

Hitachi Zosen
INOVA

Waste is our Energy
Hitachi Zosen Inova



Waste is our Energy.
Engineering is our Business.
Sustainable Solutions are our Mission.

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Hitachi Zosen Inova

We Build Turnkey EfW Plants with Our Own Technologies

Swiss clean-tech company Hitachi Zosen Inova (HZI) is a global technology leader for energy and material recovery from MSW, RDF, and organic waste. HZI acts as an engineering, procurement, and construction (EPC) contractor delivering complete turnkey plants. Our solutions are based on efficient and environmentally sound in-house technology, are thoroughly tested, can be flexibly adapted to user requirements, and cover the entire plant life cycle. HZI's portfolio is rounded off with strong operation and maintenance (O&M) capabilities.

HZI's customers range from experienced waste management companies and municipalities to up-and-coming partners in new markets worldwide. Our innovative and reliable solutions for grate combustion, anaerobic digestion, flue gas treatment, and material and energy recovery have been part of over 600 reference projects delivered since 1933.

Waste – A Global Challenge We Take On



More Waste

The amount of waste worldwide is growing faster than the global population, with the production of municipal solid waste set to rise from 1.4 billion tons at present to 2.2 billion tons by 2025.

Less Landfill Capacity

A lack of landfill capacity, the negative environmental impact, urban hygiene, increasing costs, and tighter regulations require alternative solutions.

Demand for Energy and Resources

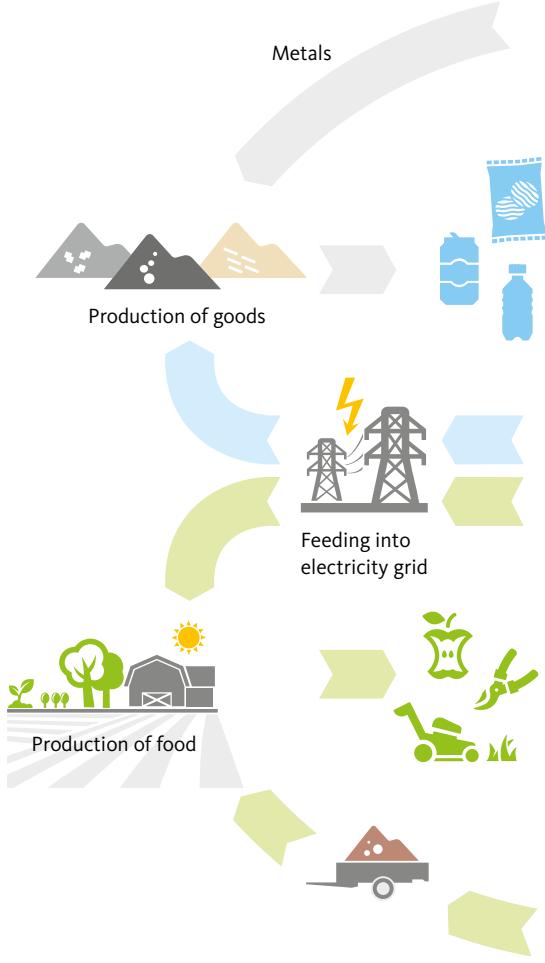
As natural resources become scarcer, the recovery of energy and raw materials from waste becomes more important.

Away from Landfill...

Landfills account for eight percent of the total greenhouse gas emissions. The negative impact on human habitat and the environment would be substantially reduced by replacing landfills. Landfill taxes and bans are supporting changes in waste management.

...to a Circular Economy.

Separate collection of direct recyclables and organic waste allows for material and energy recovery. Thermal treatment is used to recover energy and material from waste that cannot be recycled directly.



“Converting non-recyclable waste materials into electricity and heat generates a renewable energy source and reduces carbon emissions by offsetting the need for energy from fossil sources and reduces methane generation from landfills.“

| The United States Environmental Protection Agency

Material Recycling



Energy Recovery



Organic Recycling

Collection, Separation...

