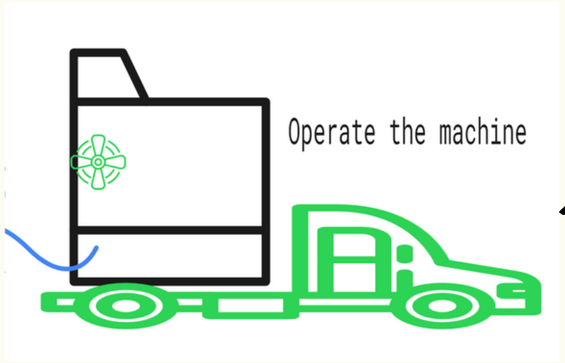


Make schedule for the different farms



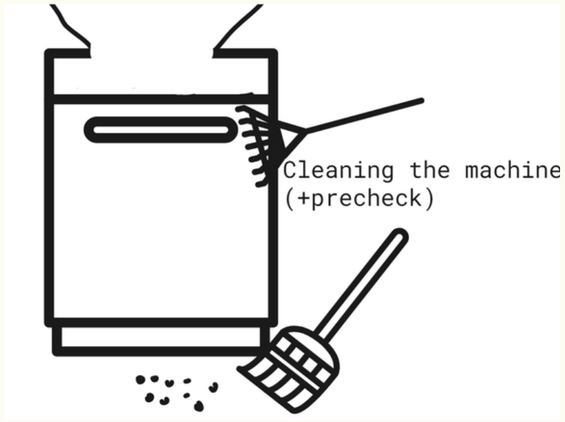
Maintenance / pre-checking the machine

Drive to the farm



Operate the machine

User Scenario



Cleaning the machine

Move to next farm

repeat until workday is over

drive to garage/charge batteries

Business Model

Number of harvesting seasons	2	
Rice per ha	2900kg/ha	
area of average farm	1,3ha	
produced rice per farm	3770kg	
produced rice for 1 harvest season	1885kg	
capacity of the machine	600kg/hour	
Working Time per farm	**3,14hour**	
selling price by farmers	**0,48$/kg**	Average Selling Price Today
wage for employee	$200,00	10 machine operators, 1 manager, 1 engineer
Income for farm per year	**$1.809,60**	Existing Model

