PROJECT BRIEF

Marvel Technology & Tools Private Limited is a private firm, started in 2007. It is involved in the manufacture of parts and accessories for motor vehicles and their engines. Around 50 people work in the factory in 2 shifts (25 people per shift). Based on the number of users and water consumption, it is estimated that around 2.5 m³ wastewater is generated from the factory in a day.

PROJECT OUTCOMES

- Efficient management of wastewater which is collected from the factory leading to an improved sanitation situation.

SYSTEM IN BRIEF

The wastewater is collected and conveyed through a sewer line to the treatment system. The treatment system consists of Prefabricated Integrated Settler of 2 chambers, Anaerobic Baffled Reactor of 2 chambers and Anaerobic Filter of 3 chambers, Planted Gravel filters. The treated wastewater is collected in the Collection Tank.

1. **Settler**: a sedimentation tank for retaining articles by settling over a specific time frame.

2. **Integrated Anaerobic Baffle Reactor (ABR) with Anaerobic Filters (AF)**: ensures anaerobic degradation of suspended and dissolved solids by mixing fresh wastewater with an active sludge blanket.

3. **Planted Gravel Filter**: a tertiary treatment unit, which helps in removal of odour and colour of the wastewater by aerobic processes.

SALIENT FEATURES

- **Source**: Toilets and washrooms
- **Design Capacity**: 3 m³/d
- **No of users**: 50
- **Peak flow**: 3 hours
- **Influent quality**: BOD: 250mg/l; COD: 500mg/l
- **Effluent Quality**: BOD: <30mg/l; COD: 100mg/l
- **Status**: Operational

PROJECT SPECIFICATIONS:

- **Kind of Project**: Small Medium Enterprise (SME)
- **Funding Agency**: Marvel Technology
- **Construction Period**: 6 months
- **Construction Cost**: Rs. 8.5 lakhs
- **Start of operation**: 2016

MODULES ADOPTED

- **Integrated Settler, ABR with AF**
  - **Volume**: 10.2 m³
  - **Area of construction**: 10.4 m²
  - **No. of ABR chambers**: 2
  - **No. of AF chambers**: 3
- **Planted Gravel Filter**
  - **Area of Implementation**: 10.36 m²
  - **Plants Used**: Canna Indica, Cyperus papyrus

**Built up area**: 26.30 m²
**PROCESS FLOW DIAGRAM**

- **Settler**
- **Anaerobic Baffle Reactor (ABR)**
- **Anaerobic Filter (AF)**
- **Planted Gravel Filter (PGF)**

**OPERATION AND MAINTENANCE**

The wastewater treatment plant is operated and maintained by a trained operator.

**Regular Maintenance:**
- Wastewater flow checking in all units and clearing the blockages in all chambers (registers)
- Regular operation of pumps

**REUSE OPTIONS**

The treated wastewater is disposed into the drain.

**PERFORMANCE OF DEWATS**

<table>
<thead>
<tr>
<th>Sample points</th>
<th>COD mg/l</th>
<th>BOD mg/l</th>
<th>TS mg/l</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Date of Sampling:</strong> 3/11/2016</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Settler 1st chamber</td>
<td>280</td>
<td>80</td>
<td>1,143</td>
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<tr>
<td>PGF Outlet</td>
<td>206</td>
<td>60</td>
<td>1,197</td>
</tr>
</tbody>
</table>

*Note: The samples are analyzed after 2 months of commissioning*