The first steps of a sustainable waste management system are the reduction and complete collection of waste, as well as the separation of waste fractions that have a market value for recycling.

...and Energy from Waste ...

Recovery of materials and energy from waste using thermal and biological waste treatment is an integral part of any modern waste management system focused on maximizing utilization of all resources contained in the waste and minimizing the adverse impact on society and the environment.

...Serve to Protect Human Habitat...

EfW not only decreases the volume of waste, it saves natural resources such as land and water. It also protects the air and climate because EfW plants reduce the greenhouse gases coming from landfill.

...and Ensure Sustainable Recycling.

A modern waste management system not only focuses on protecting health and the environment, it also makes maximum use of waste to reduce the exploitation of our limited natural resources. Hitachi Zosen Inova has two first-class in-house technologies for sustainable waste management aimed at bringing the world closer to a circular economy.

Hitachi Zosen Inova – Portrait



We deliver. Check our 600 references worldwide.



“Hitachi Zosen Inova’s success is characterized by the combination of a pioneering spirit, long-term technological expertise, and a global focus. This is as true today as it was in 1933.”

| Koichiro Anzai, Chairman of the HZI Supervisory Board

Pioneer in Thermal Waste Treatment

Hitachi Zosen Inova's roots go back to the foundation of “L. von Roll Aktiengesellschaft” in 1933, set up to focus on thermal waste treatment. Six years later, it delivered its first plant for the Dutch city of Dordrecht.

Emphasis on Technology

From the very beginning, the Swiss company developed proprietary and improved technologies, including the reciprocating grate, advanced methods for flue gas cleaning, and processes for the recovery of materials from residues.

Global Expansion

In 1960, Von Roll entered into a long-term license agreement with Hitachi Zosen Corporation, and opened its first offices in Germany and Japan. Subsidiaries were founded in France and Sweden in 1966, and in 1975 the company established a presence in the US. Since 2011, the renamed company and its subsidiary KRB have been part of Hitachi Zosen Corporation.

Reliability as a Commitment

As a licensee of the Von Roll technology, Hitachi Zosen Corporation implemented HZI's core technology in more than 200 energy-from-waste plants in Japan, China, and other countries throughout East Asia. Hitachi Zosen Inova and Hitachi Zosen Corporation combine the competencies of two strong partners in the EfW sector.

First-Class Waste Management Technologies and Services

In addition to the HZI grate combustion technology, the Kompogas® and BioMethan® technologies enhance Hitachi Zosen Inova's portfolio, allowing the company to extend its position as one of the world's leading providers of EfW plants and solutions. Offering both thermal and biological treatment of waste, Hitachi Zosen Inova is able to address the specific market requirements stemming from the separate collection of organic waste. HZI's portfolio is completed with HZI KRB's manufacturing capabilities and the construction and maintenance services of HZI Deutschland.

We Deliver Turnkey Plants



Engineering, Procurement and Construction

Hitachi Zosen Inova acts as a global EPC contractor for thermal and biological energy-from-waste plants. We are committed to delivering to our clients on schedule and within budget, and with a keen focus on safety and quality. We execute turnkey projects in international markets based on our wealth of experience in managing a wide range of projects, from equipment supply through to complete plant delivery.

Turnkey Plants

Hitachi Zosen Inova assumes overall responsibility for the construction of complex EfW plants. The concept and plant design for integrated solutions are based on our highly reliable technologies. Our success comes from decades of experience in planning and building turnkey plants around the world. Our turnkey capabilities cover all relevant EPC tasks, ranging from engineering to plant commissioning. Leveraging its innovative spirit and project management competence, Hitachi Zosen Inova guarantees highly efficient, forward-looking solutions that fully meet customer needs. Our project teams assure smooth project progress, timely coordination of suppliers and subcontractors, and compliance with technical, commercial, and regulatory requirements.

Health and Safety

Our health and safety strategy focuses on providing a safe and healthy working environment for all our employees and partners, with the aim of zero incidents.

