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SmartCity Bins

Binology - an engineering and technological company - a developer of a set of solutions for the urban environment, ensuring the efficient collection of municipal solid waste (MSW) in places of formation, and managing waste and recycled materials collection and removal processes. The company's solutions allow to optimize costs, introduce a separate waste collection, and also provide an opportunity to generate additional income .

The basis of the complex is “smart” and technologically advanced urban garbage containers running cloud software, equipped with a press compactor, solar panels, a system for fullness measuring, various sensors and other capabilities of Internet of Things technologies.

The company has already come a long way from an idea to creating a finished product. Over the past time, several serial models of the “smart” bin and software for online monitoring of containers and management of the removal of MSW and secondary raw materials have been developed. All developments are both import-substituting and oriented to the international market.

The company presents its solutions at the most significant industry exhibitions and conferences, holds an international patent and is a member of the Moscow Chamber of Commerce and Industry and a participant of the Skolkovo Innovation Center.

Company Mission

Improvement environmental situation in the world and introduction of modern digital technologies in order to achieve transparency and optimize the collection, control and removal of waste and secondary raw materials

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Background for the development of the smart container market

01 Earth population growth and high rates of urbanization

02 70% increase in solid waste production by 2050

03 Growing scarcity of land for landfill in urban agglomerations

04 Development of environmental initiatives

05 The need to comply with regulatory standards and implement government waste recycling programs

06 Digital Transformation of the Economy

Solution: Binology Smart Bin

PRESS COMPACTOR
Automated pressing system reduces waste up to 8 times

INTEGRATED SYSTEMS
fil level measurements,
fire prevention, vandal warning action
weather station
air quality determination

CLOSED CONSTRUCTION
Unauthorized Access Protection
Security of internal mechanisms

ANTI-VANDALITY
Fixed surface mount
Steel case
Protected Solar Panel

AUTONOMY
Solar panels and a built-in battery allow to work without
electrical connection

LED INDICATION
Display the status of container systems for staff

CLEAN-HANDS SYSTEM
important in a changing world
(example - COVID-19)

ADVERTISING SURFACES

Separate waste collection as a tool for the development of recycling

Separate collection is an important tool for involving secondary raw materials in recycling, and the use of digital technology can significantly reduce operating costs.

~90%

MSW in public places are secondary raw materials

>70%

MSW can be recycled

Separate collection using Binology technologies:
1. Reduces landfill growth
2. Returns resources to the production cycle
3. Reduces waste due to use of the recycled materials
4. Improves the environmental situation and preserves the health of the population.
5. Creates cost savings on waste management at the city, region, country level

In Europe is sorted in public places

60%

In Russia is sorted in public places

3%

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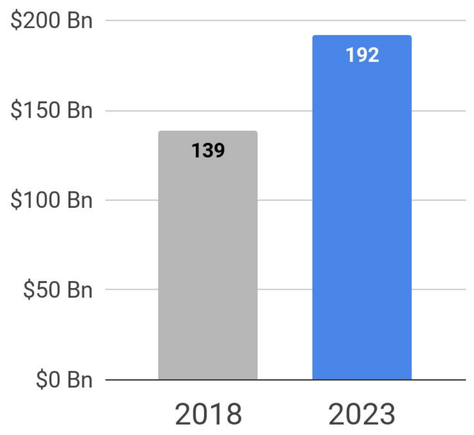
Market trends

The company's developments are directly related to the smart solid municipal waste management sector - “Smart Solid Waste Management”,
by application are in the Smart Infrastructure sector of the Smart City market,
and technology related to the Internet of Things (IoT) solutions market, in particular
in the housing and communal sector.

IoT in Utilities



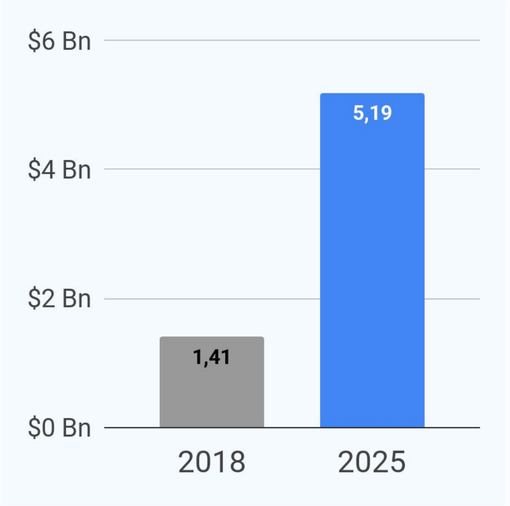
CAGR - 8,45%

Total market
IoT by 2023:

$1,200 billion

Source: IDC, BSG

Smart Solid Waste Management



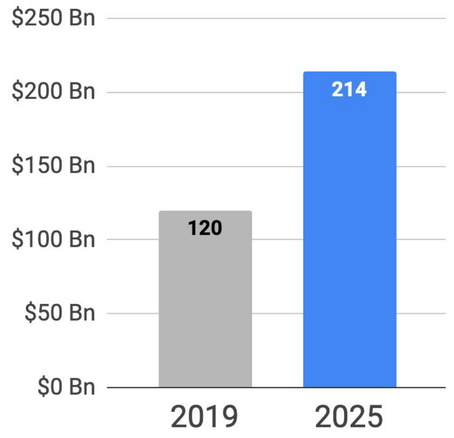
CAGR - 25,68%

Total market
Waste Management by 2025. :

$530 billion

Source: Industry Research,
Global Market Insights

Smart Infrastructure



CAGR - 10,16%

Total market
Smart City by 2025.

$1,560 billion

Source: Frost & Sullivan

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Formation of a new sphere - the Internet of bins

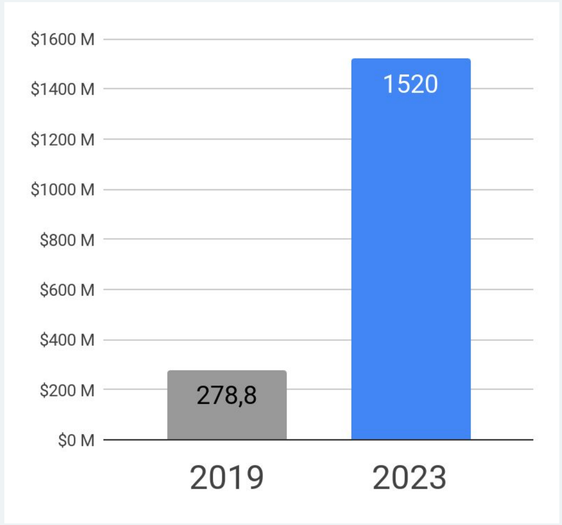
More than 2 billion tons of MSW are generated annually in the world, while only a third of them are processed in an environmentally friendly manner. The share of Russia in this stream is more than 70 million tons, of which only 5% goes for processing, and the rest is sent to landfills or burned.

The annual global volume of MSW will increase by 70% by 2050, but the cities where more than half of humanity live and account for more than 80% of world GDP, mainly
still do not have adequate systems for managing the waste disposal of citizens.

Currently, there is no global brand, technology or company offering a full cycle of digital solutions for managing the collection and disposal of municipal waste, this sector is developing and is still far from consolidation.

This has become one of the prerequisites for independent developers to form a separate niche for the technologies and systems for the intellectual collection and management of containers for MSW - The Internet of Bins.

Internet of bins



CAGR - 52,8%

Source: Frost & Sullivan

The market for solutions in the field of intelligent monitoring and management systems for MSW containers is showing high growth, as developments in this area are becoming more popular and at the same time receive active support in the media and among the population.

Therefore, solution developers have the opportunity to successfully promote their products not only among commercial enterprises, but also at the city and state levels.

Smart MSW management enables to reduce:

financial costs of waste collection, removal and disposal

natural resource management costs and energy consumption

harmful emissions

territories allocated for landfills

Public Waste Management Issues

01 The possibility of spontaneous overflow due to the inability to control the filling level of dustbins

02 Low sanitary condition, access of rodents; weather exposure

03 High labor costs for maintenance of bins and irrational use of special equipment

04 Outdated, unpresentable appearance of most dustbins

05 Opacity of the waste management system

Solution - Binology Complex

SmartCity Bin

- Container fill level measurement
- Automatic waste compaction as filling
- Separate collection of MSW
- Modern appearance and space-saving design
- Intelligent control depending on environmental parameters