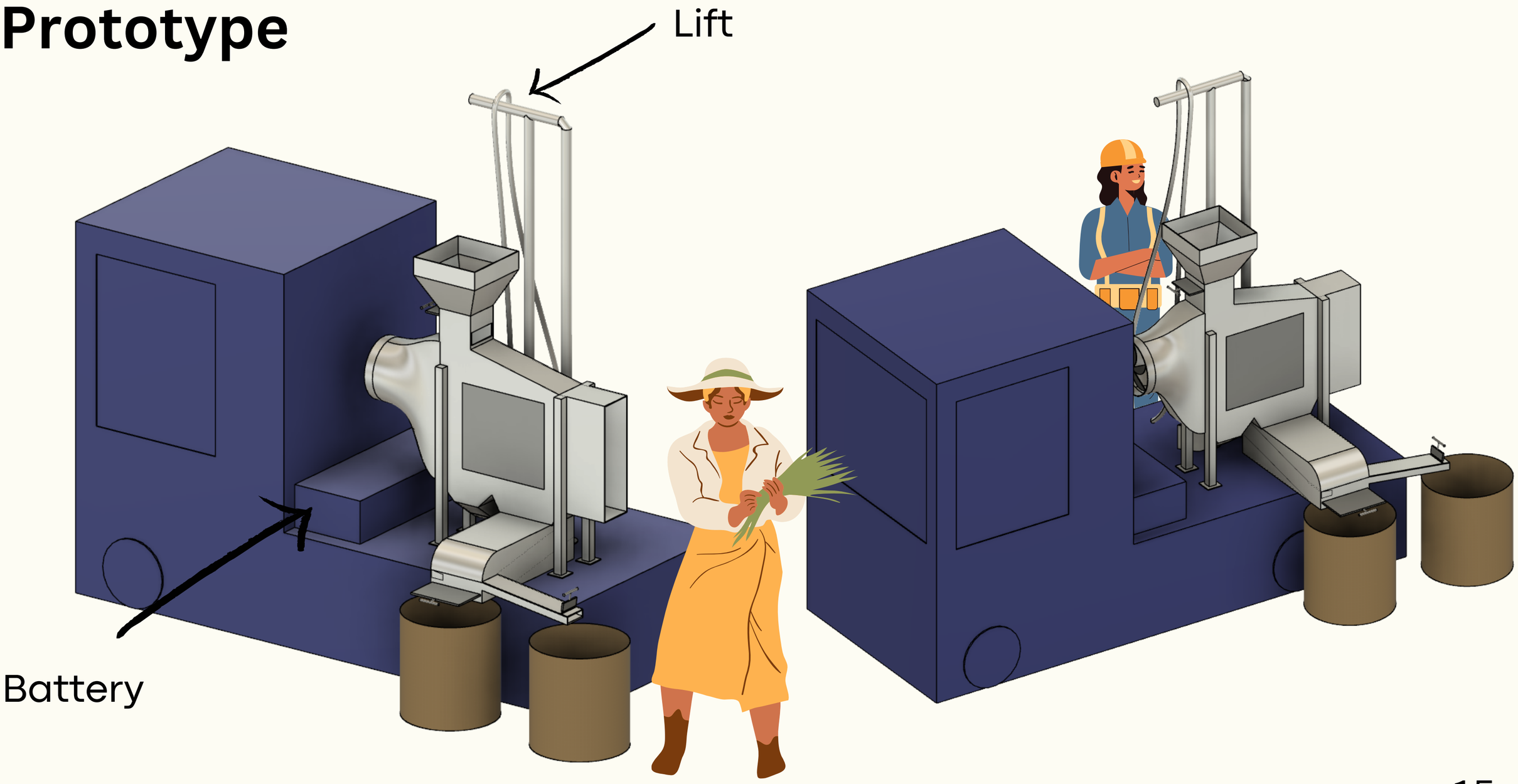
Business Model

working days per season	30days	Visit 3 farms per day
Fee per farm to cover wage for operator for 1 year	$13,33	1 person/machine
Fee per farm to cover wage for manager for 1 year	$1,33	1 person
Fee per farm to cover wage for engineer for 1 year	$1,33	1 person
Rent (garage) / per farm	$6,67	200m^2
Car maintenance - fuel cost	$5,73	moving distance : 65.4km, efficient : 6km/L, price of dissel : 1.58$/L
Batteries maintenance	$0,83	2.5KW/12V, 375$(per battery for 5y), 2 batteries
Batteries electricity	$0,10	0.118$/Kwh(Uganda Industrial Electiry Price)
Car maintenance - repair	$3,50	
Machine maintenance - repair	$5,00	
Fee for unexpected cost (deposit)	$7,00	Cover the risk of the company for machine, cost of machine production, (tax)
Sum of company's income per farm	**$44,83**	Break Even Point for farmers : extra 4.96% of selling price

Unique value proposition

- Mobile machine
- Machinization / automated process
- User-Friendly Machine (rice lift)
- Operating profit only as much as the cost of maintaining the business

