

CII Environmental Best Practices Award - 2020



Titan Company Limited (Watches & Wearables – Hosur)



Date
29.07.2020

Company profile

- Joint venture Promoted by TATAs & TIDCO.
- Watch manufacturing facility – Quarts, analog wrist watches
- Land size – 14.5 Acres
- Annual energy consumption – 12.5 ~ 13.0 MkwH
(85% is met through Renewables)
- Zero Liquid Discharge facility since 2006



Certified for

- Quality - ISO 9001
- Environment – ISO 14001
- Energy – ISO 50001
- Safety - OHSAS 18001

GreenCo Silver rating - Certified by M/s CII



Approach - Green Manufacturing



Green Perspective in all our business

- Conservation of natural resources
- Elimination of waste



- Pursue energy & water conservation initiatives
 - In-house experience
 - External expertise

Energy Auditing...

ENERGY PERFORMANCE
CONTRACT (EPC)



- Maximize the renewable energy substitution
 - Wind energy
 - Solar energy



- Systems and procedures to sustain –
QEMS , EnMS ISO 50001 & GreenCo



Project details

Theme - Waste Management & Recycling

Title - Effective handling of STP Sludge

Team - Balasubramanian.P
Sundarapandian .N
Muniaraj.R
Jeeva.M

Waste to wealth

**“ O(ON line)Rganic sludge
conversion - Manure for Agriculture**

TITAN COMPANY LIMITED

WATCHES & ACCESSORIES DIVISION

Quality and Environmental Policy

Titan Company Limited, a leading player in Manufacturing and Sourcing of Watches & Accessories is committed to...

- Demonstrate excellence in each and every activity by its employees in order to provide products and services, which meet and exceed the expectations of our customers.
- Make a net contribution to the environment by minimizing the impact of its activities, products and services by specific actions to protect and enhance the environment in which we operate.

Titan will demonstrate the above by ...

- Developing employees, suppliers and service center associates through education, training and encouraging them to pursue continued improvement in quality, environment and achieve superior levels of customer satisfaction and delight.
- Incorporating quality and minimizing the consumption of materials while designing / selecting of our products and services and the processes through which they are produced.
- Creating significant customer value and developing relationship with suppliers and service center associates, ~~driving quality initiatives~~ and supporting their quality management efforts.
- **Emphasizing conservation of natural resources such as energy, fuel & water, minimizing harmful emissions and waste, prevention of pollution, recycle, reuse viable process waste.**
- Compliance with applicable legal and other requirements.
- Effective communication to persons working for and on behalf of Titan and to the public.
- Continual review of this policy for its suitability in line with QMS & EMS standards.

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CEO - Watches & Accessories Division

Dec - 2015

STP – Overview

Process

- We used to generate around 170 to 180 KL of domestic effluent from our operations
- Inlet to the STP is the sewage from washrooms and sullage from Canteen operation
- This is being treated through a full-fledged anaerobic and aerobic treatment process - Recycled to an extent of 95 %
- Treated water is being used for Gardening , A/c system cooling towers and for wash room flushing
- Aeration sludge - 20 to 25 KLD - handled through conventional sludge drying process – Dried through sludge drying beds

