CII Environmental Best Practices Award - 2021
Godrej Agrovet Limited
Roof & River Plant- Animal Feed R&D Nashik

1

Roof & River Plant- Animal Feed R&D Nashik

- **Premix Plant**
- **Semi finished good for animal feed consumption**

2

TEAM & CONTENTS

Roof & River Plant- AF R&D Nashik

1. **Dr. RS Masali (HOD)**
2. **Mr. Gaurav Nakhate**
3. **Ms. Kavita Shukla**

01 **Productivity Improvement Initiative**

Description on productivity improvement initiatives steps.

02 **Auto Batching System**

Description how manual operation sifted to auto system.

03 **Cost Effective Spray Gun**

Pictorial description of making our own design instead of importing German make spray Gun in 1/12 times cost.

3

GODREJ- SUSTAINABILITY

OUR SUSTIANBILITY GOALS

1 ENSURING EMPLOYABILITY

Train **1 million youth** in skills that will enhance their **earning potential**

2 GREENER PLANET

- Achieve **zero waste** to landfill
- **Carbon neutrality**
- A **positive water** balance
- Reduce **specific energy consumption by 30%**
- Increase **renewable energy** utilization

3 GOOD & GREEN PRODUCTS

Generate a **third of our portfolio revenues** from **'good' and/or 'green' products**

Results so far from baseline (FY11)

Achieve zero waste to landfill	Reduce specific energy by 30%	Achieve water positive status	Become carbon neutral	Increase renewable energy sue by 30%
66% less waste to landfill	**30%** drop in specific energy	**40%** less specific water consumption	**50%** reduction in specific GHG emissions	**55%** energy from renewable sources

4

Resource conservation through productivity enhancement

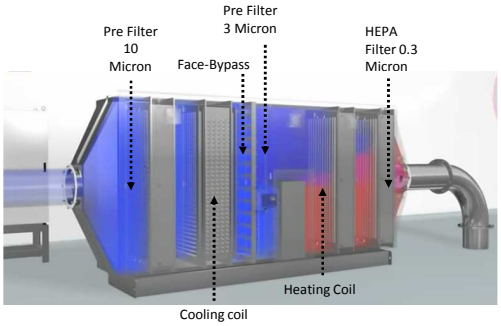
PROGRAM : To Shift batch size from 800Kg to 900kg & Reduce Cycle time as much as possible.

STRATEGY :

1. To keep machine air pressure same as for 800KG.
2. Removed intermediate process
3. Make operation easy & fast.

ACTION :

1. We change blower of air head from 800mmwc to 1000mmwc, to maintain fluidization state same it is.
2. We observed that spray was continue during shaking, which were a reason for lump formation in process, after programming changes this issue eliminated which help to increase spray rate to reduce cycle time.
3. We removed 0.3µ filter after checking bacterial load, which resulted to eliminate pressure drop across filter. It helped to achieve required pressure to make material in fluidized state & reduce cycle time by increasing spray rate.
4. Removed granulation process before coating. This required lots of process modification and trails which took almost 8 months to get success.



5

COMPARATIVE SHEET

Product	Type	Cycle time	Monthly Prod (MT)	Annual Prod. (MT)	Productivity Improvement (%)
SKU -1	Standard Cycle time-800 KG	90	538	6451	
	900 KG	88.1	618	7414	15%
SKU -2	Standard Cycle time-800 KG	192	216	2592	
	900 KG	158.2	295	3539	37%
SKU -3	Standard Cycle time-800 KG	222	31	374	
	900 KG	189.9	41	491	32%
SKU -4	Same as ealier	240	34	403	0%
SKU -5	Same as ealier	205	40	482	0%
Before			858.5	10302	19.70%
After			1027.4	12329	

6

Material conservation by automation
Auto Batching System

Loading

1st 50 Kg bags are loaded on belt conveyor with help of 2 labours. Maximum loading is 2.5 MT/Hr.

Feeding

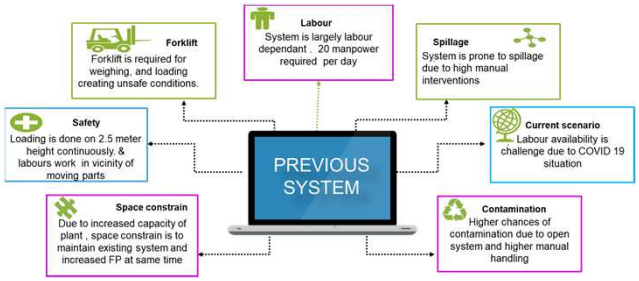
2nd Material is fed into screw conveyor by 2 labours continuously. Screw conveyor provided material for sifting at desired rate.

Weighing

3rd Good material is taken into 50 kg bags. Required quantity is taken on pallet and weighing/batching is done on ground level scale.

