

WASTE MANAGEMENT INDUSTRY SHOULD GET OUT OF THE COMFORT ZONE

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This article touches upon the issue of breakthrough directions in a booming industry of waste management. The article is primarily addressed to managers, as well as to professionals and concerned people. The author focuses on the problems of the end-to-end process of household waste disposal and the role of the *Competence Center* in the process of developing and implementing solutions for the industry.

It has become evident nowadays that the new waste management industry formed as a result of the reforms faces complex challenges, the solution of which requires large intellectual, organizational and financial investments from the market participants. Leaders have already entered the struggle for advantages in the process of the inevitably approaching phase of asset consolidation of the industry.

The new requirements are dictated by the society. People are critical about the cost, quality and methods of waste disposal. There are still small “gaps” owing to the heterogeneous and controversial nature of the views of different groups of the population on the problem. However, these “gaps” are rapidly declining due to the influence of the press, environmental

activists, youth movements and political parties.

The processes and tariff policy of the industry are under close control of the government, governors and local administrations and are exposed to a tendency to tighten, despite the apparent reduction of tension from the beginning of the reforms. Moreover, the industry model (formation of vertically integrated or functional operators) is still volatile. At the same time, everyone relies on a positive result, but everyone understands it in his own manner.

ANALYSIS OF THE CURRENT SITUATION

A comprehensive analysis of the governmental policy, the current situation in the industry, as well as public sentiment allows us to draw the following

conclusions about the optimal way of reform development. It is necessary:

- to unite the forces of industry leaders, the Russian Environmental Operator (REO), technology leaders, financial and development institutions to elaborate a promising end-to-end solution for dealing with MSW;
- to combine foreign and domestic solutions to diversify risks and reduce capital expenditure;
- to join the development and approval of a strategy for separate waste collection;
- to organize industry expertise and consolidate the resources of IT companies for the development of a specialized industry ERP solution and management system;
- to develop and implement quality standards for operators;

- to organize training of skilled personnel for the industry.

At the same time, it is necessary to take into account the experience of leading countries, current trends and requirements of the society, as well as the regional characteristics of the constituent entities of the Russian Federation, in order to prevent the dispersion of resources and forces of the expert community, to develop key solutions, while maintaining healthy and productive competition.

Such approach to the question requires mutual trust and coherence of the actions of large players, development institutions, technology partners, investors, the expert community, and state representatives.

KEY PROBLEMS, CONTRADICTIONS AND SOLUTIONS

Lately, the vision of problems and contradictions in the field of waste management and the corresponding priorities of the industry are changing rapidly.



Competence Center
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SWOT analysis

current state of the waste management industry

<p style="text-align: center;">Strengths</p> <ul style="list-style-type: none"> • Positive attitude of the society • Interest of the State • Advantage of a catching-up party 	<p style="text-align: center;">Weaknesses</p> <ul style="list-style-type: none"> • Dominance of old technologies • Lack of expertise and staff • Debt overburden of the company
<p style="text-align: center;">Opportunities</p> <ul style="list-style-type: none"> • Join forces of leading players • Skip intermediate stages • Attract external investors 	<p style="text-align: center;">Threats</p> <ul style="list-style-type: none"> • Loss of public trust • The unprofitability of new technologies • Reduced tariffs

Therefore, the flagship solutions for burning residues of MSW processing with the subsequent use of the received energy, which were recently regarded as a model to be followed, now do not seem flawless. It turned out that ensuring the required purity of emissions to the atmosphere is expensive, and the relevant standards are not always adhered to.

An alternative promising method of heat treatment using pyrolysis cannot yet replace waste incinerators due to the high-quality requirements for the input of MSW and the low productivity of the pyrolysis plants.

The solution of the problem of efficient use of waste as a source of secondary raw materials is confined to the organization of the process of separate collection, which requires changes in the urban environment, logistics, legislation and behavior of the population. Sorting technology also falls within the scope of this topic, its crucial problem is the elimination of harmful and dangerous impurities from the general stream. At first sight, both tasks successfully complement each other. However, with a simultaneous and uncoordinated implementation, they compete and reduce the overall efficiency of the operational process.

Digital technologies (stationary and mobile devices for separate col-

lection of garbage on a commercial basis with a benefit for the customer) are preparing to break into the separate collection process. Their implementation will completely turn upside down the current foundations of the industry, at least in large cities.

