Operation Maintenance (O&M) of Faecal Sludge Treatment Plant (FSTP) Devanahalli, India: Learnings

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BACKGROUND OF THE STUDY

1. CDD & BORDA /BMGF & MUNICIPAL
2. FSTP 6 cu.m/day
3. Plant Operational for 3 years
4. Technical and Institutional challenges
5. Improvising O&M
6. Sustainable O&M - Approaches
## DEVANAHALLI & FSTP OVERVIEW

<table>
<thead>
<tr>
<th>Town – Profile</th>
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<tbody>
<tr>
<td>Population (as per Census 2011)</td>
<td>30,000</td>
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<td>FS Containment structures</td>
<td>85% Pits &amp; 15% others</td>
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<td>Desludging Interval</td>
<td>3 – 5 years</td>
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<td><strong>Design Capacity</strong></td>
<td><strong>6 000 litres/day</strong></td>
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<td>Total FS Treated (2015-2018)</td>
<td>15,92,000 Litres (data collected by CDD)</td>
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<td>Years in Operation</td>
<td>3 (since 2015)</td>
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LOW O&M FSTP TECHNOLOGY

DESIGN CONSIDERATIONS

- Sludge and liquid flow by gravity
- Minimal moving parts (only 3 manually operating valves)
- Low energy requirement (Solar Roof)
- Recovery - Compost + Treated water for Gardening
- Minimal human resource – One Operator
O&M - LABOUR REQUIREMENTS

Operator (1)

Additional Labours (3)

Desludging Operators (1)

Labours for Composting (3)
CHALLENGES

O&M - Technical Challenges

O&M – Institutional Challenges
O&M – CHALLENGES (Solid Liquid Separation)

Scum – entering Liquid Stream due to poor settleability

Solid Waste – (2-20 Kgs / Load)
Creates blocking of screens - Frequent cleaning of screens
O&M – CHALLENGES (Sludge handling)

Shorter SRT – Due to sludge movement

Sludge accumulation in PGF
O&M – CHALLENGES (Sludge handling)

Valve Blockage and Corrosion (Replacement of Valves)

Blockage in Stabilization tank outlet during stoppage periods
O&M – CHALLENGES (Sludge Drying)

- Slower drying rate
- Algae formation during monsoon
- Sand loss after sludge removal
INSTITUTIONAL CHALLENGES

• Reduced plant utilisation rate - lack of support from private operators
• Truck stoppages – breakdown
• Labour strikes & unavailability of additional labour for scheduled maintenance
• Mobilizing funds from ULB for retrofitting infrastructures (Incidental causes)
FSTP UTILISATION RATE (2015 – 2018)

Private Operators

Govt Operators

3

GOVT

83% loads 2017
80% loads 2018

PVT

20% loads in 2017 & 2018

750+ loads
FSTP Utilisation rate (33%)
TMC Devanahalli passed 4 resolutions – to improve plant functions:

1. Outsourcing of O&M
2. Regulating disposal at FSTP
3. Monitoring standards for Construction of OSS
4. Inclusion of Desludging fees with Property tax
OUTSOURCING O&M

ULB (Government Body) Plant handover (2016)

RFP and Processing (2016)

State government approval

Tender document and RFP approval (1 year span)

Call for Bid In 2017

Technical + Financial Bid

Tender Awarded

KAM-AVIDA

CDD SOCIETY

Cube Bio Energy

JV Tender awarded

O&M - Technical Challenges

O&M – Institutional challenges
COST OF O&M

- Truck Operation (Repair and Maintenance): 20%
- Truck Operation (Fuel): 25%
- Plant Operation & Maintenance: 30%
- Admin cost: 15%
- Consumables and Miscellaneous: 10%
- Market For End Product: O&M Support
SOLUTION TO INSTITUTIONAL CHALLENGES

- Post Tender – Optimized Truck operations
- Agreement between TMC to provide additional labor
- Salary to operators & labor – From TMC but through contractor
- Conduct awareness campaigns for different stakeholders on Reuse
- Connect gaps in the FSM chain – conversion of insanitary toilets
1. Replacement of gate valve with plug valve
2. Increase buffer capacity for additional loads
3. Mangalore tiles to prevent sand loss and sludge handling.
4. Solar Roof for improve evaporation rate
LESSONS LEARNED ON O&M

• Integrated O&M plan with long term contract
• Choice of technology in Devanahalli is suitable for stoppage and restart periods
• Back up plan of O&M schedule – Preparedness is the key
• Sustainable O&M model – Stakeholder engagement + Strong Institutional framework
• Adaptability – Change the plan with learning
THANK YOU

Questions ???

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