

PARTNERING WITH YOU FOR GROWTH

Waste- to-energy consulting





The strength of experience

When you choose Konecranes, you get access to a trusted source of global experience and knowledge combined with local know-how to improve your lifting operations and increase your safety and productivity. Renewable energy provides some of the most challenging crane applications. The scale, ambition

and complexity of today's waste-to-energy (WtE) manufacturing can be truly breathtaking. Facilities are getting bigger, output capacity is growing, customization is becoming more complex and a fully integrated real-time project is still in the future.

COMPREHENSIVE KNOWLEDGE OF WTE INDUSTRY

We understand that in modern WtE plants, all systems should be aligned for continuous operation at maximum efficiency from the arrival of waste to its incineration and load out of slag by product.

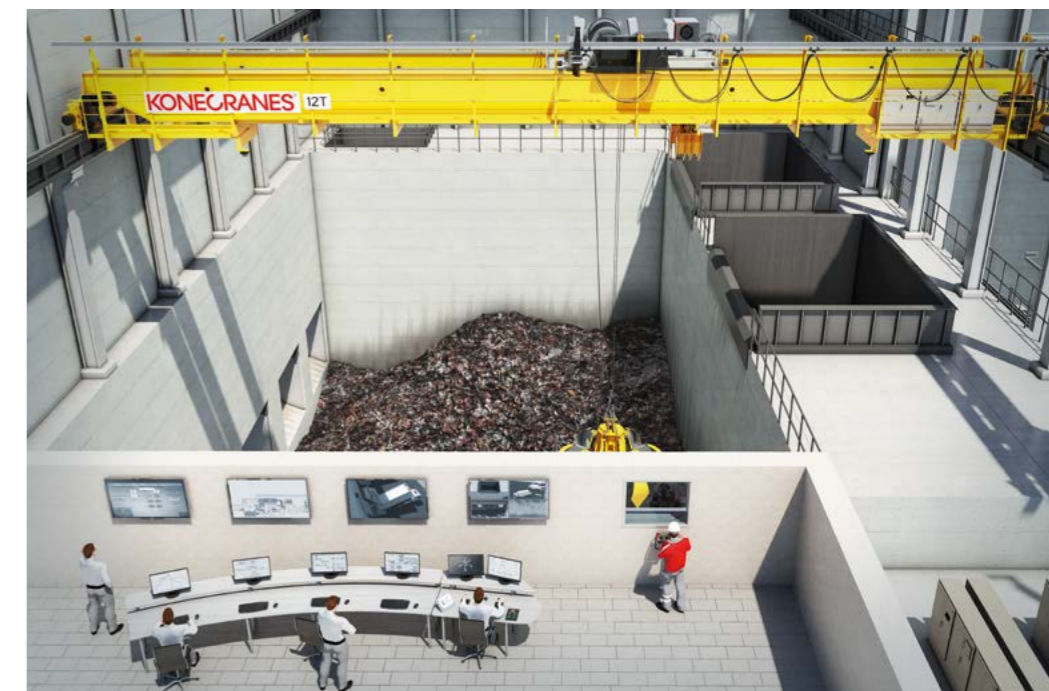
Consulting Expertise that makes a difference

