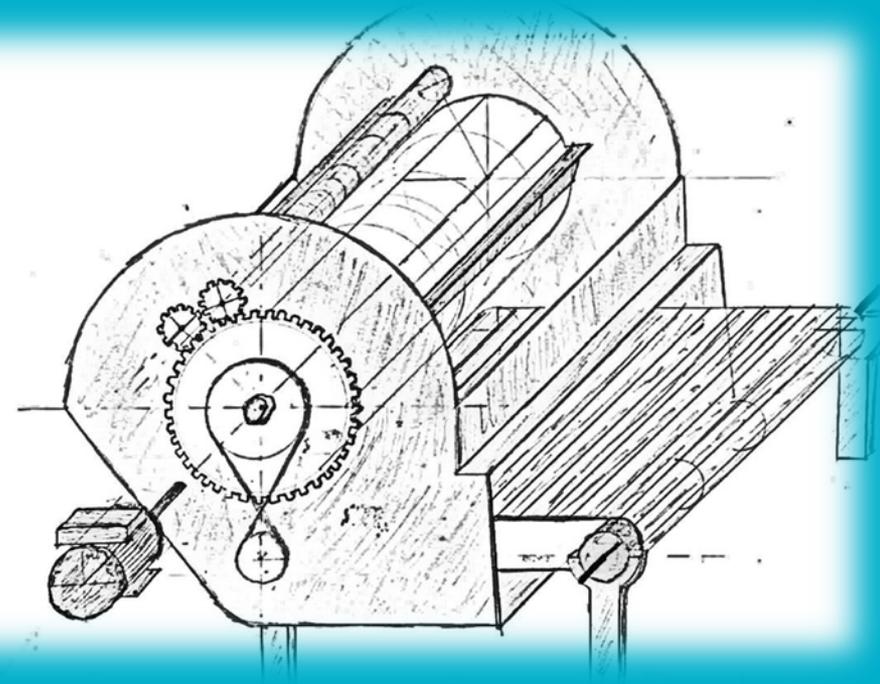


PROteINSECT Engineering Competition

ENTODRYA

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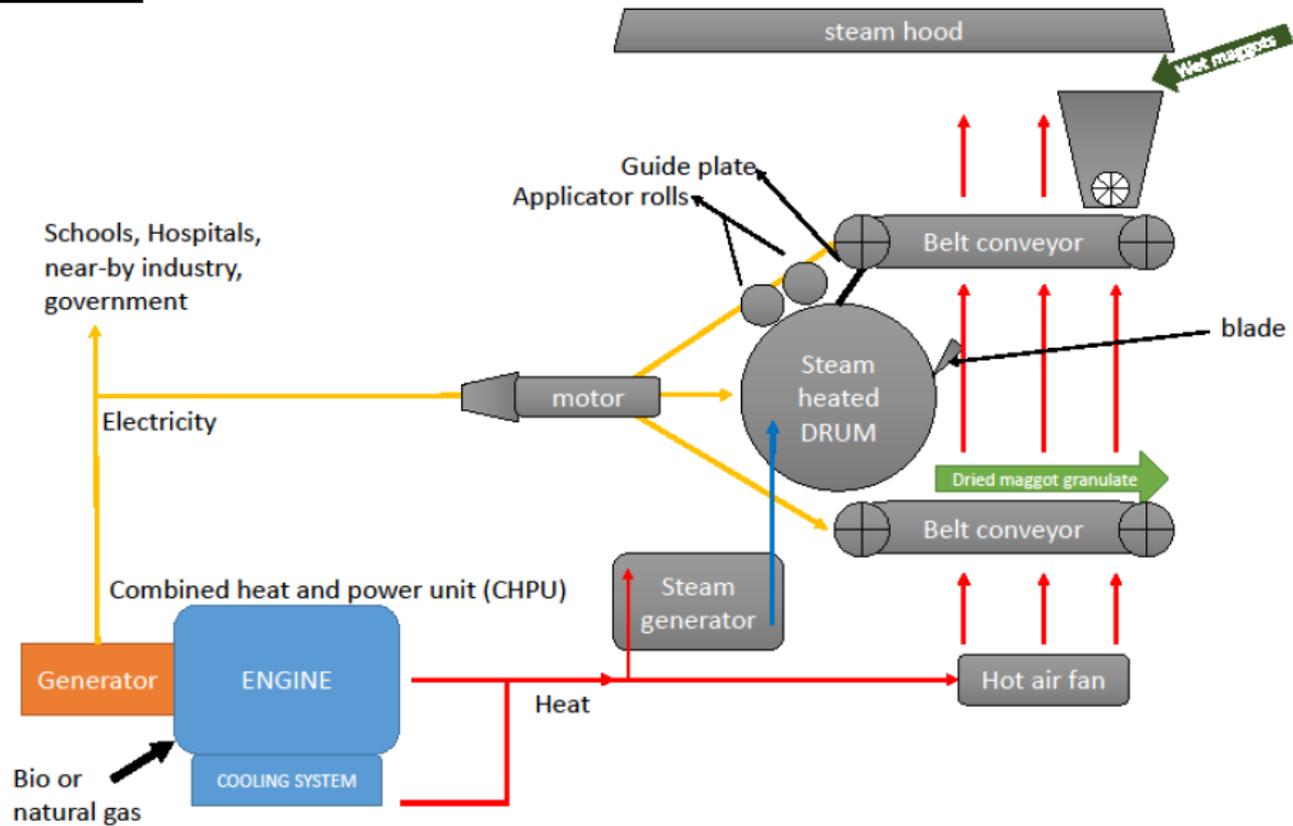
MAKING DECISIONS..