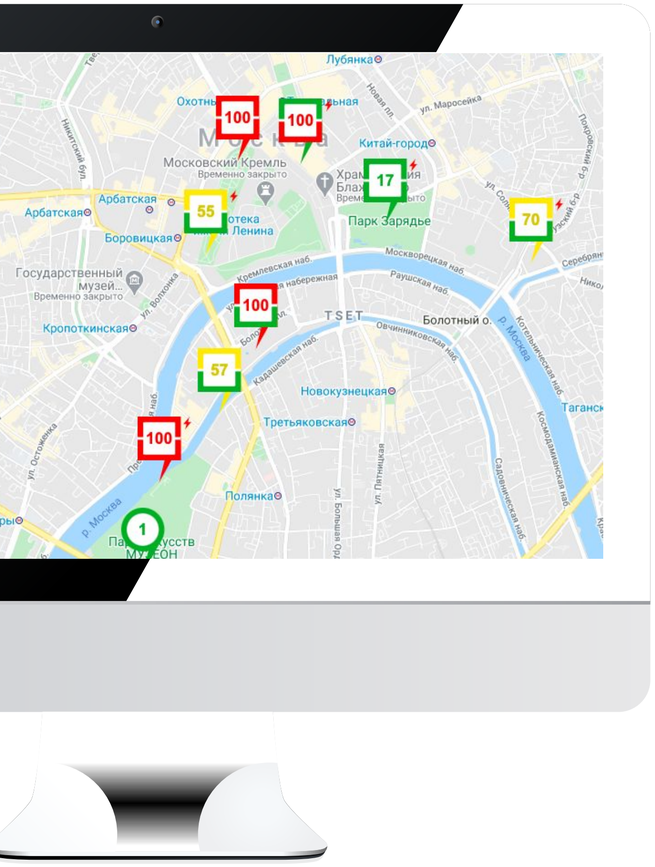
SmartCity Management Cloud-Based Software (SaaS)

- Containers transmit data data to SmartCity Management
- The operator performs online monitoring of container parameters
- Based on data from containers and environmental information, forecasts and optimal tasks for carriers and personnel are generated

Mobile app

- Transport routes are built on the base of tasks prepared by the system, also taking the traffic situation into account
- Drivers and maintenance staff receive a task on a tablet or smartphone

Binology SmartCity Management software and Binology mobile app



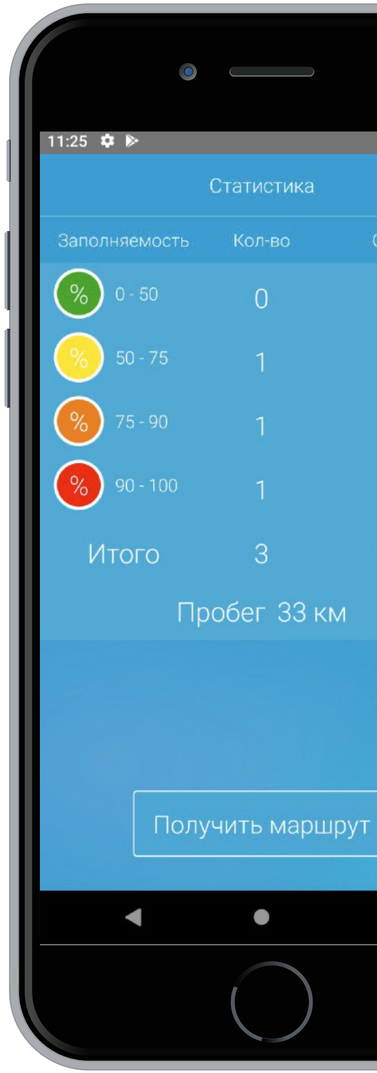
Detailed information about the status of each container: fill level, battery charge, weather station indicators, etc.

The accumulation of "big data" enables to predict the filling of containers and optimize waste management processes, generate the necessary reports

The operator monitors the availability of drivers and plans their work schedule.

The driver can note the detected malfunctions and initiate their elimination.

The operator monitors work done by the drivers and generates relevant reports



Lineup of Containers

Binology SmartCity Bin 120

Container with a press compactor for unsorted waste

Binology SmartCity Separation Station 2/3

Separate collection station with a press compactor for unsorted waste and one / two additional containers for recycled materials

Binology SmartCity Bin 120 / Separation Station 2/3 Lightbox

Container (s) with a press compactor for unsorted waste and secondary raw materials, equipped with (e) lightboxes for advertising posters with LED-backlight

Binology SmartCity Bin 120 Indoor TV

Container with a press compactor for unsorted waste, equipped with two Full HD advertising video panels with remote content management

Target segments and placements

Residential complexes and areas

Recreational areas - parks, squares, public gardens

Public transport stops, metro stations

Business centers and shopping malls

Transport hubs, airports, railway stations

HORECA

Streets with large pedestrian traffic

Industrial enterprises and gas stations

Educational institutions, schools, universities and campuses

Medical facilities, hospitals

Smart container as street format advertising medium

annual income

up to 30%

from the container cost

Smart containers are installed in public places with increased pedestrian traffic and solve the problem of shortage of advertising surfaces.

