Oil Palm Plantations

Seethanagaram .A.P

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Good & Green

OUR 2020 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**

Brighter Giving

agrovet brighter farming OPP

GOAL AND ACHIEVEMENTS

					
Goal 2020	Achieve zero waste to landfill	Reduce specific energy by 30%	Achieve water positive status	Become carbon neutral	Increase renewable energy by 30%
Results so far from baseline (FY11)	**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

OPP PLANT FEATURES

Continuous Sterilization Technology- First in India

Boiler Designed to consume 50-55% Shredded Empty bunch fibre in fuel mix.

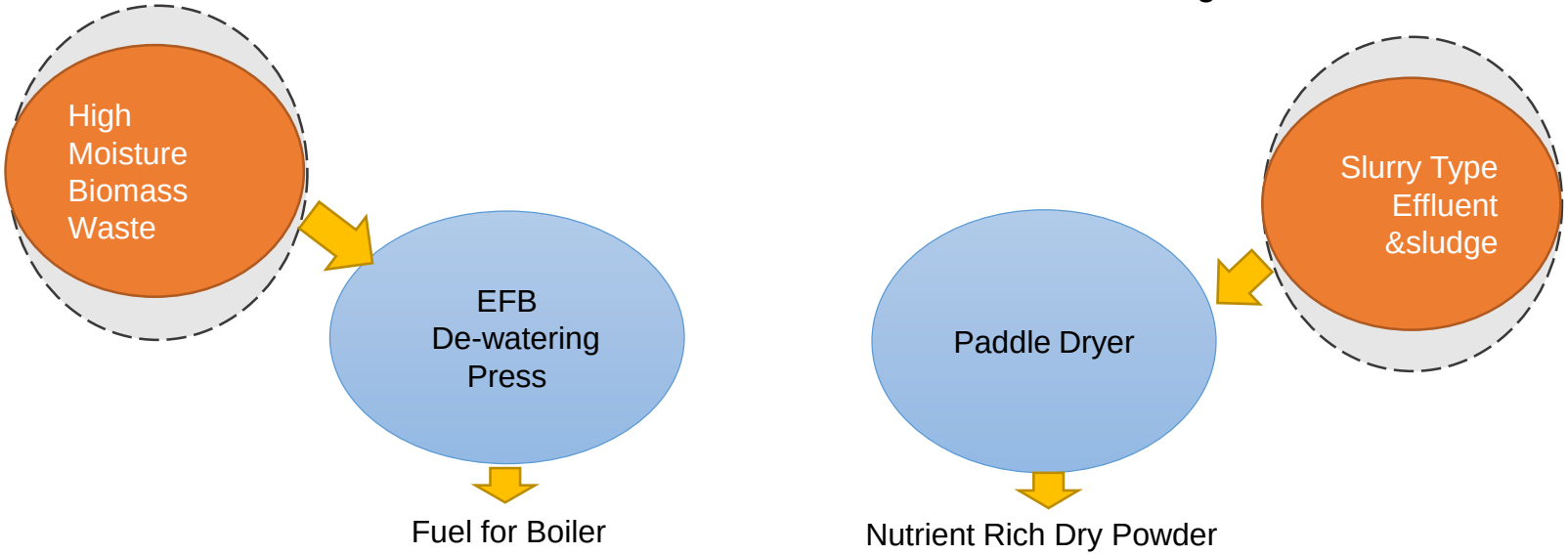
99% of energy comes from renewable sources

OPP TARGET VS ACHIEVEMENT

PARAMETERS	ACHIEVEMENT AGAINST TARGET LAST YEAR
Specific Energy	10% reduction
Specific Water	6% reduction
Specific GHG	40% reduction
% Renewable Energy	99.5%
Waste to landfill	0

WASTE MANAGEMENT

Oil Palm Biomass-Waste & MEE Concentrate &Solid Sludge



Project Commencement: 02-03-2018
Project Completion: 05-11-2018

Project Commencement: 18-07-2018
Project Completion: 01-03-2019

TRIGGER FOR PROJECT

BIOMASS WASTE:

Palm Oil Mill Generates huge quantities Biomass waste

50% Biomass waste is Empty Bunch, contains 70% Moisture it is not suitable for boiler Fuel

Dumping of biomass waste in yard occupies large area

Storm water in Rainy season causes Environmental Problem to surrounding water bodies.

Lignin-rich Empty bunch takes long time for De-compose
Heaps of biomass waste causes fire hazardous in dry weather.

