

# Clean Cap

## Wireless bin fill-level sensor

The Clean Cap measures the bin fill-level in real-time. It can be attached to any type of bin to monitor any type of waste.



### Easy to Install

- Attachable to any type of bin or container
- Flexible bracket options for different container types
- Available in both solar and battery-powered models

### Robust Fill-Level Sensing

- Accurate sensing with ultrasonic technology
- Effective monitoring of both solid materials and liquids
- Sensor settings can be configured remotely

### Basic Specifications

	Clean Cap B	Clean Cap S
<b>Power</b>	Battery-powered	Solar-powered
<b>Size</b>	95 x Ø96 mm	57 x 76 x 106 mm
<b>Net Weight</b>	470 g	720 g
<b>Battery Life</b>	Up to 10 years	Over 10 years

### SMART Communication System

- Wireless transmission of bin fill-level and bin status information
- Telecommunication through WCDMA and GSM networks
- Locational information provided by GPS module

### Complementary to Clean Cube

- Covers areas not feasible for Clean Cube installations
- Data from Clean Cap can be viewed on the same software solution that displays data from the Clean Cube

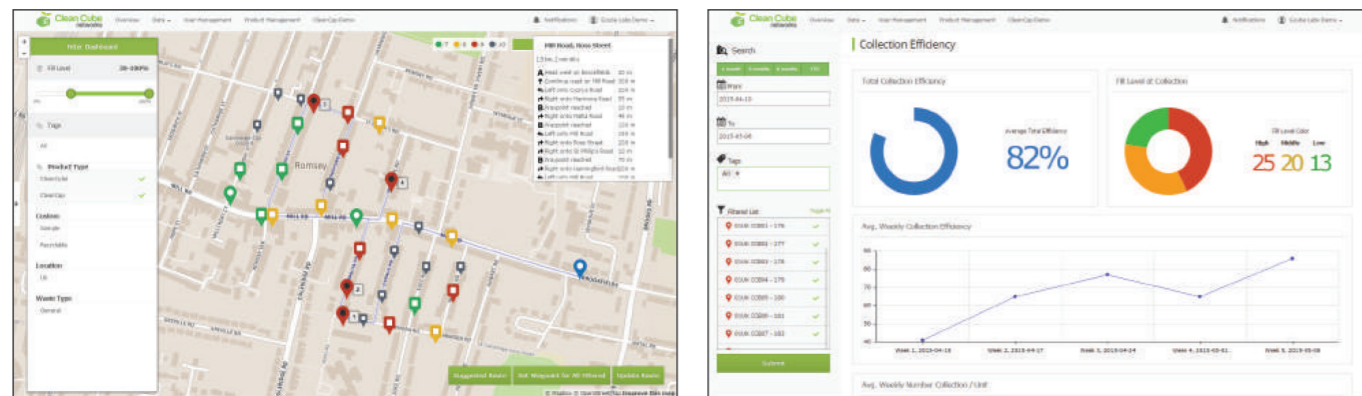
### Technical Features

- Measuring Technology: Ultrasonic
- Measuring Range: 30 – 400 cm
- Material: High impact ABS / Polycarbonate
- Battery:
  - Clean Cap B — High performance lithium battery
  - Clean Cap S — Rechargeable lithium battery

# Clean City Networks (CCN)

## Real-time monitoring and data management platform

CCN receives real-time data from Clean Cubes and Clean Caps to improve waste collection efficiency by informing users when and which bins need to be collected, and provides smart collection schedules with route optimization.



### Robust Monitoring Function

- Real-time monitoring of bin fill-level and bin status
- Notifies collection staff when waste collection is required
- Route optimization for each collection
- High customizability of monitoring options

### Intelligent Data Analytics

- Smart data for smart waste collection planning
- Comprehensive collection of historical data
- Data analytics reports to improve efficiency
- Generates collection schedules using predictive algorithms

### User-friendly User Interface

- Easily accessed anywhere, anytime
- Mobile application (Android/iOS, cellular phone/tablet supported)
- Web-based solution with no installations required

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Much More, Much Smarter.



# INNOVATIVE SOLUTIONS FOR SMART CITIES



# Waste collection gets smarter, greener, and more efficient than ever.

Our integrated waste management solution results in direct cost savings, a greener environment, and cleaner cities.

## Economic Benefits

- Reduces collection frequency by effectively increasing bin capacity by up to 8 times
- Smart waste collection planning using real-time data to optimize resource allocation
- Lowers operational costs by up to 80%

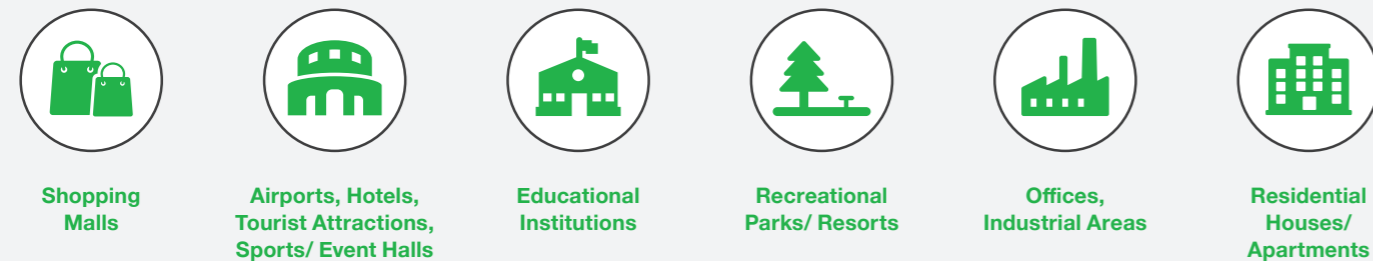
## Environmental Benefits

- Eliminates overflowing bins
- Reduces CO2 emissions
- Utilizes renewable energy