The ENTODRYA concept is based on the following aspects:

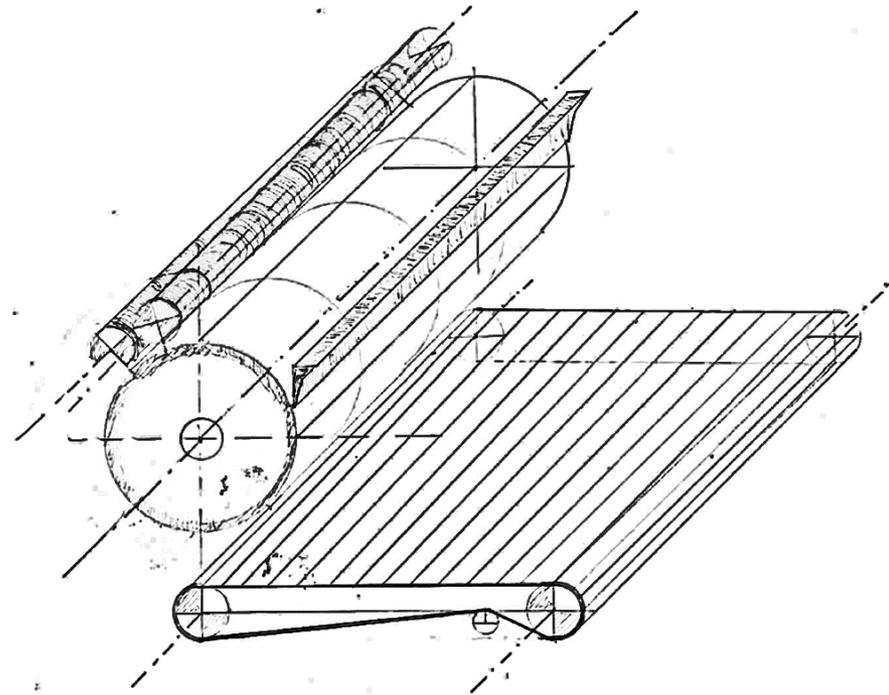
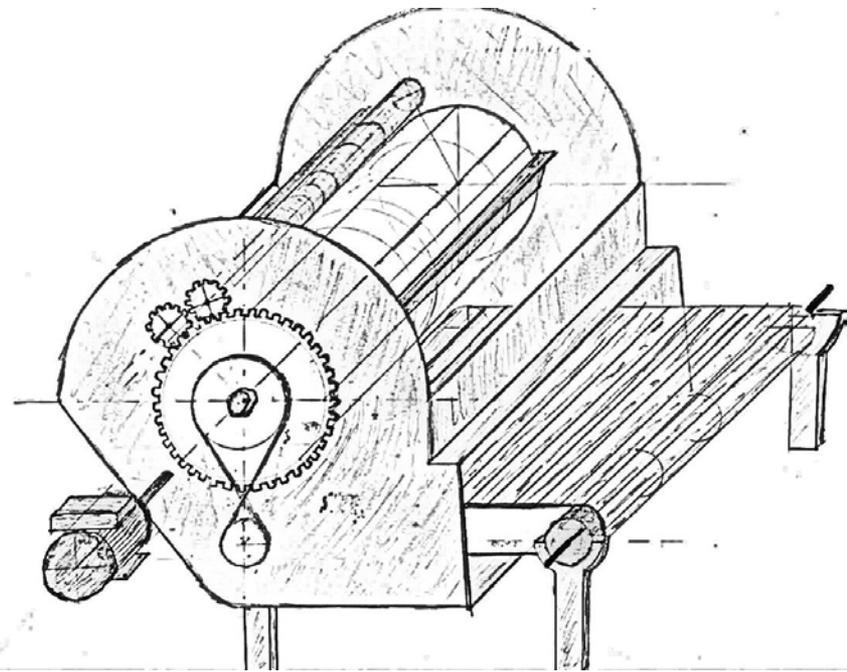
- (No or) insufficient electrical infrastructure
- the product should be able to be stored in sealed bags at room temperature for 1 year
- the product produced by the ENTODRYA is designated to be used as feed
- output 1t per day minimum
- Easy design to be easily repaired
- Low risk when working with the machine
- run-up times
- hygienic design

CONCEPT DESIGN

SCHEMATIC VIEW



DRUM DRYING



CALCULATIONS

description of parameters		unit
diameter of drum	0,5	m
length	1	m
initial moisture content	0,65	
initial solids content	0,35	
moisture content after drying	0,05	%
heat of contact surface	102	°C
thickness of layer	0,003	m
heat transfer coefficient	1200	Wm/K
energy to evaporate water at 30°C	2250	kJ/kg
density of initial product	1050	kg/m ³
contact area 3/4 of the drum	0,75	factor
temperature of product to be dried (preheated with hot air fans)	30	°C
calculations		
surface of drum	1,57	m ²
mass of feed on 3/4 of the drum	3,71	kg
weight of solid parts from initial product	1,30	kg
weight of solid parts with x% moisture content after drying	1,37	kg
mass of water evaporation	5,07	kg
energy demand for water evaporation	1,36E+05	J/s
drying rate	0,060	kg/s
contact time (3/4 of drum)	62	seconds
contact time (1/1 of drum)	82	seconds
rpm of drum	0,73	rpm
time needed for 1t of maggots with x% initial moisture content	2,99	hours

SUMMARY

- It was hard to find data for insect processing
- ENTODRYA is one approach out of various possible
- a combination of procedures could bring good results
- various opportunities for optimization or completion
- process engineering will be a key factor in industrial production of high quality mealworm feed products
- competitive situations on the market will bring more sophisticated results

Thank you for your attention!

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