

“Design & Fabrication of a Machine to REDUCE the Critical PROCESS Parameters & Improve Productivity of Agro – Based Dhup Agarbatti”

Shri. Krishna S. Vishwakarma, Shri. R.A. Tamboli, Mr. Shailesh V. Nighot, Mr. Alok K. Mandlekar.

ABSTRACT:-

In our country still our villager are struggling with short of money, living standard. Mainly our farmer does irrigation related activity when the season comes & rest of the time they remain with no work this causes a biggest trouble to them because they uses money whatever they earn by selling their crops into their idle time i.e. off-season.

Hence there living standard remain unchanged due to short of money saving. Keeping this thing into mind we are trying to help farmer by giving them a chance of self-employment, so that, they can change their living standard to some extent.

Hence we are focusing to develop a system/machine which can be run manually. The cost of the system or machine will try to keep very minimum, so that the farmer can purchase it or taken it on rent.

The objective of our machine is to utilize mainly agriculture based product which is available at very low price along with some additives. Through this project the farmer can produce a daily consumable product which would be so called as “Agro Dhup Agarbatti”.

KEYWORDS:- Mixing chamber, Hopper, Critical data, Agricultural waste, Agro Dhup – Agarbatti.

Introducon

The aim of this concept is to support financially to the farmer, with the help of our proposed machine. The objective is to encourage the farmer so that they become self employee. We offer a new home based machine concept which would be a better solution to improve the economical condition of farmer. Various engineering and general technique implanted to form this home based machine concept. Data related to a process has been collected from the selected company.

In this concept we focused on agro based material which is freely or at a very low price rate available in villages.

Here the farmer & his family can utilize Agro based material so to make money by producing Agro based Dhup – Agarbatti.

In this concept we have targeted to make above mentioned project concept so to assist farmer to generate extra wealth by producing an agro based Dhup – Agarbatti by keeping consumer health into consideration.

DATA COLLECTION THROUGH LITERATURE SURVEY

CONCEPT AVAILABLE IN MARKET

In the market Dhup product is easily available. The current Dhup products and machines are shown below

TYPES OF PRODUCT AVAILABLE ALONG WITH IT'S SIZE & PRICE

Dhup Products Available in Market

S.N	Brand of Product	Size d*l mm*inch	Wt (gm)	No. of Sticks	Price Rs.
1	Shri-Hari Agarbatti	8*3	100	12	25
2	Arsi Agarbatti	8*4	100	15	30
3	Dwarikamai Aggarbatti	8*5	100	10	20
4	Agarwal Dhoop Company	8*6	100	20	40
5	Nirmal Sugandh Udyog	8*7	100	30	30

The above table shows the brands of Dhup product which are available in the market. The tables contain its size and price also.

Machine Related Available Data

S.N	Machine Available	Machine Wt (kg)	Machine Product Size d/l (mm)	Power Hp	Capacity/ hr	Price
1	Auto dhoopbatti making machine	175	6,8,10/3",4",2"	2	13-15kg/24hr	112000/-
2	High speed agarbatti making machine	50	3,5,8/1",2",1,5"	5	12-15kg/10hr	140000/-
3	Incense powder mixing machine	50	6,8,10/3",4",2"	0.5	15-20kg/24	84000/-

1.1) TYPES OF MACHINE AVAILABLE ALONG WITH IT'S PRICE & CAPACITY

The above table shows machine related data is shown. In this table machine weight, power required, size, price and capacity is available.

Ingredients of Market Product

S.N	Ingredients	Hydro carbon HC (ppm)	Co2 Level %	Price Rs/ Kg
1	latex liquid chemical	898	14.5	120.5/-
2	Burning Powder - Charcoal	1064	12.08	46.97/-
3	Khasa Powder	377	2.3	220/-
4	Burn Oil	1050	20	70/-
5	Wood Powder	230	2.8	5.00/-
6	Cow Dung	202	3.5	3/-
7	Paper Pulp	120	6.9	10/-
8	Kapur	171	4.15	440/-
9	Luban	162	3.75	230/-

1) CONTENTS AVAILABLE IN MARKET

In the above mention table ingredients required to Dhup Agarbatti

production is shown. he basic elements with its price and Co2 level. Besicallly all this are useful for production purpose of Dhup Agarbatti.

