



DRYAD™

“Developing MSW processing facilities using DRYAD™ technology for scientific disposal of city waste, recovering energy & ensuring GHG reductions”.



**ORGANIC RECYCLING
SYSTEMS PVT. LTD**

Introduction

- ORS was **incorporated in 2008** as a strategic initiative between a team of technocrats (sector experts) & group of investors (Intellivate Capital) to promote 'Green field' projects in the field of integrated urban waste management.
- **Vision:** is to become single largest project developer in urban waste management sector over the next five years by giving viable solutions to city administrations for mitigating environmental challenges poised by perpetuating waste disposal issues.
- Current **focus** is on providing scientific solutions on Solid Waste Management in conformance with MSW handling rules.

Need of the Hour

- Estimated generation of MSW in India is around 65 million tons p.a and its expected to grow at 1.3% per capita p.a. Its a known fact that scientific disposal of MSW is a major problem before city administrations across the country.
- Presently, MSW is being dumped in open designated areas for landfills, that are in proximity of cities, which is an alarming situation for environment & public health.
- As per the Honorable Supreme Court Order, City administrations have to compulsorily set up scientific processing facilities for disposal of Solid Waste at a priority.

MSW as a resource

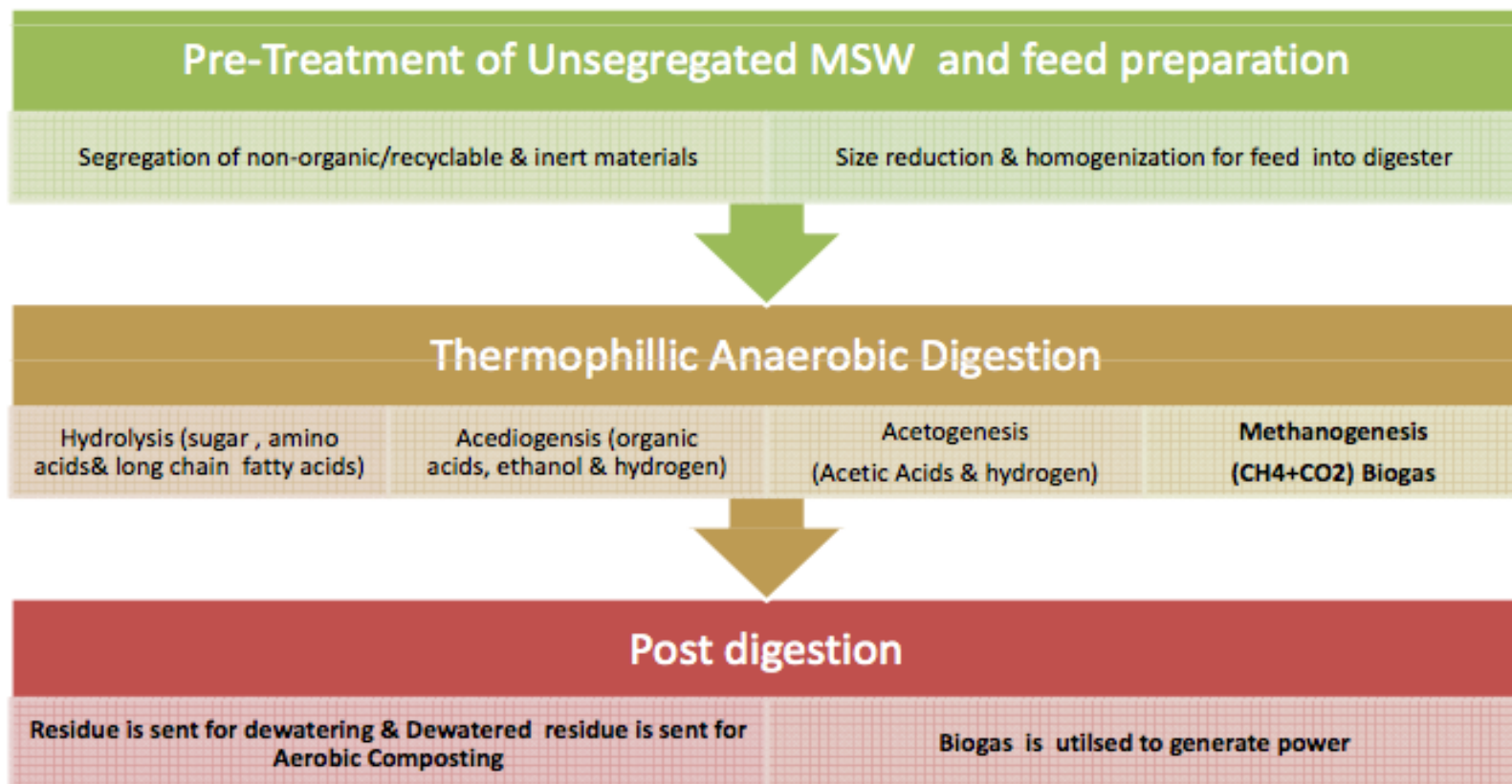
- MSW is an abundant source for Methane CH_4 a major contributor of GHG emissions. The gas has a huge potential to generate electricity.
- **Potential for energy generation from MSW has been estimated at 3650 MW from 215,000 TPD in year 2012 & 5200 MW from 304,000 TPD in year 2017.** (source MNRE)
- MSW is available throughout the year ensuring high PLF of 85% to 90% as compared to PLF of other renewable sources like wind farms.