The annual income from advertising on one container can be up to 30% of the cost of the container (depending on the price of advertising
in the region of installation).

Authorities and owners of territories are interested in the economically feasible implementation of technologies to optimize the processes associated with MSW. Therefore, containers, in addition to their main function, justifiably become new and profitable advertising carriers, due to which it is possible not only to reduce the payback period of projects, but also to receive constant additional income in the future.

- Painting in any RAL color
- Pasting with street vinyl film on four sides

- Built-in Lightboxes
- Built-in professional video panels and sound speakers

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Effect of the implementation

The payback period of projects on Binology solutions

from 2 to 5 years

depending on the country / region

Ecology

50-90%

the share of recovered secondary raw materials in the MSW stream

to 80%

reduction of waste to be disposed of at landfills

use of solar energy as a power source

CO2 reduction

separate collection and formation of environmental culture, improving the sanitary and environmental conditions of facilities and improving the quality of life of people

Smart city

70-90%

reduction of MSW disposal costs

Earnings from the sale of recycled materials and advertising

transparent system for monitoring and managing primary collection of MSW

Big Data, including collecting data on environmental parameters, air quality, pedestrian traffic, etc.

modern appearance of the bin and hermetic waste storage

Competitive advantages

- Lower total cost of ownership
- Intelligent Press Compactor Management System
- Easy integration into existing waste collection processes through the use of a standard wheelie bin
- Increased structural strength, more wear-resistant pressing technology
- Preventing trash placing
  solar panel
- The garbage collector holds more overall household waste
- Unique non-contact and secure waste disposal mechanism

Binology Technologies on state level

(on the example of the creation of the Operator of an intelligent waste collection system together with the Russian Ecological Operator)

Direct economic benefits for the State:

- Reduced waste collection and disposal costs
- Reducing the amount of waste disposed in landfills
- Decreasing number of trips of garbage collecting vehicles
- Additional income from taxes on profits, property and advertising
- The possibility of selling recycled materials
- Increasing the effectiveness of the mechanism of extended responsibility of manufacturers
- Implementation of the key parameters set by the government
- The development of the digital economy and smart cities

Organizer

- subsidizing the project from the budget and compensating the interest rate for the Operator that incurs capital costs;
- Involvement of Enterprises in the mechanism of Extended Producer Responsibility (EPR);
- solving organizational issues and information support in the media.

Operator

- purchase and installation of containers;
- ensuring the functioning of containers and software;
- attracting enterprises to participate in the project;
- repayment of the subsidy, including by receiving payment from the enterprises for advertising on containers.

Country State

- coordination of the placement of containers in places with large pedestrian traffic;
- ensuring the collection and delivery of collected waste and secondary raw materials;
- conclusion of an agreement with the Operator for a period of at least 5 years.

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-production of the required number of containers;
- software implementation and training;
- warranty and after-sales service.

Recycling Plant

- placement of advertising of own products on containers and the introduction of recycled materials collected from them **in exchange for reducing the paid environmental tax** while fulfilling the standard for waste disposal (ensuring the requirements of the EPR - Extended Producer Responsibility).

The Team

Alexey Kondrashov
Director of Business Development

Over 12 years of experience in business development. An expert in the field of building affiliate networks and sales of specialized IT solutions.
Education: Ural Federal University

Vladimir Turkin
Founder, investor

Serial entrepreneur
An expert in waste management with industry expertise of over 8 years. Member of projects optimizing waste management systems for large enterprises of the Russian Federation.
Education: Lomonosov Moscow State University

Alexander Skrylev
CDO

An expert in the field of computer-aided design, a certified specialist in CAD SolidWorks.
Experience in managing the complete product life cycle for Roscosmos
Education: MSTU Bauman

Raigedas Pocius
COO

More than 15 years of leadership in research and production enterprises.
Experience in the production of equipment and electronics full cycle.
Education: Moscow State University of Instrument Engineering and Computer Science

Andrey Malay
Founder, investor

Serial entrepreneur, venture investor. Over 15 years of experience in business, including the creation and development of international companies in the field of high technology.
Education: Lomonosov Moscow State University

Daniel Ivanov
CTO

Expert in the implementation of highly loaded web-based IT systems, certified specialist in Angular / React, ITPM, Web / IT Security
Education: MSTU Bauman

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