MATERIAL DATA SHEET

Material Data

Sr no	Materials	Size	Qty.	kg	Price Rs.	Total Rs.
1	M.S Chanel	100*50 mm	2m	18.56	206/-	1350
2	M.S Sheet	16 Gauge	2.5m	31.6	75/-	2370
3	Round Bar	Dia.25 mm	1.8m	8.9	127/-	750
4	M.S Flat	40*5 mm	3m	10.84	61/-	600
5	General Bearing	Dia.25 mm	3nos		300/-	900
6	Bevel Gear	Dia.25 mm	2nos		1000/-	2000
7	G.I Ball Valve	Dia.1"	2nos		400/-	800
8	G.I reducer	Dia.1"	2nos		22.5/-	45
9	G.I Nipple	Dia.1"	2nos		16/-	32
10	Bolt	1/2"*1/2"		2	80/-	160
11	Bush	Dia.26 mm	2nos		100/-	200
12	Angle(M.S)	40*40*5 mm	9m	29.52	59.5/-	1755
13	Angle(M.S)	25*25*5 mm	3m	6.56	60.5/-	160
14	Paint	1/2 Ltr*3	1.5 Ltr	4	150/-	600
15	Labours Charges per hour	13day*6hr			40/-	3000

This sheet contains the information about the material which is used to fabricate our Dhup Agarbatti machine. It also contains the material required and its price.

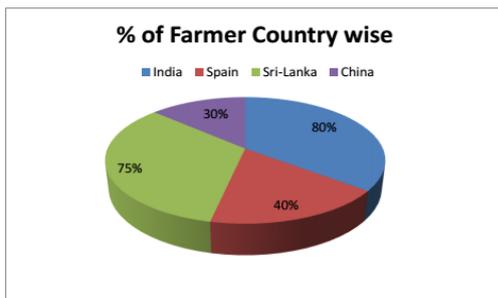
FARMER RELATED DATA

Farmer Related Data

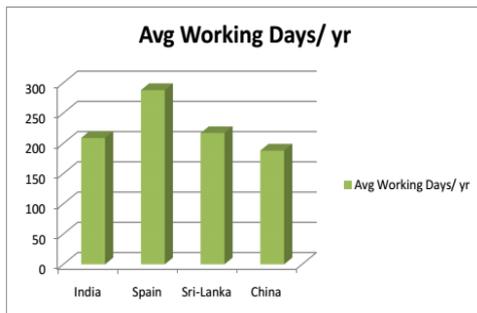
S.N	Country	% of Farmer Country wise	Avg Income/ month	Avg Working Days/ yr	Refrence
1	India	80	2115	209	hand book of dairy farming
2	Spain	40	3660	288	practical spanish for farmer
3	Sri-Lanka	80	4300	217	the forest garden farms,hikkaduwa
4	China	30	4500	188	chinese farmer painting

Above table contain the farmer related data in some different countries. Percentage of farmer in the country, average working days and income of farmers is also shown. This table is provides all data which is required to differentiate the farmers in countries.

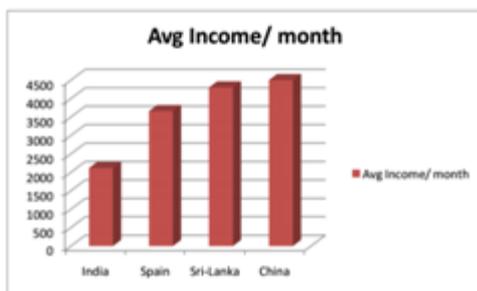
The percentage of farmers in the different countries in Asia is compared by following graph



Average working days of farmers in different countries are shown in the following graph.



The following graph shows the average income of farmers in different countries. By comparing with other countries Chines farmers earn high income.



PROBLEM STATEMENT

WHY WE WANT TO CHOOSE THIS TOPIC.

If we look up at the nearby market, you will easily find numerous brand of Dhup Agarbatti, but the important thing is how much it is safe to your health.

The smoke comes out from the burning Dhup Agarbatti contains various toxic gases like Co, Co₂, Hc etc. these gases produce bad effect on human eye & health. Sometime these products contains some high amount of fragrances due to which after

sometime of burning the Dhup Agarbatti could cause human headache.

To reduce these effects we suggest a new concept of making Dhup products which solve the purpose.

By considering all problems we develop this concept and try to implement this in real life. The main aim of this concept is to make the human life more secured.

The other side of this project is to produce a machine which makes the Dhup Agarbatti in a very low budget. The concept is to provide Agro Based Dhup Agarbatti which may be produce by farmer at villages.

The main motive of this topic selection is to boost and increase the economical condition of farmer in India because lots of farmer suicide cases is occurs due to their poor economical condition.

To reduce the suicide cause we try to support them as providing part time work at their home from this project.

ACTUAL CONDITIONS

In our day to day life we face the problem of increasing price of all

products. The life of common man is very hard to adjust all the things in minimum salary.