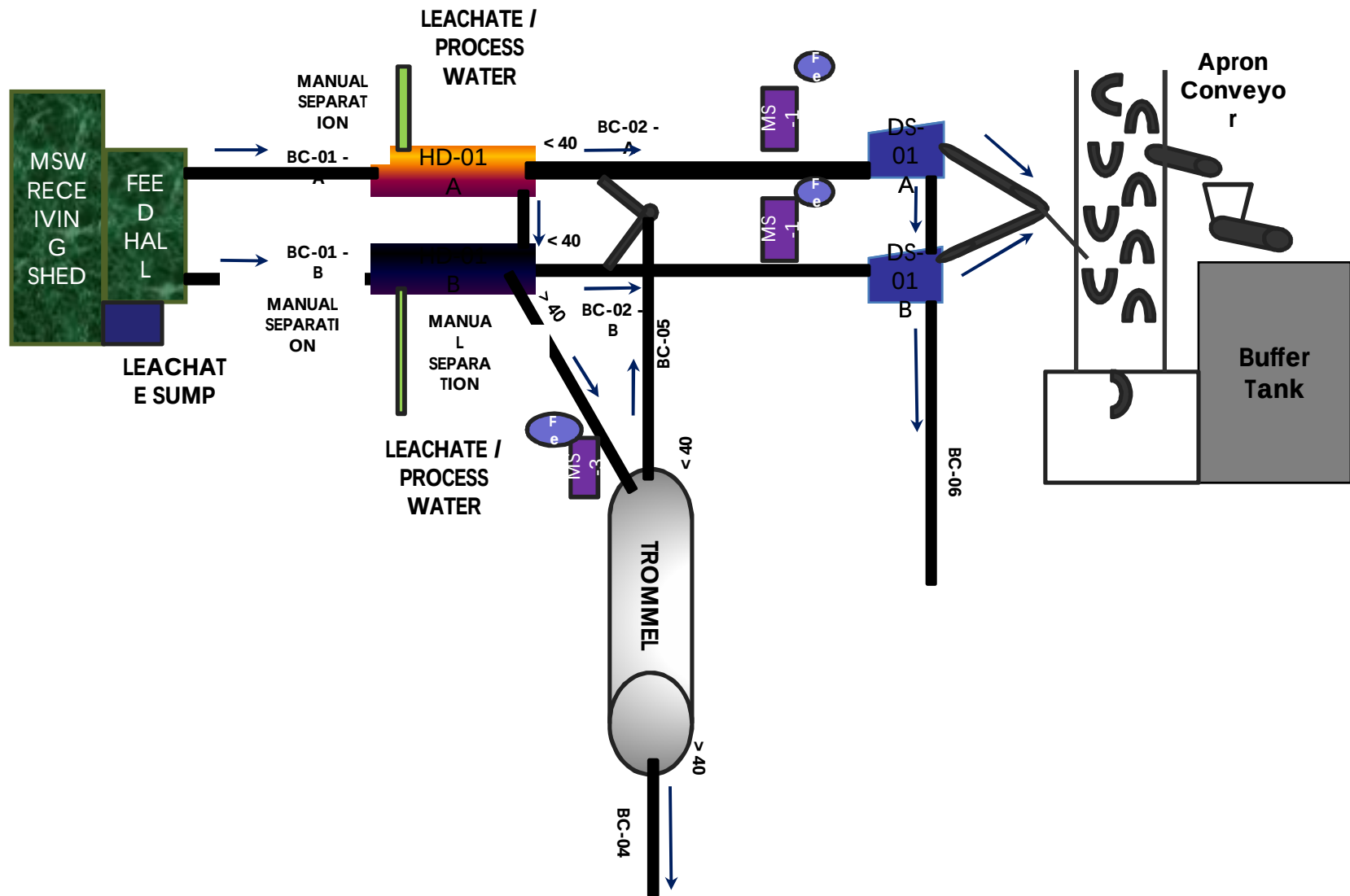
Available Technologies

- There are a range of technologies available for recovering different materials from MSW. Prominent ones are Biomethanation, Refused Derived Fuel, Gasification & Composting.
- Biomethanation (Anaerobic Digestion) scores over other technologies in terms of higher outputs with respect to electricity generation, better quality of compost & maximum number of Carbon credits.
- Biomethanation (AD) has two variants: Mesophilic (that operates at 20-30°C & Thermophilic (that operates on 50-55°C and is suited for Indian conditions).
- DRYAD™ is based on principles of Thermophilic Biomethanation.