Prototype



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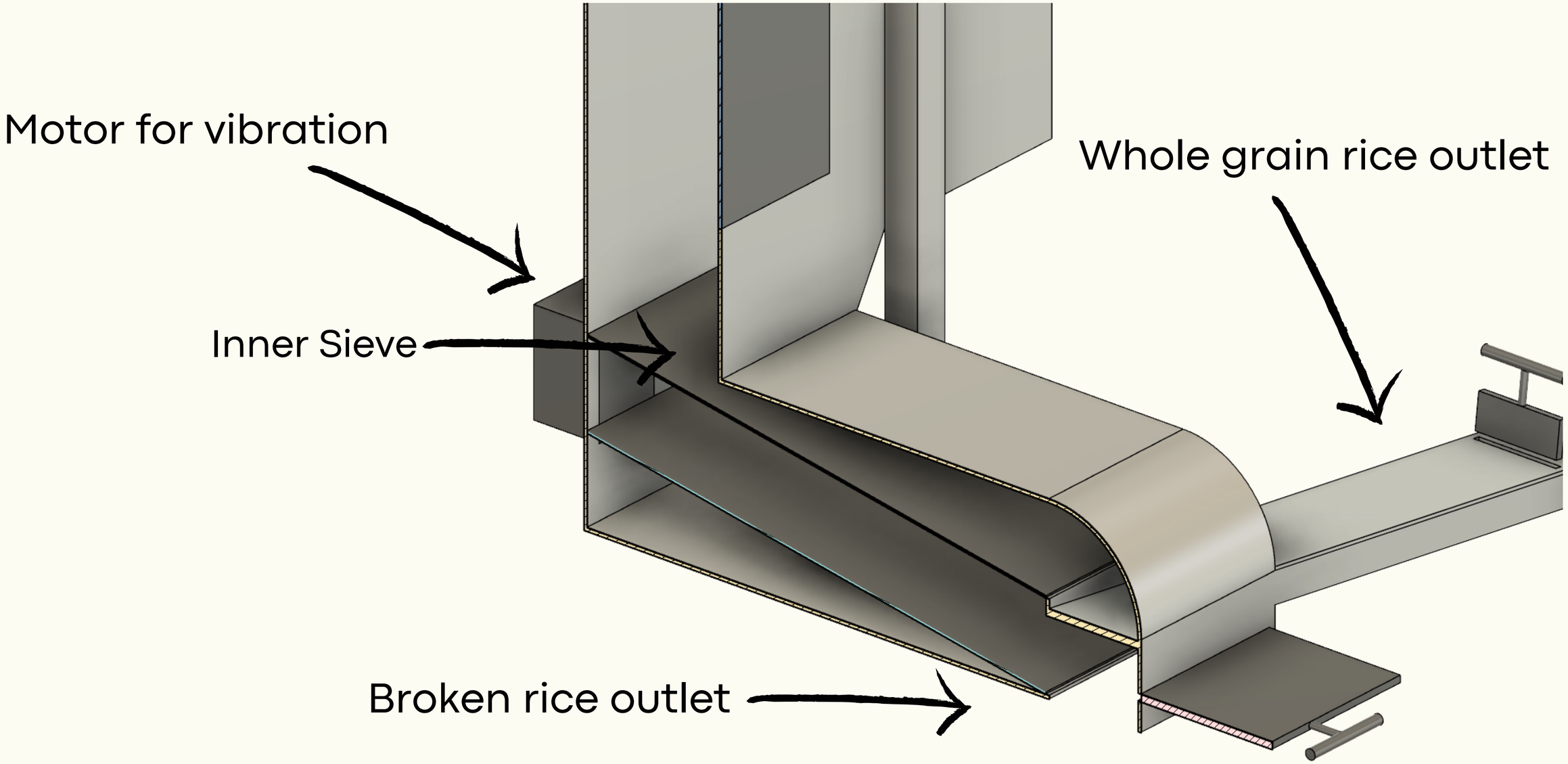