Quality Management

The quality of our products and services is a key element in implementing our vision, mission, and related strategy. As quality is so essential to the success of our company, HZI introduced a comprehensive quality management system in accordance with the ISO 9001 standard back in 1992, and the system has been certified ever since.

All from a Single Provider

With us, your energy-from-waste projects are in good hands. We are capable of performing virtually any task relating to thermal and biological EfW. Our services include plant design and construction, plant operation, and maintenance and equipment servicing. We are there for you.

“Hitachi Zosen Inova is one of the major players on the market and has in house proven technologies and relevant capabilities for the supply of Turnkey EfW plants. We are operating EfW plants that Hitachi Zosen Inova has delivered as a professional and reliable EPC contractor.”

| Jean Erkès, Senior Vice President Recycling and Recovery Projects, Suez



EfW plant under construction in Zorba (Germany)





We Recover Energy and Material from MSW and RDF

Hitachi Zosen Inova's Thermal EfW Technology

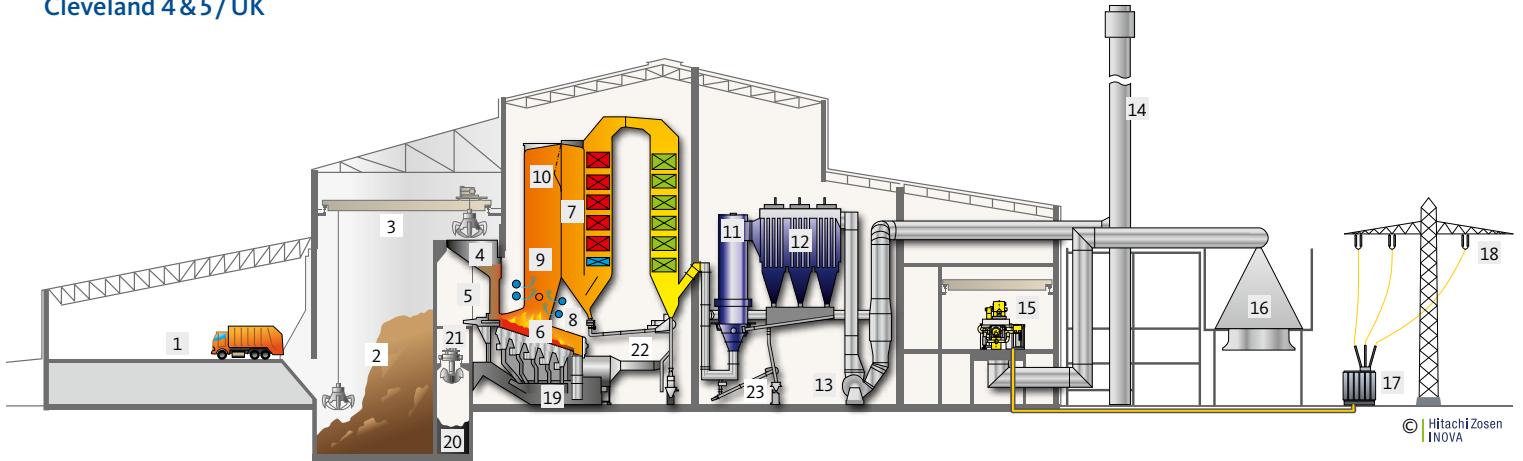
Long-term, proven EfW solution with grate combustion, energy utilization, flue gas treatment, and material recovery.