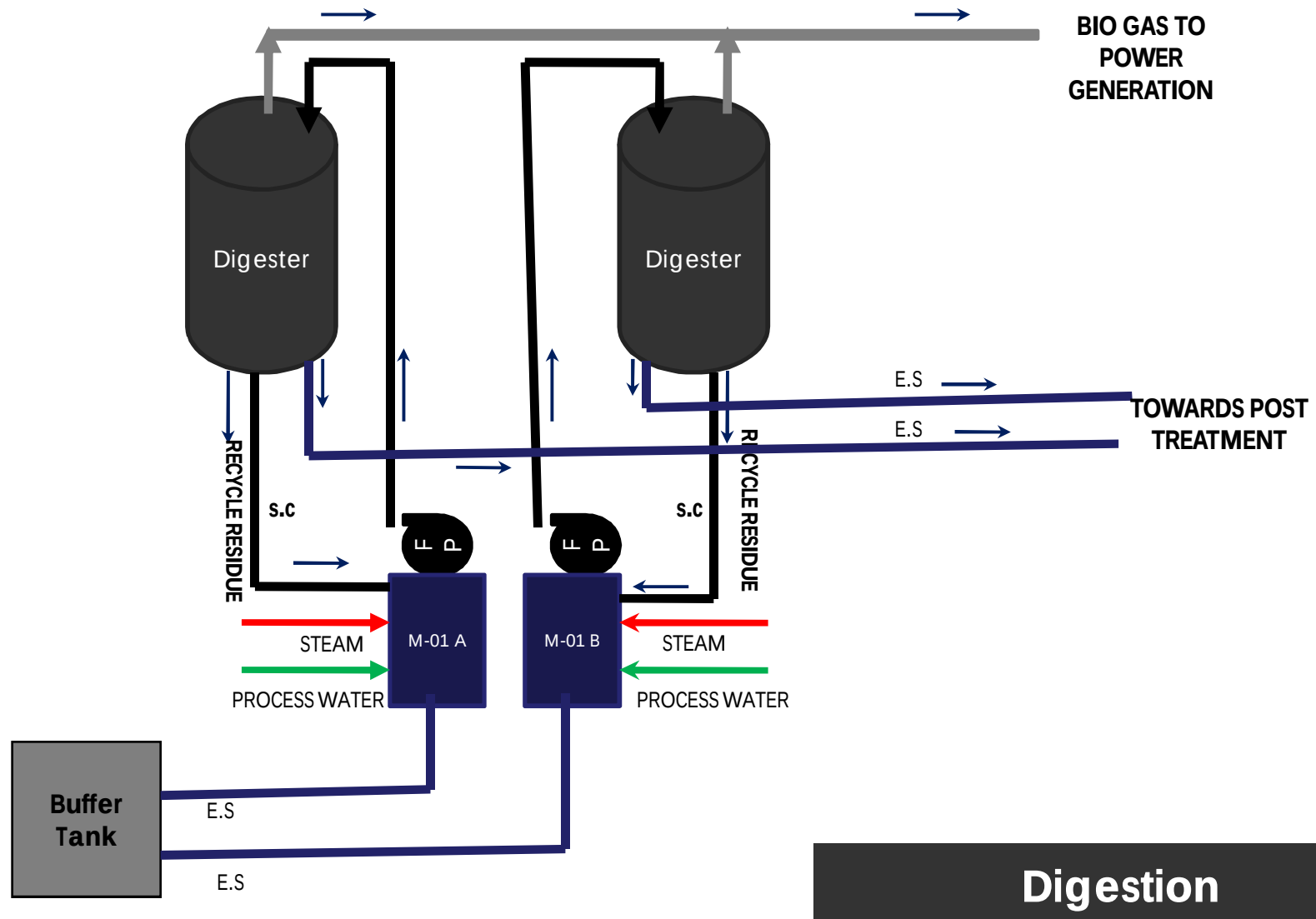
DRYAD™ Process