Motor for vibration
Inner Sieve
Whole grain rice outlet
Broken rice outlet

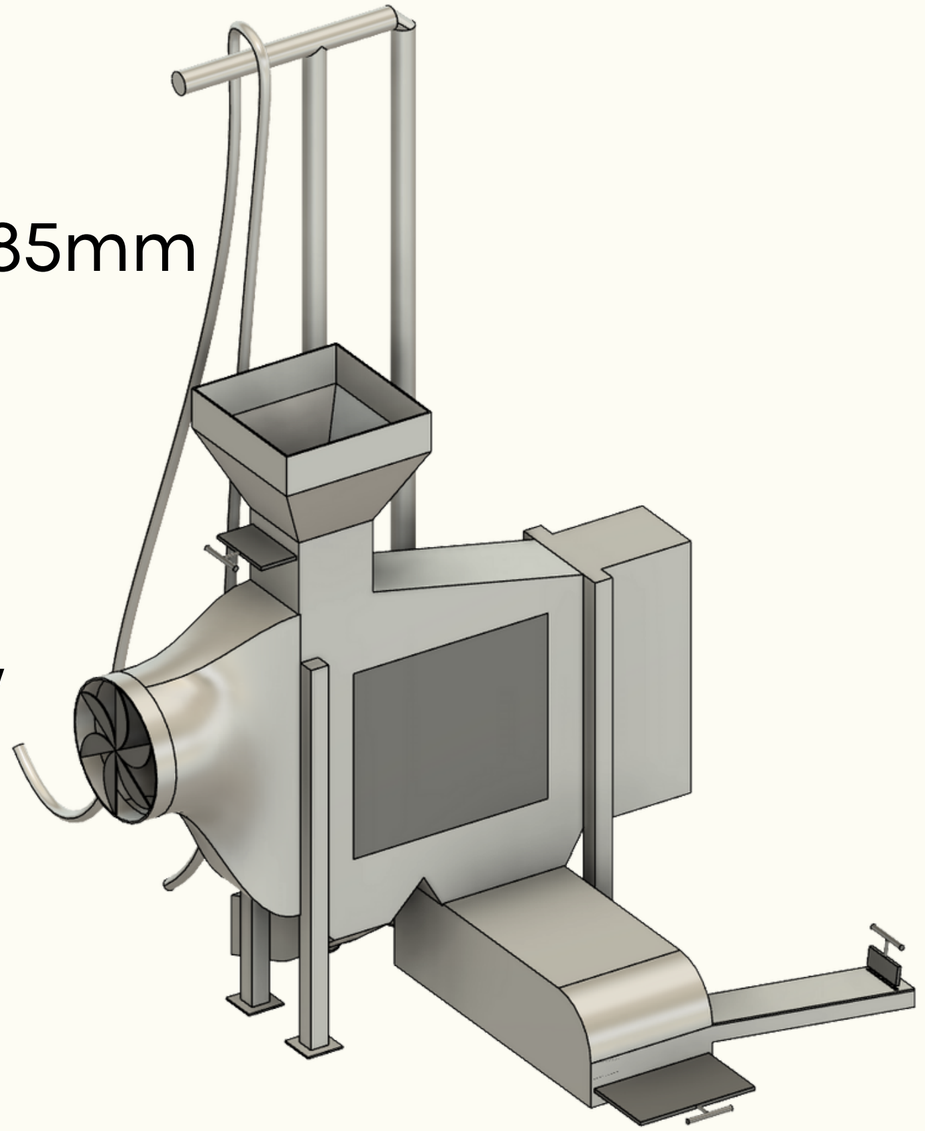
Technical specs

- Machine Dimensions :

  Height: 1660mm, Length: 1560mm, Width: 185mm

- Air velocity of fan : 10.99m/s
- Flowrate : 1.06m^3/s
- Winnowing Fan Power consumption : 43.9W