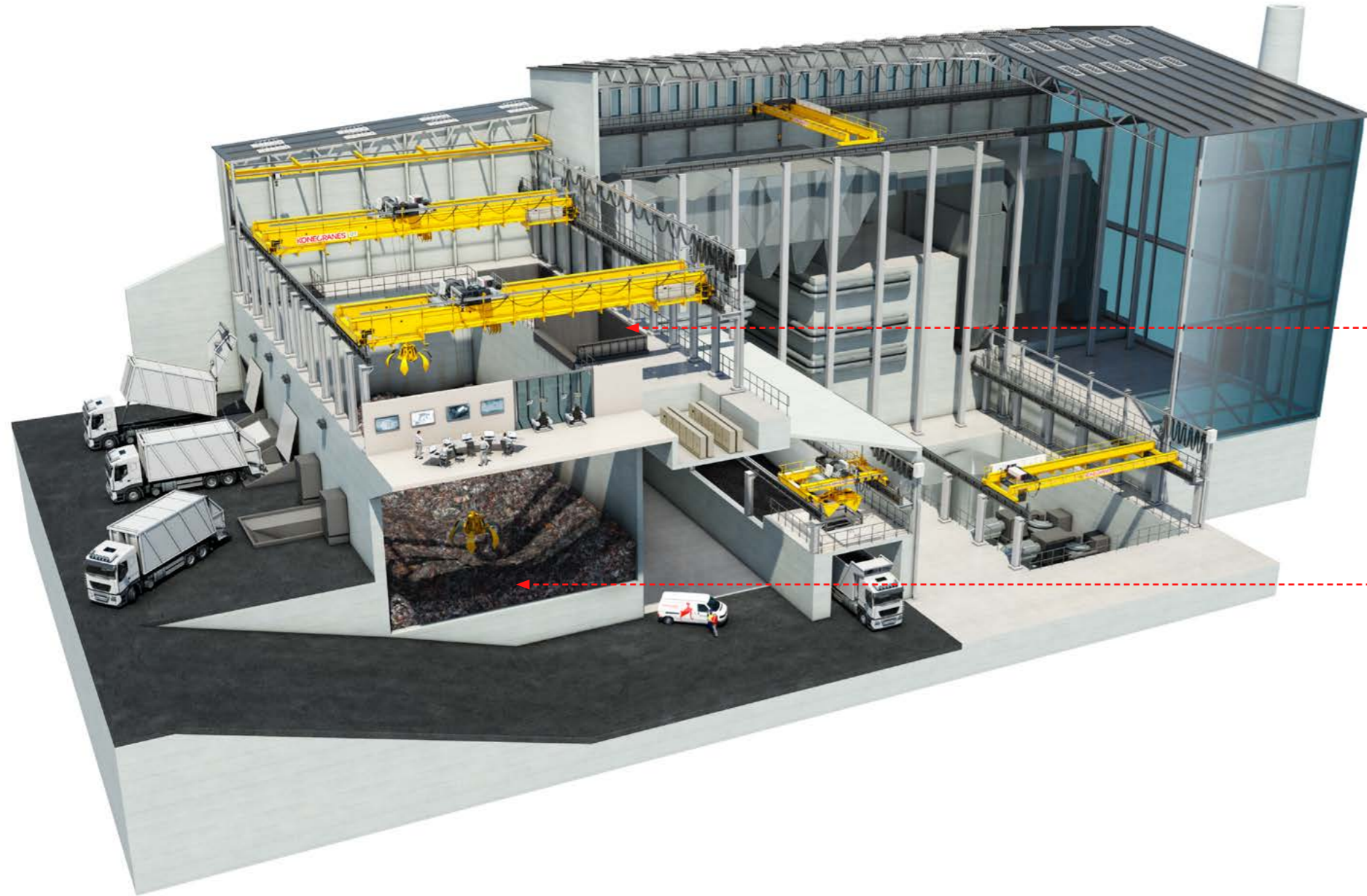
Konecranes has been meeting the rigorous demands of WtE solutions for over 50 years. We combine our long background in the industry with proven expertise and align the right professionals with the appropriate process knowledge, technological skill and hands-on site experience to provide comprehensive solutions designed help you adapt and thrive in the rapidly changing WtE industry.

To be able to quickly adapt in this fast-changing environment, Konecranes waste-to-energy consulting can help simplify and guide complex decision making. We help accelerate building an at-scale WtE facility and take advantage of economies of scale. This could benefit you by providing exposure to cutting-edge technological capabilities and to economies of scale in capital expenditures and fixed cost.

WtE Consulting helps optimize your operations

By working with Konecranes from the start of your project, we can help you to optimize your layout, throughput, and your material handling equipment. Our patented simulation software tool can run simulations specific to your plant to help you to make the best decisions for your material handling needs. Using our industry-leading expertise, we help you to understand how each action impacts your operations and design the most suitable solution with the best possible performance in compliance with industry standards.