Thermal EfW: Grate Combustion



Cleveland 4&5 / UK



Waste Delivery and Storage	Combustion and Boiler	Flue Gas Treatment	Energy Recovery	Residue Handling and Treatment
1 Tipping hall	4 Feed hopper	10 SNCR injection levels	15 Extraction-condensation turbine	19 Bottom ash extractor
2 Waste pit	5 Ram feeder	11 Semi-dry reactor	16 Air cooled condenser	20 Bottom ash bunker
3 Waste crane	6 Hitachi Zosen Inova grate	12 Fabric filter	17 Trafo	21 Bottom ash crane
	7 Four pass boiler	13 Induced draft fan	18 Electricity export	22 Boiler ash conveying system
	8 Secondary air injection	14 Stack		23 Residue conveying system
	9 Start-up burner			

“Reliable, well proven technology and innovative solutions from HZI ensure highly efficient energy recovery combined with optimal material recycling, and minimize the adverse impact on the environment. We see this every day in our plant delivered by Hitachi Zosen Inova”

| Olli Alonhiemi, Managing Director, Westenergy Oy Ab

Thermal Treatment of Waste – an Efficient, Environmentally Sound Solution for Modern Cities

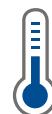
Mixed municipal solid waste or RDF from sorting plants is delivered to the site and stored in a bunker. A crane both thoroughly mixes and feeds the waste into the feed hopper. From there it is pushed onto the grate by a ram feeder. A fully integrated control system ensures stable and efficient staged combustion, and optimized burn-off loss on the grate. Upon completion of the combustion, the residual ash falls into the wet or dry bottom ash extractor, from where it can be taken to a treatment facility for metal recovery and reuse of the inert material for road construction.

The flue gases from the combustion are cleaned to strictest standards in the downstream flue gas treatment system and are continuously monitored before being released into the atmosphere via the stack.

The energy in the flue gases is used to produce superheated steam, which is expanded in a turbine generator to generate electricity. Alternatively, the heat can be used for process steam supply, or also combined with the heat from flue gas condensation for district heating purposes.

Hitachi Zosen Inova's thermal EfW plants are designed custom fit, for a big variety of heating values, throughputs, and methods of energy recovery. With HZI, you can rely on the experience we have gained in over 500 reference plants over more than 80 years, using our own technologies to deliver the highest energy efficiency and lowest residue production.

1 t of Waste



Up to 3.4 MWh heat



Up to 1.1 MWh electric power



Up to 200 kg recyclables

Thermal energy is extracted as steam or hot water, and can be converted into electricity.

Combustion Systems

Reliable Technology – Continuously Improved and Optimized

Grate combustion is the best-proven thermal waste treatment technology and has been successfully deployed in well over 1,000 plants. Thanks to continuous optimization, today's grate combustion is the most advanced technology with regard to environmental friendliness, operating reliability, flexibility, and cost effectiveness. The grate combustion technology we have developed in-house is specially designed for the thermal treatment of municipal solid waste and RDF.

Well-Proven Combustion Technology

A fully integrated control system ensures stable and efficient staged combustion, and optimized burn-off loss on the grate. The gases released from the waste in the bunker serve as primary air. Secondary air is mixed with recirculated flue gases above the grate. This assures complete combustion and lowest CO, NOx, and VOC emissions. Flue gas recirculation and low excess air enhance the energy efficiency of the plant.

Inova® Grate

The rugged construction of the grate and the heterogeneous waste fractions explain why grate combustion remains the most widespread method for thermal treatment of residual waste today. In fact, it forms the very heart of EfW plants, and is the technology of choice not only for untreated municipal and industrial wastes, but also for RDF and for pre-treated wastes.

Conveying and Stoking to Perfection

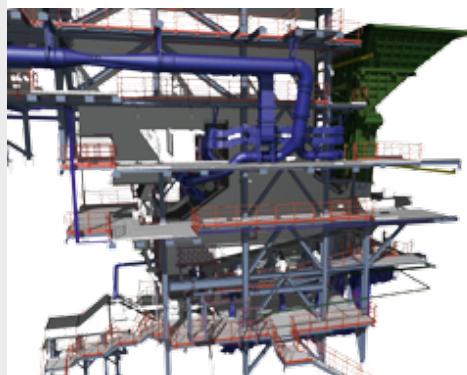
From the feed hopper the ram feeder doses the waste onto the grate in a controlled way. The grate is composed of individual grate modules with alternating fixed and moving grate block rows. The hydraulically-driven

moving grate blocks stoke the waste and convey it through the combustion chamber for optimum burn-out.