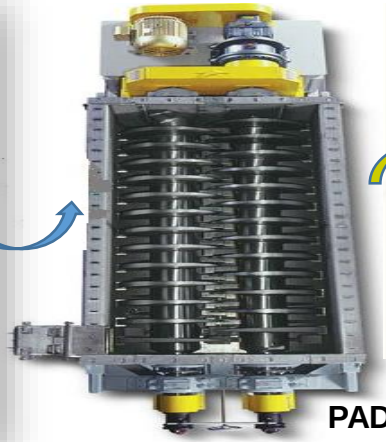
MILL Ex-DECANTER SOLID SLUDGE &MEE CONCENTRATE

Three phase Decanter Sludge from mill and Effluent concentrated evaporation contains 80% Moisture

Surplus sludge stocking and storage in Yard and disposal is Environmental challenge.

Partly quantity utilised by Aqua Farmers as fish feed & Oil Palm plantation farmers using as organic manure.

Zero-waste asper Good & Green Policy


PADDLE DRYER

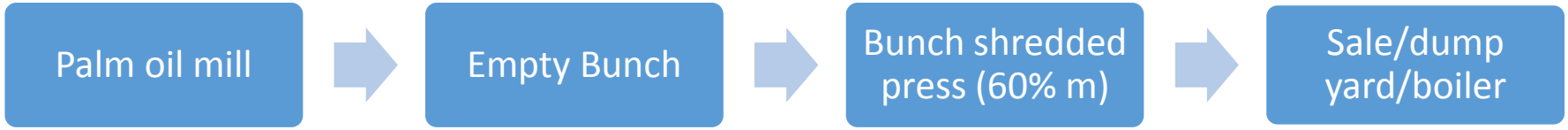

DRIED SLUDGE POWDER

Shredded Empty Bunch-De-watering Press

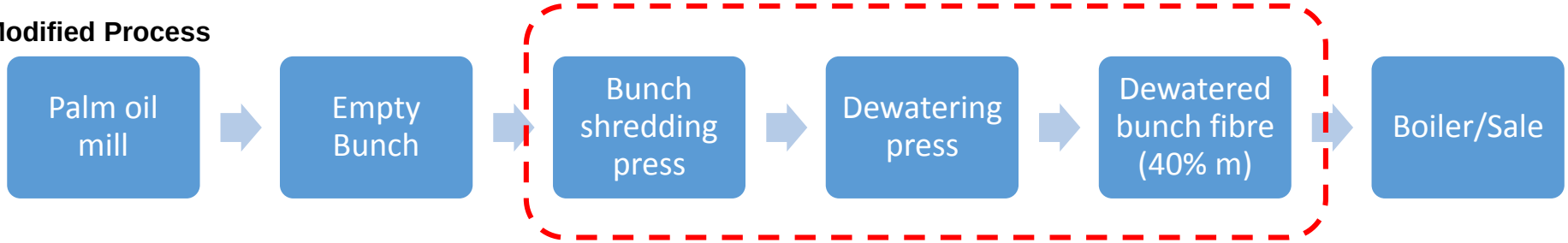
MEE Concentrate & Ex-Decanter Cake- Paddle Drye