STRUCTURAL BENEFITS

- Hopper location and dimensions
- Bunker dimensions
- Grab size
- Optimization of building dimensions and loading

OPERATIONAL OUTPUTS

- Truck arrival pattern
- Feeding cycles
- Average effective grab contents
- Crane load and idle time
- Stacking pattern
- Mixing pattern

MAIN BENEFITS

- Complete overview of operation
- Optimization of tipping bays and equipment sizing
- Material inventory planning and storage
- Prediction of crane lifetime based on simulation output and plant design requirements
- Evaluation of material mixing options

Simulation becomes reality

A good simulation gives you the ability to test a new design without the expense of adapting your current facility or building a new one. Simulation study can help to assess different specifications for waste-to-energy cranes for the planned or existing waste-to-energy facility simulation model.

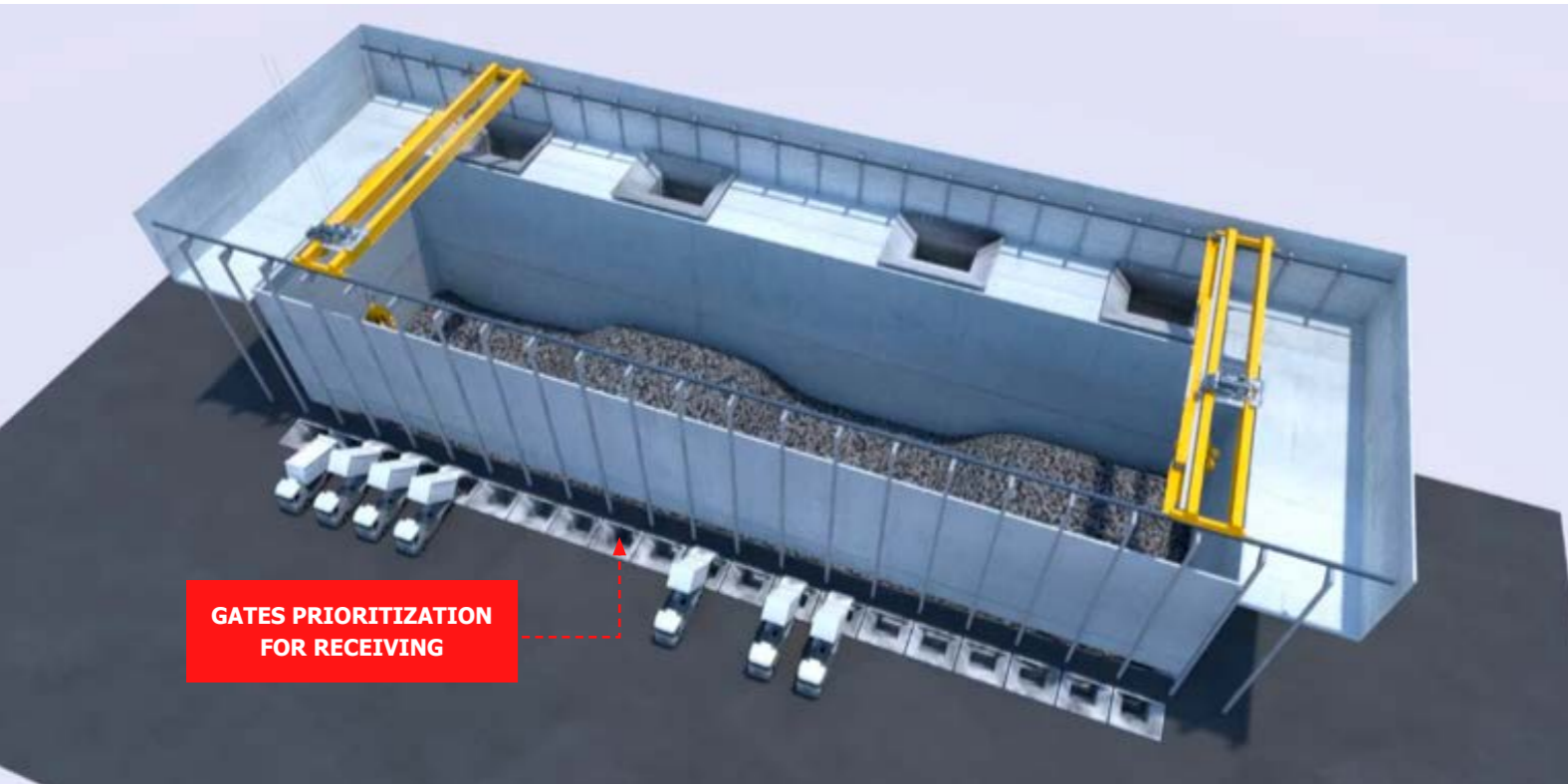
Our WtE simulation provides a complete view of your operation and makes it easy for you to adopt the right strategy while you are still planning your facility. Not only will it help you to optimize your operations, its data will provide a road map to minimize the cost of your downtime and give your facility a long and productive lifecycle.