If we consider the Dhup product it also have high cost but the consumption of such product is daily at home.

In the industry of Dhup product the various types of machines are used. This machine consumed high amount of electricity. The cost of electricity in current condition is on the way of raising which also effect on the price of product.

Also in factories there are three to four labor is required to handle the machine. This labor cost is also included in all type of Dhup product that will be manufacture in the company therefore the cost of product is high. These are all the actual condition in the market for this product.

FARMER RELATED PROBLEMS

Now days the some Indian farmer is suffering from very poor economical condition because of fluctuation of rainfall in rainy season. Usually the farmer earns money in two times in a year because farmer produces two crops yearly. If the rain are not well than all the works of farmer gets failed and they lose their grains. They face the money problem

in their life. Also they could not be able to get two times food a day. Due to failure of products they even could not refund the loan of banks.

The children of the farmer are not able to study in the good school due to economical problem.

Farmer and their family spent valuable life in tension & low economical condition only and because of that farmer get try to suicide due to such bad problems of their life.

PROBLEM SELECTION

FARMER FINANCIAL SUPPORT

The condition of the farmer in India has not changed even after independence. They are still dependant on the rain for water and politicians for fixing remunerative prices. But nothing going smoothly. Most of the farmers have burden of loans from banks and private money lenders, which they are not able to return and hence, have to take extreme step like suicide. The government is also not very worried about their condition.

Therefore we try to provide the better solution for the improvement of the economical condition of farmer. when the farmer used our concept they will definitely earn money daily. There is no requirement of higher expenditure also they used the raw material which is freely available in the villages for the production of Agrobased Dhup Agarbatti. hence by spending a small part of time farmer earn money through concept. And this is the best financial support for farmers to improve their economical condition.

ROUTE CAUSES OF PROBLEM

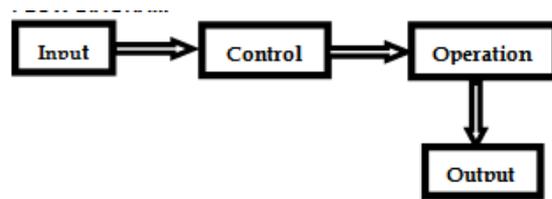
Indian farmers are poor because 1) they are not aware about market needs. 2) Their valuable crop is not purchased at time plus they don't have personal storage facility. 3) They don't know alternate medium of income. 4) Intermediate parties manipulate them to sell their crop against any previous rate of loan. 5) Improper rain so they faced the shortage of water for crops.

DEVELOPMENT OF OUR CONCEPT

Design of "Design & Fabrication Of A Machine To Reduce The Critical Process Parameters & Improve Productivity Of Agro – Based Dhup Agarbatti Machine"

WORKING OF PROJECT

FLOW DIAGRAM



DESCRIPTION

In this machine we use the component like mixing chamber, push plates etc. The material like cow dung, bhusa, paper pulp, camphor, lubhan etc. are mixed with the help of mixing blades present in the mixing chamber.

The blades are connected to the shaft which is mounted in the hopper. The shaft is connected to the bevel gear & the gear is connected to the pulley. When the raw material is inserted in the mixing chamber, by using human power to rotate the pulley and therefore the blades are rotate which is mounted on the rotating shaft and due to rotating blades the material mixed properly.

The mixing blades produced pressure on the material & hence the material is out from the outlet port. The outlet port is a structure like a hole is present at the bottom of the hopper which allows the material to passed through it towards outward.

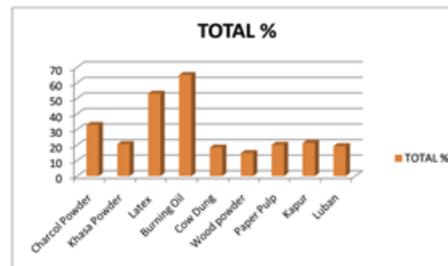
This outlet port is circular in shape therefore the material flow towards outside is circular in shape & the Dhup Agarbatti is produced.

CONCEPT PROJECT MACHINE



S.No	Particular	% content				
		Co	HC	CO2	O2	Nox
1	Charcol Powder	1.27	1064	12.08	17.68	1.859
2	Khasa Powder	0.28	77	2.3	16.32	1.64
3	Latex	2.01	898	14.5	32.5	4
4	Burning Oil	4.2	1800	22	34	4.8
5	Cow Dung	0.95	202	2.2	15.11	0.114
6	Wood powder	0.075	230	2.2	11.29	1.2
7	Paper Pulp	0.029	120	3	15.72	1.338
8	Kapur	0.98	171	2.5	15.5	2.232
9	Luban	1.2	162	3.75	13.5	0.8

above table shows the smoke contamination of a particular. The table contain Co, Co₂, Nox, Hc, O₂percentage in a specific particular.