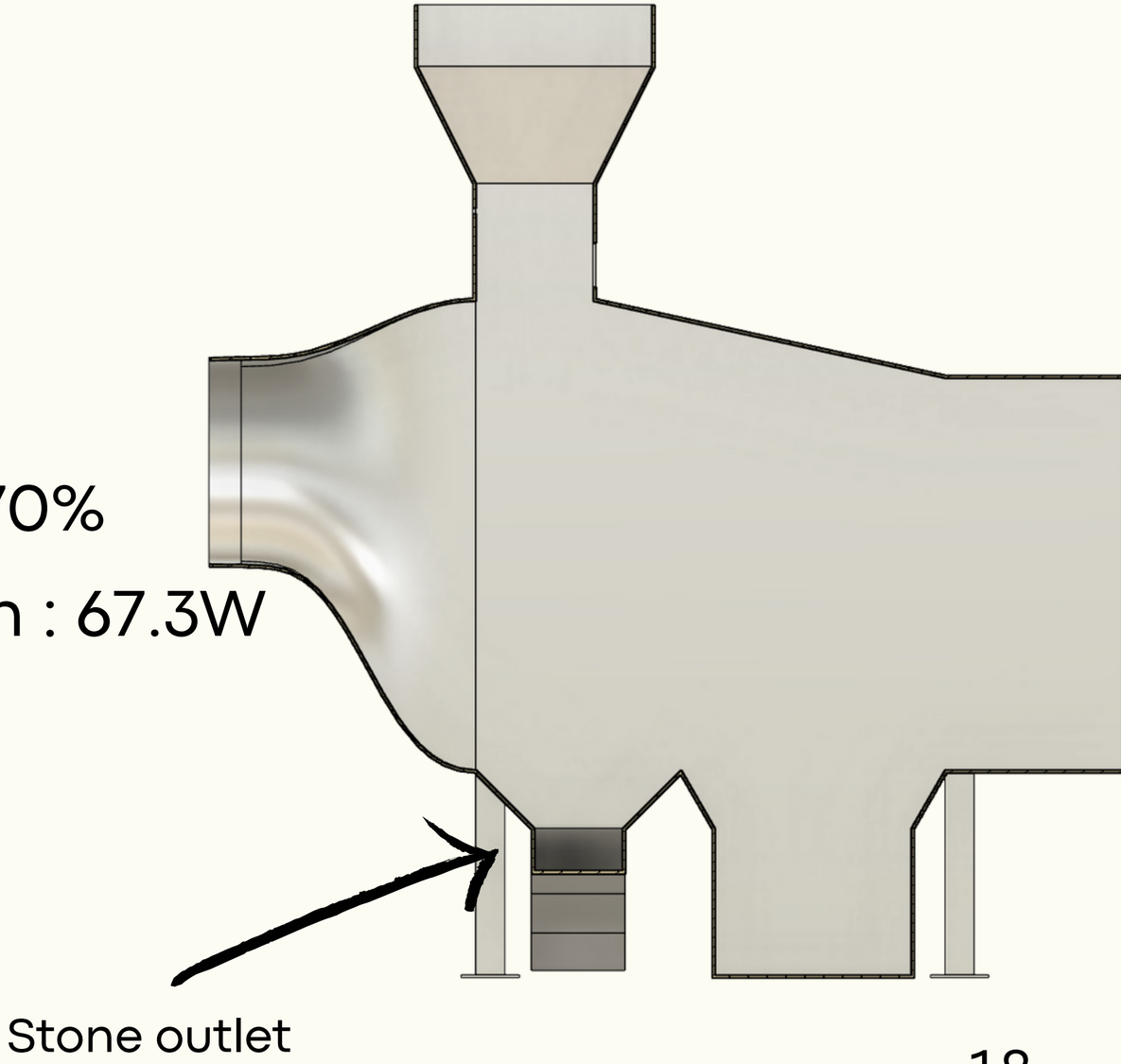
- Rice Throughput : 600kg/h

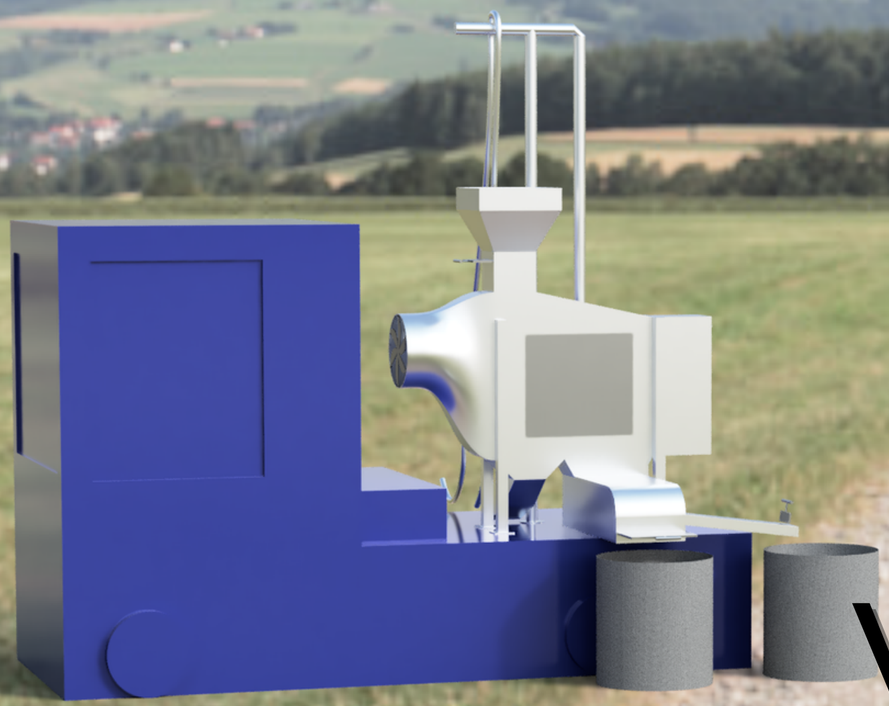


Technical specs - Vibration

- Mass of sieve : 1kg
- Angle of sieve : 20°
- 2 Motors
- Frequency : 20Hz
- Efficiency of Chaning Power Type : 70%
- Vibration Motor Power Consumption : 67.3W

- Total Power Consumption : 178.6W





Vielen Dank !!!

감사합니다 !!!

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