Integrated Solid Waste Management Solution

BioEnable Integrated solid waste management provides the strategic approach to sustainable management of solid wastes covering all sources and all aspects, covering generation, segregation, transfer, sorting, treatment, recovery and disposal in an integrated manner, with an emphasis on maximizing resource use efficiency.

Smart Integrated Solid Waste Management System

Using Cutting Edge Technologies

Smart Integrated System

- Centralized Data collection
- Data Analysis & Planning
- Scheduling & Dispatching
- Monitoring & Escalation
- Scorecard & KPIs
- SBS - Smart Bin Sensor
- WBA - Waste Bin Automation
- DBS - Database System
- GIS - Geographic Information System
- DSS - Decision Support System
- MIS - Management Information System
- EIS - Executive Information System
Smart Integrated SWM Automation

- Weigh Bridge Monitoring
- Vehicle Route Monitoring
- Call Center Management
- Remote Staff Attendance
- Work Allocation to Staff
- Smart Sensor Bins and RFID Tags for Bins with Readers on Vehicle
- RFID Tags
- Centralized Datacenter
- Business Intelligence Platform for Reporting
GPS Tracking

LIVE Tracking
As waste management operations all over the world attempt to become cleaner and greener, Pune Municipal Corporation is leading the way with complete end-to-end automation and monitoring of waste collection and management. PMC is using cutting edge technologies like GPS, GSM, RFID, M2M, IOT Sensors along with innovative Mobile and web application to improve and smoothen ground-level mechanisms for waste collection and efficient processing and re-cycling of waste.

Citizen Interface

- Citizen Interface commonly used for Citizens of Pune
- By registering on above link people can identify the status or level of waste bins according to their preferred locations

Staff Login

- Staff Login can be used only for Staff Members
- Staff members can see all the details regarding their ward offices(Applicable for DSI, SI, Mukadam etc.)

Open Data

- Live information about Monitoring of Garbage Vehicles (MoVe) System.
- Dashboard shows the present day reporting count/Total Installation count for allocated garbage vehicles

Dashboard Manager

- Manager Login can be available only for Head of Department.
- HOD will be able to see all the details on Dashboard. It will become easy for supervision purpose.
Pune Municipal Corporation

- Integrated SWM Back Office
- Single View Dashboard, showing all Bins and Vehicles

- Garbage Vehicles
  - All Garbage Vehicles under your ward
    - List View
    - Map View

- Bins / Feeder Points
  - All Garbage bins / Feeder points / Chronic Points under your ward
    - List View
    - Map View

- Routes
  - All active Routes followed by garbage vehicles under your ward
    - List View
    - Map View

- Processing Units
  - Garbage Processing Units.
    - List View
    - Map View

- Ward Contacts
  - These are list of people whom you can directly connect for any SWM issue under your ward

- Feedback/Complaints
  - Report an unclean bin, or lodge a grievance or provide feedback for your ward
  - +

- Reports
  - All related reports comes under this section.

- Weight Automation
  - Weight Automation Dashboard.

- Garbage Statistics
  - Garbage Statistics.

- GIS Survey
  - GIS Survey
    - List View
    - Map View

- Smart Bin
  - Smart Bin Level

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- Disclaimer

- Single View Dashboard, showing all Bins and Vehicles
Route and Bin Monitoring

- Bin-1: Picked up Bin (Colored Green)
- Bin-2
- Bin-3: Non Picked up Bin (Colored Red)

Route of Dumper Placer (194)

Processing Unit

Transfer Station 1

Baseline and Actual Route on Map

- Actual Route taken by Vehicle
- Baseline Route to be followed by Vehicle
- Hotel Points for Garbage Collection

Play Map - Kondhwa Wanowarie (Hotel Gaadi-89)
The above Map View Shows that the Vehicle was scheduled to reach Point A at 6:00 AM but actually reached at 6:10 AM (Delay by 10 minutes) and collected Total: 6 Garbage Buckets from Point-A & Point-B
Click on Route Name to see the Whole Route map

Click on Route Point to See the Points and Click of Vehicle to add/edit vehicles

Click on Visit Counts to check the Individual Bin Visit Details
### Back Office Application for Staff at Command Centre

#### Category wise Score for Specific Ward

<table>
<thead>
<tr>
<th>Vehicle Category</th>
<th>Vehicle Count</th>
<th>Coverage Score</th>
<th>Timely Pickup Score</th>
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<tr>
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<td>18</td>
<td>Today Y’day Month</td>
<td>37 22 78</td>
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<td>Compactor</td>
<td>1</td>
<td>Today Y’day Month</td>
<td>0 0 0</td>
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<td>Dumper Placer</td>
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<td>Hotel Gadi</td>
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<td>Today Y’day Month</td>
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**Note:** Score consist of combination of visit count score along with timely visit score.