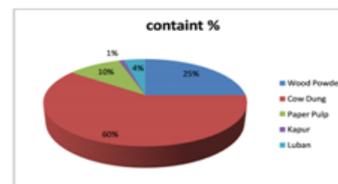


CONTAINS OF PARTICULAR IN PRODUCT

The following table shows the ingredients and its ratio in our Dhoop product. These percentages are specially decided by getting the trial on the Dhoop Agarbatti machine.

Ingredients	
Particular	contains %
Wood Powder	25
Cow Dung	60
Paper Pulp	10
Kapur	1
Luban	4

Also the graph shows the numeric value of the particular ingredients.



COMPARISION OF OUR PRODUCT WITH CURRENT PRODUCT

- 1) The table shows the smoke percentage of the current product. It contains the actual tested value of it.

EXPECTED RESULT WITH OUR CONCEPT

FARMER BENEFIT:- As we also known that the Indian farmer are poor. They only do the farming at one time and can not do another job. To see that problems we make this machine to provide the farmer some income resources. For this machine farmer can works after doing the farming work& make dhoop agrabatti. In this machine the material used is easily available the village in very low cost. For this machine farmer definitely got the benefit in terms of money.

SMOKE CONTAMINATION

sr. no	Particular	Total(%)
1	Charcoal Powder	32.889
2	Khasa Powder	20.54
3	Letex	53.01
4	Burning Oil	65
5	Total	171.439

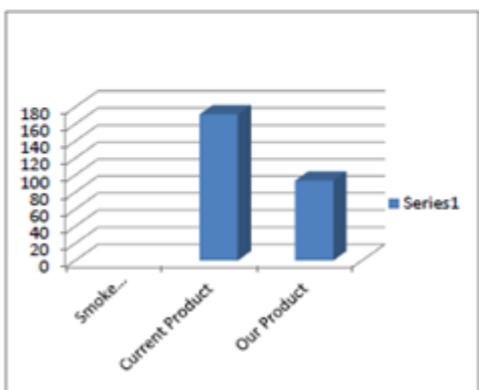
2) The table shows the smoke percentage of our product. It contain the actual tested value of it.

Sr. No	Particular	Total(%)
1	Cow Dung	18.374
2	Wood Powder	14.765
2	Paper Pulp	20.087
2	Kapur	21.212
2	Lubhan	19.25
2	Total	93.688

3) Total smoke contain in the product

3) Total smoke contain in the product

Smoke Contamination(%)	
Current Product	171.439
Our Product	93.688



The above graph shows the comparison of current product with our product. After studying this graph we conclude that our product is less harmful to human being and also less smoke contain when compared to other. The raw material required to make this product is also very cheaper.

DAILY INCOME

By using this machine farmer can make Dhoop Agarbatti daily & sales it to generate some income every day. He does not required any electrical cost. The daily income is depend is depend on amount of dhoop Agarbatti he make per day.

SUMMARY

Special thanks to guide, collage, ME-dept., Group members to help to develop this concept by spending our valuable time. The aim of this concept is to improve the economical Condition of farmers. This concept contains Problems statements related to farmers, actual condition, farmer financial support, causes of problems, and the solution over it is included.

REFERENCE

- 1) The hand book of dairy farming in India, Engineers India Research Institute publication, 2005, Vol-2
- 2) The journal of Chinese farmer painting of China, by Diater Wanazura, Chines Art publication, June 2005, Vol-1
- 3) Book of Design of machine element by Vinod Thombre Patil, Nirali publication, June 2013.
- 4) The book of Advance manufacturing processes by P.K.Ambadekar, S.T.Ghan, and D.M.Dharmadhikari, Nirali publication, June 2013.

AUTORS DETAILS



Shri. Krishna S. Vishwakarma
krishna.sharma.pce@gmail.com
 Lecturer Mechanical Department
 Shri Datta Meghe Polytechnic
 Nagpur (M.S), India



Shri. R.A. Tamboli
 Principal
 Shri Datta Meghe Polytechnic
 Nagpur (M.S), India



Mr. Shailesh V. Nighot
shaileshnighot786@gmail.com
 Student of Mechanical Department
 Shri Datta Meghe Polytechnic
 Nagpur (M.S), India



Mr. Alok K. Mandlekar
alokmandlekar@gmail.com
 Student of Mechanical Department
 Shri Datta Meghe Polytechnic
 Nagpur (M.S), India