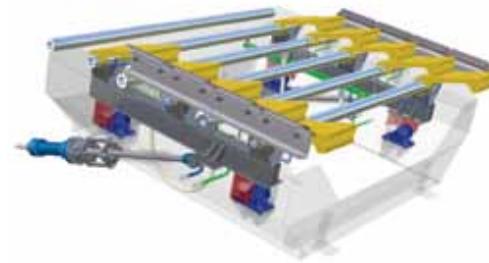
Individually Adapted Design

The number of grate modules depends on the specific throughput, the properties, and the calorific heating value of the waste. Various grate modules are assembled in rows and lines to suit each specific situation, with a capacity of between 4 and about 44 tons per hour. The air-cooled grate with its robust design has proven to be very reliable. Depending on the properties of the waste, it is the most favorable solution in terms of capital and maintenance costs. For high thermal loads with higher calorific values, water-cooled grate bars ensure optimum burn-out and an increased lifetime. They also offer a decisive advantage: In every zone, the airflow can be adjusted precisely to the combustion requirements.

HZI grate combustion



HZI grate element



Flue Gas Treatment

Clean Air Thanks to HZI Technologies

Emission limits for EfW plants are more stringent than for any other thermal power or process plant. This requires best available technologies (BAT) for pollution control. The pollutants introduced by the waste include combustion products like SO_x, NO_x, HCl, and HF, as well as substances such as heavy metals, dioxins, and dust. HZI offers a range of flue gas treatment processes that ensure complete cleaning in full accordance with the legal requirements.

Xerosorp® Dry Scrubbing – High Efficiency and Small Amounts of Residues

Our Xerosorp® process removes acidic gases by adsorption with sodium bicarbonate. In addition, activated carbon or coke can be injected for the removal of volatile organics and metals. Our Xerosorp+® process combines the advantages of the dry scrubbing process and the low temperature SCR DeNOx system for cases where highest removal efficiencies are required for fly-ash, acid gas, and NO_x. Both the dry scrubbing and the SCR DeNOx processes operate at the same temperature, thus avoiding energy and heat losses. Maximum heat can be recovered prior to and after the Xerosorp+® process.

HZI Semi Dry – Economic and Reliable

The HZI Semi Dry process employs the principle of the circulating fluidized bed for efficient removal of acid gases by adsorption with hydrated lime. Recirculation of the reagents maximizes their use and provides excess reagent to capture contaminant peaks. In addition, activated carbon or coke can be injected for the removal of volatile organics and metals.

HZI Wet Scrubber – Pollutant-Free, Step by Step

Wet scrubbing is the most effective method for removing acid gases from even heavily burdened flue gases, and

achieving lowest emission levels. The contaminants are captured by providing intensive contact between the flue gases and water, or by adjusting the pH through the addition of reagents.

HZI Condensing Scrubber – Higher Energy Efficiency

In addition to the advantages of the Wet Scrubber, the Condensing Scrubber allows for additional heat recovery by means of condensation of the water vapor contained in the flue gas. This delivers overall EfW plant energy efficiencies of up to 100% or more with the use of the heat for district heating.

DYNOR® SNCR – Efficient NO_x Removal

DYNOR® is the answer to Europe's tightened nitrogen oxide limits. Simple in design and easy to install, our non-catalytic DYNOR® process closes the gap between the costly SCR process and the conventional SNCR process. It is an investment which pays off.

HZI semi dry technology



HZI wet scrubbing technology

Xerosorp+® technology



Energy Recovery

Economical, Reliable, and Efficient

Recovering the energy content of waste is the key aspect in EfW plants. As the thermal EfW process is low in emissions and renewable to a great extent, it contributes to the reduction of greenhouse gases. The recovered energy is used in the way that best meets the needs of the client. Cogeneration, the simultaneous production of electric power and heat, offers high efficiency and maximum energy yield.

complete plant. A fully redundant system ensures safe and reliable supply of heat and power around the clock and throughout the year.