STP – Process flow



pH – 6.97
TDS – 1500 ppm
BOD – 440 ppm
COD – 1400ppm
TSS - > 200 PPM

We are Zero discharge compliance unit since 2006

Effluent from domestic wastes /wash rooms

Waste water from Canteen

Domestic treatment flow

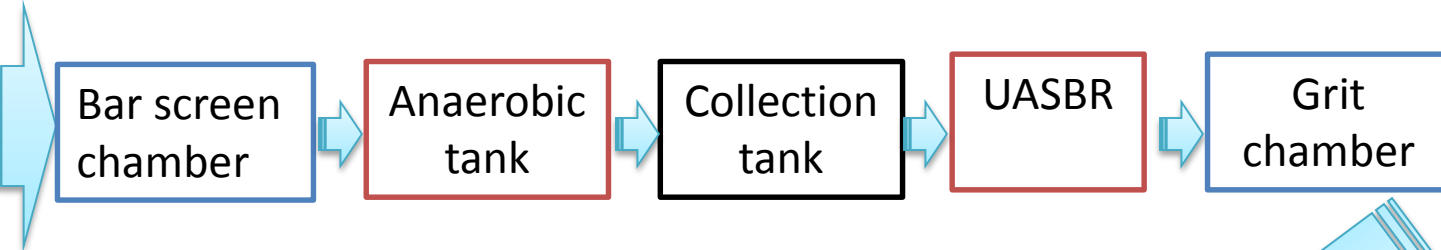
Bar screen chamber

Anaerobic tank

Collection tank

UASBR

Grit chamber



pH – 7.2
TDS – 1490 ppm
BOD – 5 ppm
COD – 35 ppm



Treated water

Collection sump

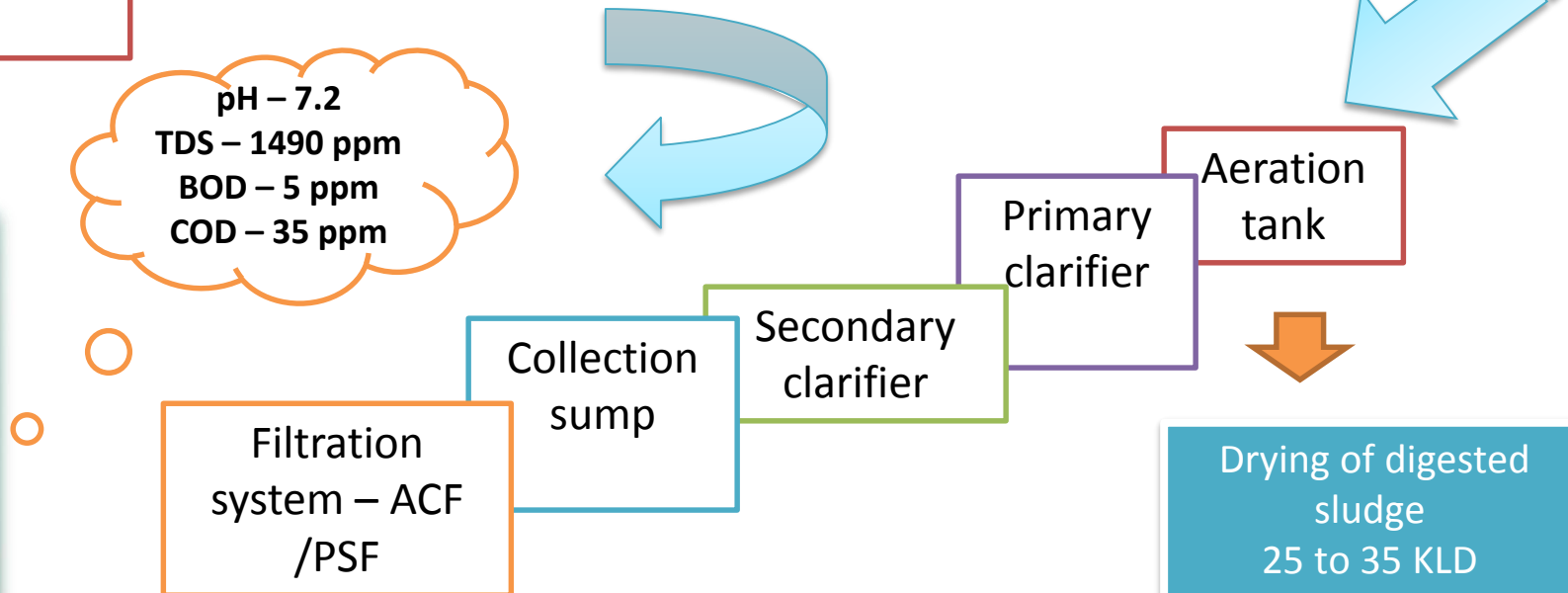
Secondary clarifier

Primary clarifier

Aeration tank

Filtration system – ACF /PSF

Drying of digested sludge
25 to 35 KLD



STP – Process

Challenges

- Frequent disturbance due to shock load / monsoon
- Higher sludge volume index(800 to 900 mg/ lit)
- Drying of sludge - Huge delay in drying the sludge
- Handling of sludge - During monsoon seasons
- Odour – Issues from near by residential colony
- No space to construct additional drying beds – to handle shock loads



Alternates evaluated / tried

- Additional filtration mechanism before Aeration – Shock loads from canteen stream
- Solar system for sludge drying – Need huge space
- Filter press system for sludge handling - Delay in formation of dry sludge / Takes time for drying