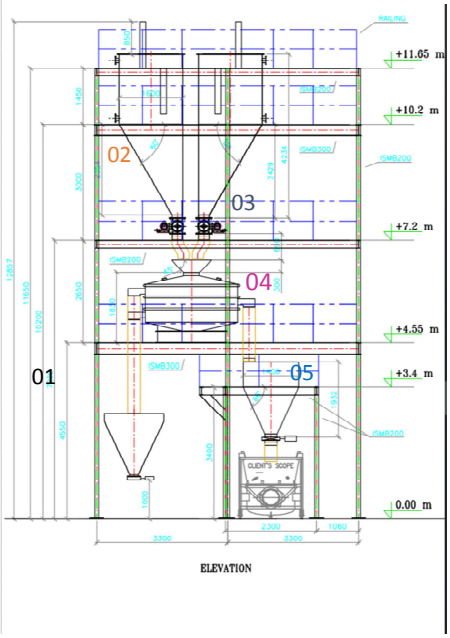
Product container loading

4th Rejected material is kept as undersize and oversize. Good material is loaded in product container by 2.5 Meter high loading platform. Forklift is used here to keep material on height.



7

Auto Batching System



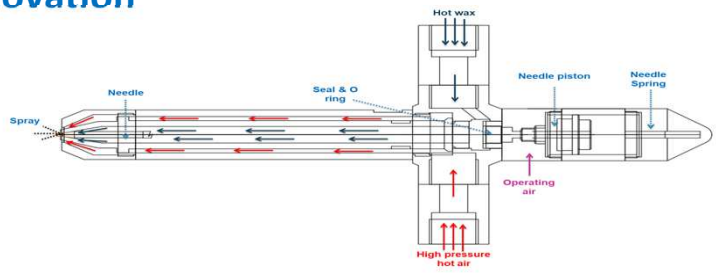
01 Dumping Section –Material dumping section into system
02 Filter & Silo –Suction unit for material conveying into system & storage.
03 RAV – To feed RM with required rate of Vibro-sifter.
04 Vibrosifter – This machine utilizes screens of different sizes for sifting and separating of the materials until the required size is obtained.
05 Weigh Scale –RM lot making

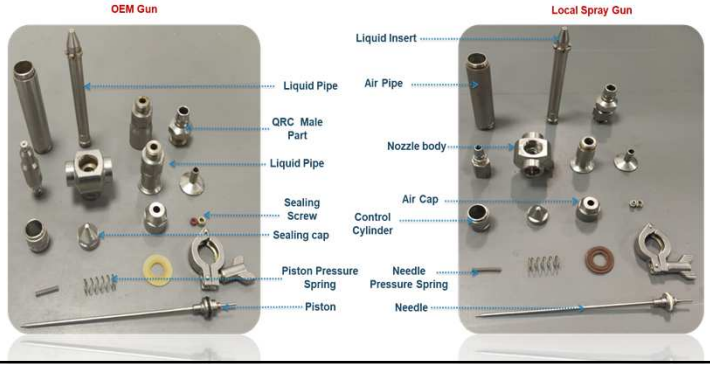
Manual batching System		Auto- batching System	
Labour Cost	Rs. 472500	Labour Cost	Rs. 94500
Power Cost	Rs. 24160	Power Cost	Rs. 43190
MH equip. operation cost	Rs. 13500	MH equip. operation cost	Rs.2700
Total	Rs. 510160	Total	Rs. 140390
Annual Cost	Rs. 6121920	Annual Cost	Rs. 1684680
Saving per annum		Rs. 4437240	

8

Improvement by design innovation
Cost Effective Spray Gun

- Spray Gun is used for coating in Fluid bed coater.
- Wax flows through central orifice and Hot air is passed outer concentric orifice.
- Spray opening and closing is done through Piston – Needle mechanism
- Critical parameters for gun are- Pressure, Temp & Flow rate.



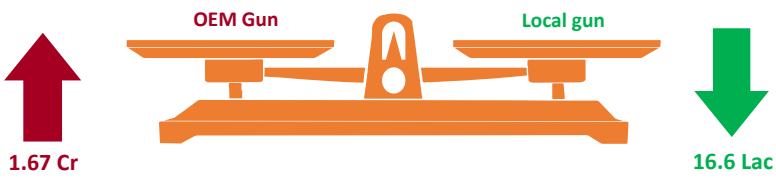


Key Points	OEM spray gun	Locally made spray gun
Cost/gun	Rs. 14.16L	Rs. 1.38L
Warranty	Zero Warranty	1 Year Warranty
Parts	14	12
spray length	2600mm	2550mm
Spray Pattern	V	V

9

Cost Comparison & Saving

Gun Type	Cost of single gun	Cost of 12 guns for 2 machines
Schlick Germany	₹ 14,16,000	₹ 1,69,92,000
Godrej Nashik	₹ 1,38,650	₹ 16,63,800
Cost saving	**₹ 12,77,350**	**₹ 1,53,28,200**
% Cost Saving	**90%**	



Cost Saving- 1.53 Cr

10

Uniqueness of the project:

- These projects helped us to improve overall processes which helped us to make **processes** faster, more efficient, more reliable, and definitely better than they previously were.
- Generally, in food industries, we do not do many changes in machines to maintain food quality, but in our plant, we have done changes in processes and equipment's while achieving the same product quality.
- Internally designed most critical equipment of the process.

Replication potential of the project in Indian Industry:

This project can be replicated in any industry using coating machine.

Mention the trigger major trust/reason behind initiating the project:

- Reducing the requirement of frequent changes of spray gun
- cost saving/ material conservation
- Safety concern, spillages and labour intensive process

Intangible benefits:

- Safety, space availability, work area improvement
- Waste reduction
- Productivity improvement

11

12