This study will provide quantitative results showing

- How well the cranes can perform during peak workload enabling a fair comparison and support making a choice between them.
- Two or three different waste density results.
- Accurate crane movements, truck arrivals, and hopper waste level reduction.

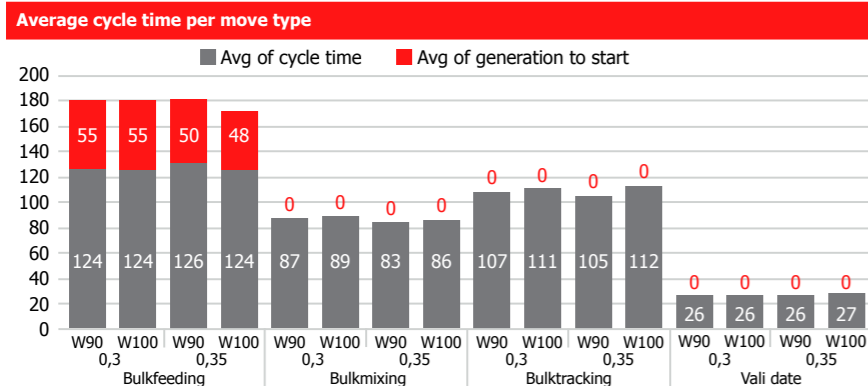
KPI	W90 – 0.30 ton/m³	W100 – 0.30 ton/m³	W90 – 0.35 ton/m³	W100 – 0.35 ton/m³
Idle time	7.2 %	9.3 %	9.4 %	14.1 %
Average number of times that a piece of waste is mixed	1.63 %	1.90 %	1.94 %	2.45 %
Dumped waste stacked before 18:00	91 %	97 %	97 %	100 %
Number of tipping bays full (closed) 16h–17h	0.68	0.13	0.06	0.01
Lifetime (years) (with 1.63 mixing ratio for all)	5.3	5.9	5.7	6.8

*The data provided is only for indicative purposes as the real value changes with parameters selected.



Improve workflow and cost-efficiency of your processes

We try to define the safest and most efficient workflow using our understanding of how to transform waste into energy and demonstrate this with our unique simulation tool. The result will help you to achieve maximum optimization. At the same time, we identify opportunities that will improve your cost-performance ratio. Our main goal is to simplify complexity for demanding WtE applications in the toughest operating environments.



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Why choose Konecranes?

Konecranes equipment is at work everywhere, in almost every process of the WtE industry. Our long history in the lifting business, coupled with extensive knowledge of modern crane technology and WtE processes, makes us particularly able to satisfy the demands of this field.

We have the skills and resources to provide advanced solutions built on excellent products, and a localized maintenance contract that completes a sound and safe investment. Our customers know us as a partner with a clear vision that helps them succeed. The reason for our own long-term success is that we deliver on all these things, with the lowest possible cost of ownership.