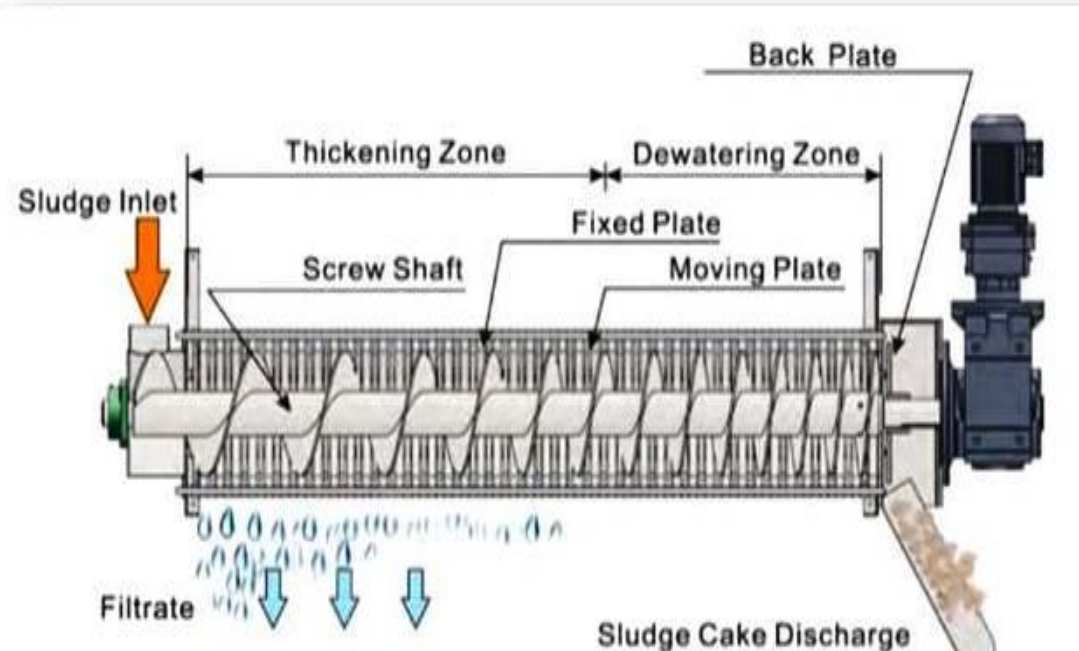
Trigger of the project - “ Higher sludge volume in STP stream ”
Conventional sludge drying process
No space for construction

Need – Quick / Mechanized drying for STP sludge

Project – Organic sludge convertor

Details

- It's a mechanized sludge handling unit which converts the organic wet sludge in to semi solid form with 80~ 90 % drying
- Sludge from the system is fed to the machine and getting converted into dry sludge
- Identified in water Expo held at Chennai
- Pilot trials have been tested at our site for month time - Sep 19
- Project implementation – Nov '19
- Investment – Rs 18 L



Organic sludge convertor

Working Principle

- Screw sludge dewatering machine main body of dehydrator is a filter device formed by fixed ring and swimming ring overlapping each other and spiral shaft running through it. The front section is the concentration section, and the back section is the dehydration section.
- The filter gap formed between the fixed ring and the swimming ring and the pitch of the spiral shaft gradually decreases from the concentrated part to the dewatering part.
- The rotation of the screw shaft promotes the sludge transport from the concentrated part to the dewatering part, at the same time, it also continuously drives the moving ring to clean the filter seam and prevent clogging.

Implementation Road map

S.No	Project Description	Plan	Actual Completion
1	Trial run	Sep-19	Sep-19
2	Approval from Top Management	Oct-19	Oct-19
3	Releasing of Purchase Order	Oct-19	Oct-19
4	System receipt / Erection and Commissioning	Nov-19	Nov-19

Project – Benefits

Uniqueness

- Removal of moisture - To an extent of 80 %
- Fully automatic - continuous operation
- Quick drying
- Improved hygiene (Handling of sludge)

Benefits

- Easy handling of sludge
- Lower power cost
- Occupies lesser space

Description	Metrics	Before	After
Handling of Sludge	Operation	Manual	Mechanized
Processing of sludge	Type of drying	Sludge Drying Bed/Filter Press	Mechanized
Conversion time - Sludge	No of Days	10	In a day - contineous
Process	Type	Batch	Contiuous / Autoamatic
Space	Area	High	Very Less
Exposure to Biological Hazard	Freuency	High	Very Less

Project – Horizontal deployment

Replication of project:

- After successive implementation of this project at our division , its implemented within the group company - Jewellery Division ,Hosur .
- Shared in a Greenco forum visit



Challenges faced

Sl.No	Type of Challenges	Challenges	Counter Measures
1	Technical	Space for equipment	Repositioning of existing machinery at STP
2	Administrative	Lack of knowledge - Operating team	Training to our team by OEM Visit to other industries - Understanding / proess and trouble shooting techniques

Learnings



- All the wastes are resource only
- Proper waste management can support for ..
 - Livelihood of the surrounding
 - An Industry “sustainable”

Thank You