**Timely Pickup Formula**
- Delay +/- 10 min: 0% will be deducted
- Delay +/- 20 min: 25% will be deducted
- Delay +/- 45 min: 50% will be deducted
- Delay > 45 min: 100% will be deducted

**Visit Score Count** = (Actual Bins / Total Bins) * 100

### Vehicle wise score and count details

<table>
<thead>
<tr>
<th>New Desig No</th>
<th>RTO Number</th>
<th>Vehicle Category</th>
<th>Ward Office Name</th>
<th>Ward Name</th>
<th>Allocated Route</th>
<th>Driver Details</th>
<th>Coverage Score</th>
<th>Timely Pickup Score</th>
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<td>MH 12-JF 6310</td>
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<td>MH-12-RR-633</td>
<td>Ghanta Truck</td>
<td>Dhole Patil Road</td>
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<td>Ghanta Truck</td>
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<td>Asutumgarh Stadium</td>
<td>62 10</td>
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<table>
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<tr>
<th>Date</th>
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<th>Expected Stoppage Count</th>
<th>Actual Stoppage Count</th>
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Vehicle Routes

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<td>Shantai</td>
<td>Nobel sus</td>
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<tr>
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<td>Hadapsar Ramp</td>
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Feedback / Complaint View for Staff

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<tr>
<th>Subject</th>
<th>Work Category</th>
<th>Priority</th>
<th>Description</th>
<th>Image1</th>
<th>Image2</th>
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<tr>
<td>Feedback</td>
<td>Bin</td>
<td>Medium</td>
<td>Test feedback</td>
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<td></td>
</tr>
<tr>
<td>Bin Not Cleared</td>
<td>Bin</td>
<td>High</td>
<td>Bin is not cleared from my Ward</td>
<td></td>
<td></td>
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</tbody>
</table>
Route Replay & Monitoring on Bin Pickups

- Bins / Feeder Points mapped
- Vehicle Allocation & Tracking
- Bin Pickup schedules defined

Advanced Route Mapping & Monitoring

Route to Follow
Bin / Feeder points
Garbage Vehicle
Staff Management - Attendance

Total Registered Employees: 9605
Total Present Employees: 9540

Prabhag No: 1 (Aundh)
Today's Presence: Swachh Staff: 32/35
SWM Staff: 11/14

Prabhag No: 15 (Yerwada)
Today's Presence:
Swachh Staff: 34/38
SWM Staff: 14/19
Hotel Dashboard

Total Commercial Units Covered Today
1500 / 1600 Units

Total Commercial Waste
300 MT

Active Devices
25

Hotel Nirvana
ETA: 02:25 PM
ETD: 02:30 PM
ATA: 11:34 AM
ATD: 11:35 AM

Cleared
Next Day Pickup - 02:25 PM

Request Clearance  Add Feedback

Uncleared
Delayed - 284 Mins

Request Clearance  Add Feedback

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## Weight Automation

### Weight Automation at PMC Ramps

- **RF Tag**
- **Long Range RF Reader**
- Sends Vehicle ID & Weight to Control Panel inside the Cabin
- Control Panel sends to Web based SWM software

---

### Weight Statistics For Hadapsar Transfer Station

**17.72 MT**

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<td>Aundh</td>
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<td>5.82</td>
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<td>Kondhwa Wanawadi</td>
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<table>
<thead>
<tr>
<th>Latest Logs</th>
<th>Vehicle Depot No</th>
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Wardwise Vehicle Availability Report

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<th>Distance (Km)</th>
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<th>Installed / In Use</th>
<th>Distance (Km)</th>
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Staff - Mobile APP

Routes

Route Name: DP-BHA-00-R1
Source: Mirza Masjid
Destination: Hadapsar Ramp

Route Name: GG-BHA-47-R1
Source: Vehicle Depo
Destination: Vehicle Depo

Route Name: HG-KON-00-R1
Source: Hadapsar Ramp
Destination: Sus

Route Name: GG-KON-63-R1
Source: Hadapsar Ramp
Destination: BT Kawade

Bins/Feeder Points

Garbage Bins
Feeder Points
Chronic Points

Bins/Feeder Points Map
Citizen Mobile APP

**Realtime Status**

**Tilekar Vasti**

- **Expected Arrival Time**: 12:55:00
- **Expected Departure Time**: 13:00:00
- **Actual Arrival Time**: --
- **Actual Departure Time**: --

Next Day Pickup - 12:55:00

**Uncleared, Delay : 4 hour 26 minutes**

Request Clearance  Feedback
Feedback, Add new

Subject: Bin not Cleared

Work Category: Bin

Priority: High

Description: Bin Not cleared from my Ward

Image1

2.81 Mbit/s | 00:00:00 | 100.00 % | 10.08 KB / 10.08 KB

Image2

6.56 Mbit/s | 00:00:00 | 100.00 % | 10.08 KB / 10.08 KB

Save  Back to list
Providing Cloud Based Citizen Grievance Redressal Management System, website and mobile application
To set up a single access point for replying citizen’s grievances received through any of the communication mode viz. online portal, mobile application, E-mail, Manually on paper, social media and on call centre number. This grievance system will act as a Centralized Citizen’s Grievance Redressal Management System for all the grievances