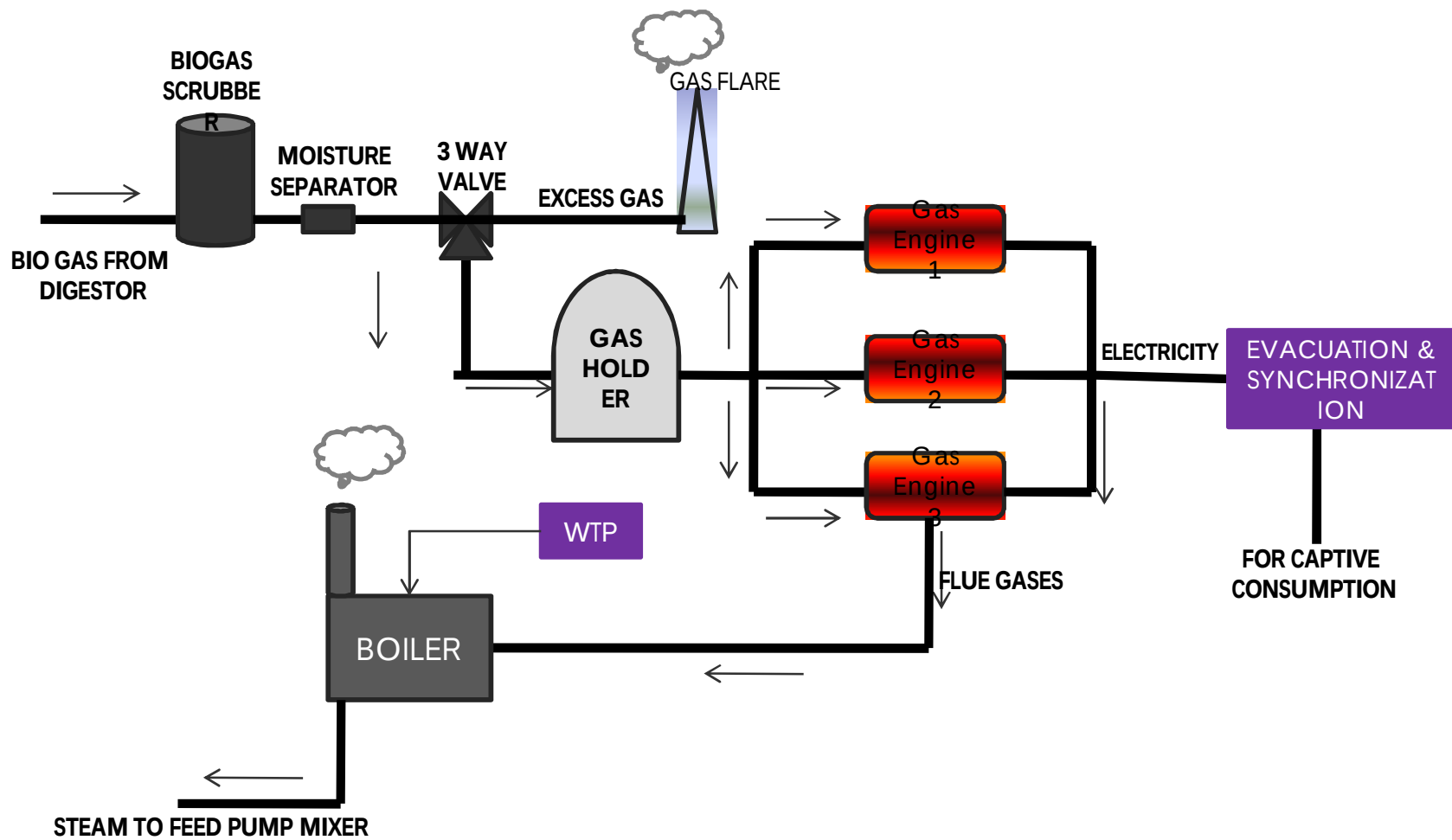
■ The Process involves 3 Steps:



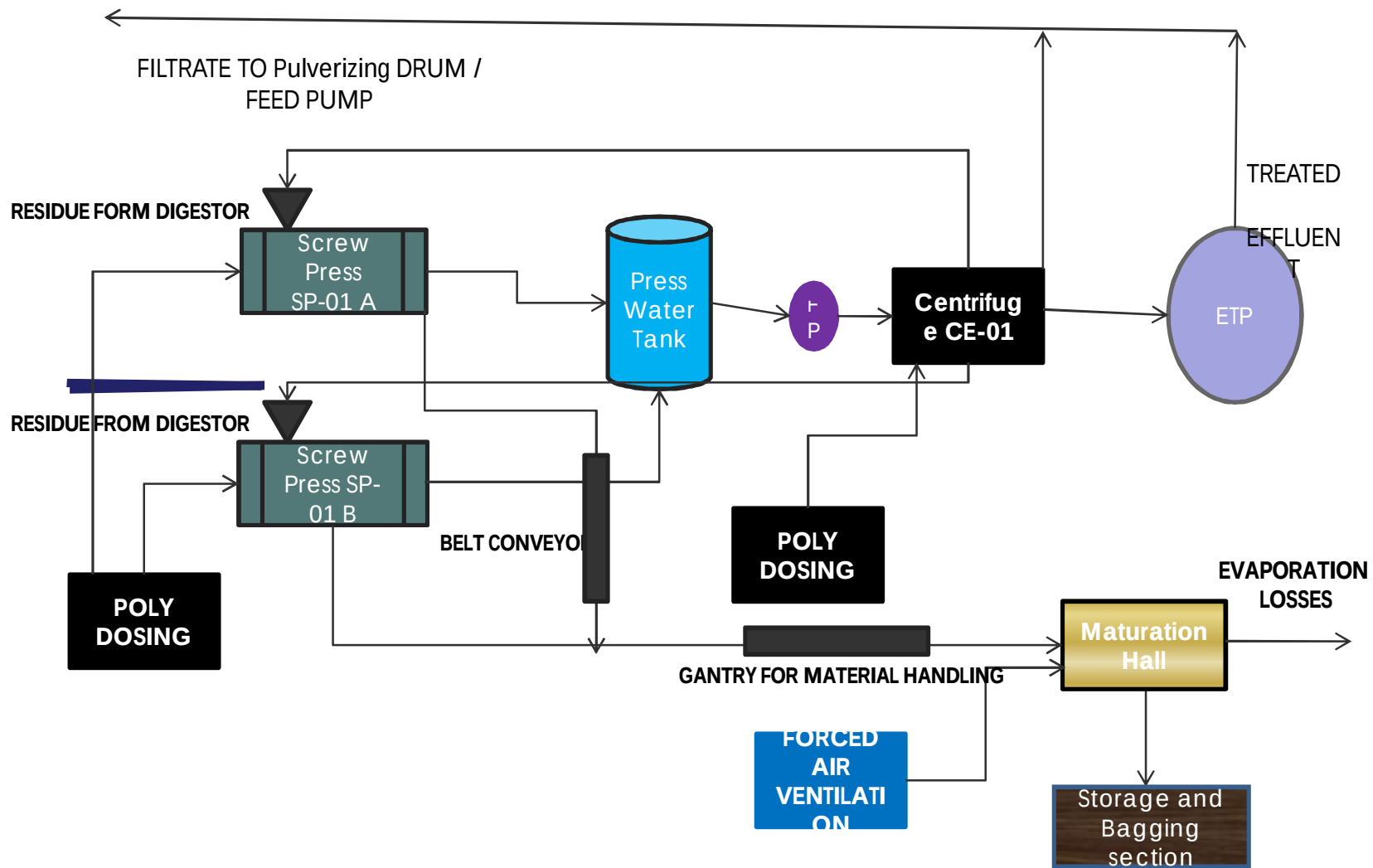


Pre-Treatment





Power Generation



Post Treatment

Benefits of DRYAD™

- DRYAD™ operates at 55°C (temp suitable for operation in Indian cities)
- It has a high loading rate that requires less digester volume and in turn requires less area for operation as compared to landfills.
- Odour less operation as it's a closed process (which results in high public acceptance)
- Bio gas generation is in the range of 117nm³ to 124 nm³/ton of waste (which results in higher electricity generation)
- Captive consumption of electricity is low as compared to thermal technologies.
- Digestion & composting period ranges from 14 to 21 days which is less as compared to conventional processes.
- Quality of compost is better than conventional product as all inerts are being removed during pre-treatment & pathogens are completely absent as the digestion takes place at a high temperatures.

400 TPD Solapur Project

- 400 TPD Solapur Project on Mixed MSW is completed & is under stabilization. It is **'FIRST OF ITS KIND' operational** plant based on biomethanation process in the country.
- Once stabilized, the plant will generate over 3.00 MW of electricity and 60-80 tpd of organic compost.
- The electricity will be sold to Maharashtra State Electricity Distribution Company Limited (MSEDCL) for which PPA has already been signed. The compost & carbon credits will be sold in open market.
- The project was completed at a cost of 60 cr in 2 years timeframe.



Actual Solapur Site Photographs

Solapur Photographs



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What Next?

■ 1000 TPD MSW Processing Plant at Bangalore, Karnataka

Snapshot

■ Nature of Project	Build Own Operate & Transfer Basis (BOOT)
■ Duration of Project	25 years
■ Project Capacity	Processing of 1000 TPD MSW
■ Technology Proposed	DRYAD(TM)
■ Power Generation	Installed Capacity 10 MW
■ Compost Generation	150-200 TPD

■ Other Turnkey project opportunities as EPC & technology provider

THANK YOU !

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