UNIQUENESS OF DE-WATERING PRESS

Conventional Process-1



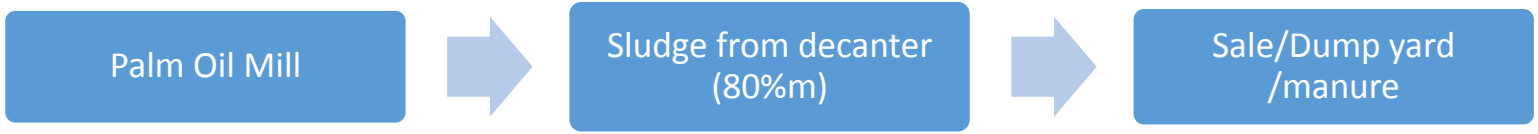
Modified Process



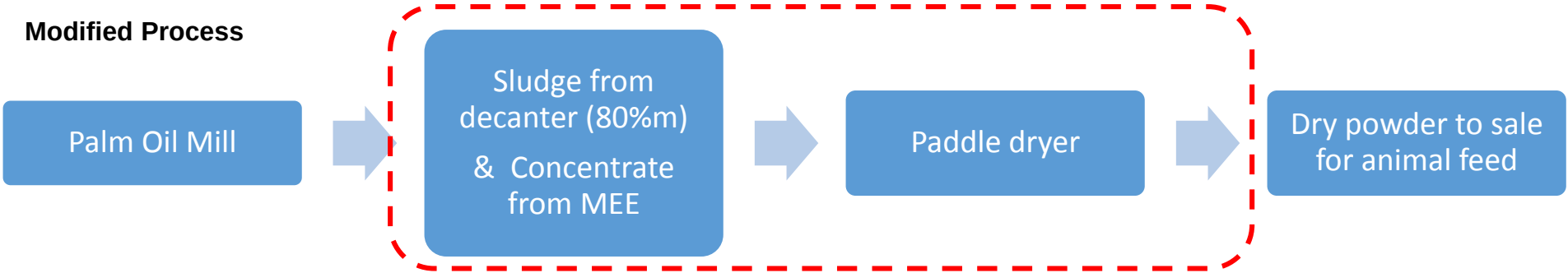
- Reduces Empty bunch shredded fibre Moisture from 60% to 40% which is Suitable for boiler.
- 55% De-watered Shredded bunch fibre used in place of High GCV Palm Meso carp Fibre in Fuel Mix.
- Recovered Squeezed water from process contains 5% oil
- Saves High GCV Fuel saves from process and Surplus De-watered Shredded bunch fibres are salable.
- Small Footprint, Easy Operation & Easy Maintenance, Wide Line-up Array. Energy Saving & Low Noise

UNIQUENESS OF PADDLE DRYER

Conventional Process-2



Modified Process



- Reduces 80% moisture of Liquid Concentrate derived from palm oil mill effluent evaporation (MEE) plant and Ex-Decanter cake coming from Mill clarification section to10% moisture Dry Powder.
- Dry powder which is nutrient rich with 15% Protein is being used as one of the ingredient in animal feed.
- High Thermal Efficiency, Precise Control of temperature, Uniform product quality.
- Heat transfer medium doesn't come into contact with product
- The wedge-shaped blade heat transfer surface has a self-cleaning function.

PROJECT ECONOMICS

Name of the project/ Equipment	Project Cost (INR Lakhs)	Savings (in UoM)	Saving (INR Lakhs)	Pay Back (Years)
Multiple effect evaporation & Paddle dryer	1541.65	4140 Mt	332	4.5
De-watering Press	161.49	3110 MT	26.31	6.0
Paddle Dryer	413	1700 MT	124	3.3

TANGIBLE BENEFITS

22000 MT

Dewatering Empty Bunches Fibre used as renewable energy source in Boiler fuel mix annually

20000 MT

Ex-decanter Sludge and MEE concentrate feeding to Paddle Dryer and getting 5000Mt of Dry sludge powder

- 60,000 tons of GHG/annum will be saved if the same amount of fossil fuel is used
- Maximum Utilisation of Surplus Fibre, Increase in sale of High Calorific Palm fruitlet mesocarp fibre & Palm Nut Shell.
- Huge space saving.

INTANGIBLE BENEFITS

- Avoiding stock piles in storage yard.
- Conversion of High Moisture Empty bunch into Low moisture Shredded bunch fibre by Dewatering press and make suitable for boiler fuel.
- It avoids Environmental Hazardous like seepage of ground water and water pollution due to passing of storm water in rainy season.
- Paddle Dryer is eco-friendly. it avoids dumping huge quantity of Ex-decanter Solid sludge in rainy season which leads to environmental problem to nearby water bodies.
- Reduction of Odour & Improving Mill Hygienic condition.

REPLICATION POTENTIAL IN SECTOR

- This is first of its kind projects in India in Palm Oil Industry
- This project can easily replicate in Indian Palm Oil Industries, Where abundance of biomass waste generated.
- As the global economy is shifting towards low carbon approach, this project is Environment friendly with payback around a year.

CHALLENGES FACED

. **Challenges Faced – Paddle dryer**

- Frequent changing of suspend solids in feed material effecting the final product moisture, for avoiding issue we arranged manual sludge feed conveyor and feed solid material into paddle dryer for maintaining feed solids.
- Oil was coming with MEE concentrate and effecting paddle dryer final powder quality. For avoiding this problem we incorporated three phase decanter at inlet of the paddle dryer and separate oil before feeding material into paddle dryer.

Challenges Faced – Dewatering Press

- Frequently material jamming was happening inside the dewater press. For avoiding this issue we increased the gap between cage and screws.
- Dewater press frequently tripped due to over load, for that we provided dampers for each dewatering press for uniform feeding

FUTURE PLAN

Installing New Paddle Dryer in FY 2020-21 to Dry-out balance sludge during exceeding Mill production.

IOT for water irrigation systems

Biomass waste use as fertilizers

AWARDS AND RECOGNITIONS

SEEM National Energy Management Silver Award-2019

National Safety Awards (NSA) 2019 (Runner-up)
Outstanding performance in Industrial Safety - 2017

Bombay Chamber of Commerce and Industries
Civic award -2019 (Sustainable Environment Initiatives)

Thank You