## Social Benefits

- Improves public cleanliness/sanitation
- Contributes to vitalizing the green technology industry and the use of the renewable energy products
- Increases recycling diversion rates

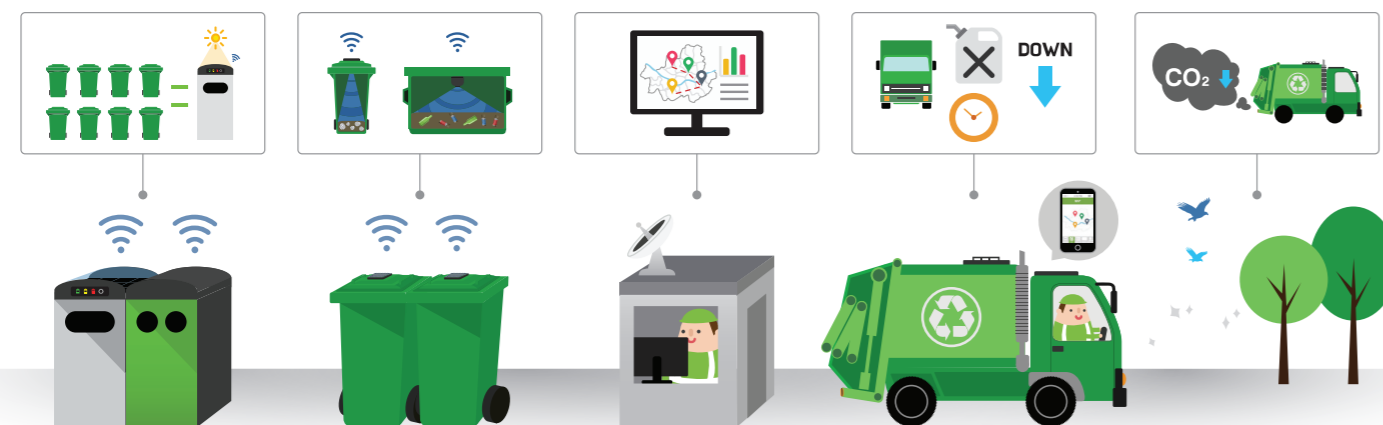
## Possible installation sites:



## The Intelligent Waste Collection Solution

Dramatically reduces waste collection costs by up to 80%.

- Clean Cube**  
Solar-powered waste compacting bin also senses bin fill-level and sends real-time data to Clean City Networks.
- Clean Cap**  
Wireless bin fill-level sensor. Senses bin fill-level and sends real-time data to Clean City Networks.
- Clean City Networks**  
Real-time monitoring and data management platform. Provides optimization of collection routes.
- Smart Collection Planning**  
Collection requires less trucks, fuel, and time, reducing operational costs by up to 80%.
- Greener Environment**  
Eliminates overflowing bins and reduces harmful gas emissions, resulting in cleaner cities.



# Clean Cube

## Smart solar-powered waste compacting bin

100% powered by solar energy, the Clean Cube compacts waste, allowing it to hold up to eight times more waste than traditional bins.



## Product Dimensions

MODEL	SIZE (H X W X L)	NET WEIGHT
120L	144.9 x 61.3 x 77.5 cm	198 kg
240L	157.4 x 72 x 86.1 cm	208 kg

## Technical Features

- RoHS compliant
- Galvanized steel sheet construction
- TGIC-free polyester powder coating finish for optimal durability and weatherability
- Compaction Force: Up to 720 kg of force
- System Voltage: 12 Volts DC
- Power Consumption: 15 Wh/day
- Battery: Spill-proof, sealed lead-acid storage
- Polycarbonate protective cover for PV panels
- Control System: Microcontroller-based automation

## Safety Features

- CE approved
- Hand detection safety sensor
- Fire detection temperature sensor
- Independent locking mechanism for all access points

## Patents

- "Module Apparatus for Refuse Collection and Method"
- "Apparatus for Refuse Collection"
- "Rubbish Can and Method for Manufacturing Same"
- "Abfalleimer und Verfahren zur Herstellung desselben"
- "M2M topology based on parameters"
- "Device determination method for device to device communication"
- "Storing Apparatus for Compressing Waste"

## Options

- Different door apertures for different waste streams
- Different power options (solar-powered / hybrid) covering both outdoor and indoor applications
- Customizable wrap design for marketing purposes
- Wi-Fi hotspot
- Embedded LED backlight advertisement panels

## 100% Powered by Solar Energy

- Can be installed anywhere with sufficient sunlight
- Crystalline silicon solar module up to 60W
- No exterior wiring needed

## SMART Communication System

- Wireless transmission of bin fill-level and bin status information in real-time to Clean City Networks
- Telecommunication through WCDMA and GSM networks
- Locational information provided by GPS module

## Powerful Waste Compaction

- Compacts waste with up to 720kg of force
- Increases bin capacity by up to eight times
- Prevents waste overflow

## Unique Features

- Compatible with standard wheelie bins
- Patented X-frame compaction module
- Customizable design options

## Certifications

- CE Markings (LVD, EMC)
- Green Certification
- RoHS Certification
- ISO 9001 Certification
- ISO 14001 Certification
- IP Rating Certificate
- KC (Korea Certification) Mark
- K (Korea Testing Laboratory) Mark