The production technologies of RDF (refuse derived fuel), an alternative fuel produced from sorted waste, which looks like a promising and safe source of energy, for example, for cement plant kilns, stand apart. At this point all contradictions and problems overlap: sorting (selection of the useful and removal of the harmful part), preparation (humidity and fraction size), logistics (storage and delivery), benefits and costs of the consumer (for the use of fuel, the kilns must be properly equipped).

The use of RDF for cement plants is a technological and organizational challenge that must be addressed by at least three parties, each within the framework of its own interest: the operator (waste disposal), the plant (alternative fuel) and the authorities (reduction of landfills).

In general, the development and modernization of the industry requires significant investments that cannot be made by the operating companies at their own expense.

According to experts' estimates, to transfer the industry from its cur-

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"Heat production and electricity from MSW is a very costly process that does not compete for payback with gas or liquid fuel"

rent state – with a processing share of 5–10%, to the next stage – with a processing share of 80–90%, an investment of about 3 billion rubles for 1 million tons of MSW per year will be required. The funds will be required for the modernization of landfills, complexes for sorting and processing secondary raw materials, thermal processing complexes, for modernization and automation of operational processes.

With the current level of tariffs, operational profitability and requirements for waste disposal quality, the return on investment in the industry is at intermediate level with a downward trend. This negative trend can be broken only by increasing the profitability of processes, ensuring the depth and quality of waste processing, as well as further consolidating the assets of the industry (consolidating operators by reducing their number).

The continuing uncertainty of the model for the further construction of the industry and place for full-cycle and functional companies (waste incinerators, recyclers, logistics companies, etc.) also hampers the development of the industry.

These problems are affected by regional peculiarities, public readiness for changes and economic constraints, which further complicates the choice of a promising solution and



E. Povolotskaya,
CEO of MSK-NT

“To finance the company’s transition to a processing depth of 90% and an operational profitability of 40%, a strong financial partner is required”

repeats the formula “We wanted the best, you know the rest”.

The introduction of promising technologies and leadership solutions will allow operator companies to take a leading position in the industry and gain an advantage in the process of consolidating the assets of the indus-

try due to the availability of replicable technologies that will meet the needs of society, attract investors and meet banks’ requirements to the quality of assets for project financing.

The difficulty and complexity of the task, the need to act on cutting edge of technology, the need for cooperation and partnership with market participants and society, financial constraints and tight deadlines – all this looks like an extraordinary task, which requires high tension of forces and leaving the comfort zone.

THE COMPETENCE CENTER, LOOKING AHEAD

Joint Stock Company *Competence Center for Waste Management Solutions – Research* was created especially for solving tasks set by the industry, finding the best technological, organizational, financial and information solutions in the field of waste management, assisting in their promotion on the Russian market in partnership with leading participants and stakeholders.

Current projects of the *Competence Center*:

- end-to-end solution with a processing depth of 95% and an operational profitability of 40%;
- separate garbage collection using digital technologies;
- integrated control system of automation for the operator;
- sectoral environmental laboratory;
- sectoral rating of operators.

The methodology of the *Competence Center* is based on attracting the best industry experts to develop key solutions, creating effective technological and financial partnerships for the benefit of a group of customers, collaborating with system participants and technology leaders of the industry (*REO, ROSATOM, IBM* and etc.), in this connection the *Center* is open for cooperation with all interested parties.

The technology leader of the industry, *MSK-NT* and the flagship of the industry, the *Hartiya* Company, basically share the ideas described above and agree that all participants are at the beginning of a long and difficult journey. We wish them success! ♻️

Leadership solutions for analysis, development and implementation

№	Problem	Promising technological solutions
1	End-to-end solution	Create an end-to-end process of waste recycling depth up to 95% with access to own processing of recycled materials, production of RDF, autonomous power supply (pyrolysis fuel) and centralized management with an operational profitability of 40%
2	Pyrolysis	Increase plant productivity and adapt to morphology of MSW
3	RDF	Ensure the quality of sorting and the process of preparing fuel with your own energy by burning or pyrolysis of part of RDF
4	Separate collection	Implement digital devices and technologies for separate collection at the level of households, urban infrastructure and individual consumers on a commercial basis