TECHNOLOGY

We understand how lifting technology is critical throughout waste-to-energy processes. Our long years of experience and continuous investment in industry-led R&D drive our innovation.

EXPERTISE

With their in-depth knowledge of WtE, Konecranes technical and service teams constantly strive to meet your lifting needs.

PEOPLE

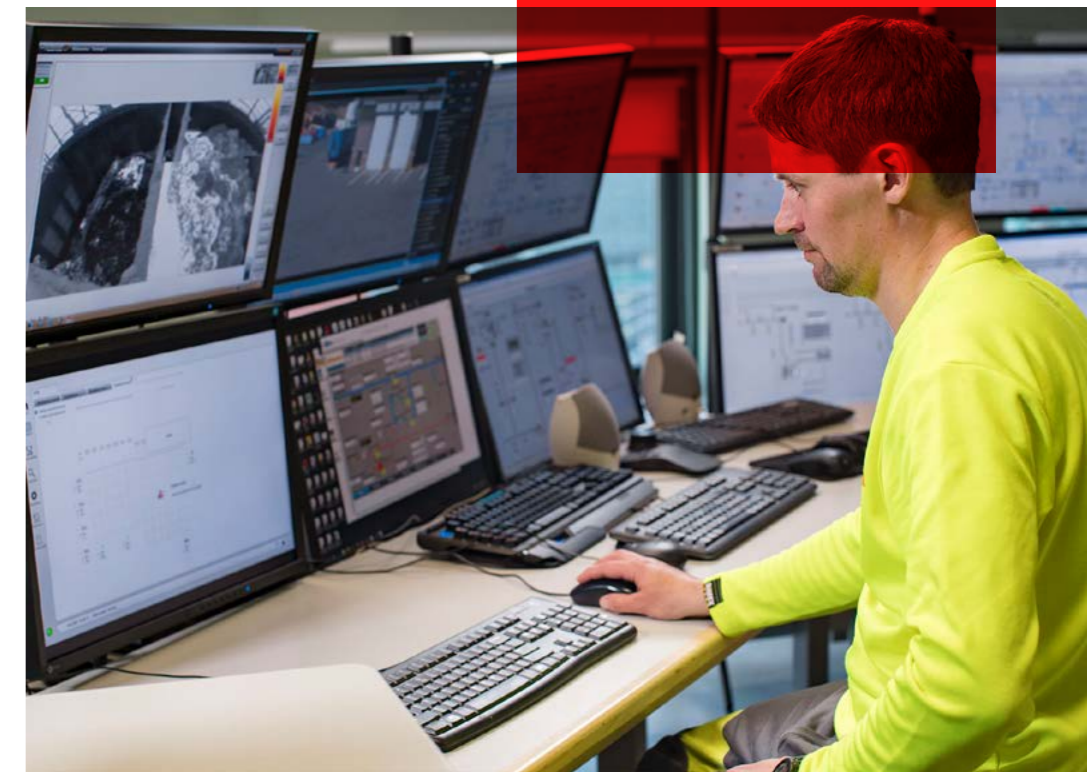
Our teams are strong because they are made of strong individuals – passionate, highly trained and motivated to serve customers. They want to be the best in the business.

SAFETY

At Konecranes, we recognize your importance and we realize your urgency. But we always take the time to do our work safely and correctly.

TEST WTE SOLUTIONS FOR YOUR PLANT

- Customizable options and advanced features provide you with the flexibility you need for the unique conditions at your site.
- Automated and expandable, the simulation tool provides you with a realistic picture of possible plant operations.



Konecranes is a world-leading group of Lifting Businesses™, serving a broad range of customers, including manufacturing and process industries, shipyards, ports and terminals. Konecranes provides productivity enhancing lifting solutions as well as services for lifting equipment of all makes. In 2019, Group sales totaled EUR 3.33 billion. Including MHE-Demag, the Group has around 18,000 employees in 50 countries. Konecranes shares are listed on the Nasdaq Helsinki (symbol: KCR).

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