Combined Cold and Power – Feeding Public Networks

The combined cold and power plant concept allows the use of heat in countries where rather air conditioning is required than heating. The electricity produced by the generator is fed into a public electricity network. Part of the steam is extracted from the turbine at a higher pressure. It drives an adsorption chiller that converts the heat into cold water, which reaches the consumers via a district cooling network.

Electric Power – Proven Base-Load Power

The electric power plant concept is reliable and easy to operate, and has been optimized continuously. Super-heated steam from the boiler drives a steam turbine connected to a generator. The electricity produced by the generator is fed into a public electricity network. Within the turbine, the steam expands and cools down. Thereafter it is condensed in an air or water-cooled condenser. To close the cycle, the condensate is pumped back into the boiler as feedwater and converted to steam again.



Electricity from waste

Thermal Power – District Heating or Industrial Facilities

If there is a beneficial use for heat, the steam cycle can be adjusted in various ways depending on the amount and temperature level of the required heat. The heat may be supplied directly as process steam for industrial use, or transferred as hot water to public district heating networks.

1 t of Waste



Up to 4.6 t steam



Up to 3.4 MWh heat



Up to 1.1 MWh electric power

Combined Heat and Power – Multipurpose Energy Recovery

While a higher heat demand reduces electricity production, it increases the total energy efficiency of the

Thermal energy can be converted into electricity or extracted as steam or hot water for district heating.

Material Recovery

Reusing Most Materials

Thermal waste treatment plants produce bottom ash and flue gas treatment residues which can be either reused or landfilled. The bottom ash consists mostly of non-combustible waste components such as glass, minerals or scrap metals. The volume and nature of the residues produced in the flue gas cleaning depend mainly on the composition of the waste. With an intelligent secondary treatment process, large parts of these materials are reused.

the fly ash into a leach-resistant matrix, which can then be used for construction purposes.

Effluent Treatment – Capture and Recycle Contaminants

The effluent treatment process neutralizes blowdown from wet flue gas scrubbers or from fly ash washing, and removes contaminants such as heavy metals, ammonia or persistent organic pollutants (POPs). Depending on the plant configuration, some contaminants such as mercury or zinc can be recovered for recycling. The only remaining components in the cleaned effluent are naturally occurring salts such as sodium and calcium chlorides and sulfates.

InovaRe by HZI – Efficiently Recovering Metals from Waste

Maximum metal recovery to high standards of purity, less need for landfill, and a reduced burden on the environment: InovaRe enables valuable metals to be recovered from waste. Thermal treatment in the furnace is followed by a dry discharge of bottom ash, which is then processed. This allows metals such as iron, aluminum, zinc, copper, silver, and gold, to be recovered – all while maximizing energy efficiency and without additional emissions. The high level of purity achieved by this process means large volumes of precious materials can be recovered, creating a source of substantial earnings over the long term. InovaRe also makes a major contribution to saving resources and protecting the environment.

Fly Ash Washing – Stabilization and Product Recovery

If fly ash is collected separately from bottom ash and flue gas cleaning residues, two different methods may be applied to remove or immobilize fly ash contaminants. Acid washing of fly ash using acidic scrubber blowdown removes heavy metals in a recyclable form, and produces a fly ash which can be disposed of with the bottom ash. Neutral washing is followed by solidification to condition



Metals and minerals for recycling recovered from bottom ash.

1 t of Bottom Ash:

Up to 27 kg
of aluminum



Up to 12 kg
of nonferrous heavy metals



Up to 100 kg
of ferrous metals



Up to 150 kg
of inerts



Metals and inerts for reuse recovered from bottom ash.





We Recover Energy and Material from Organic Waste

Kompogas® Biological EfW Technology

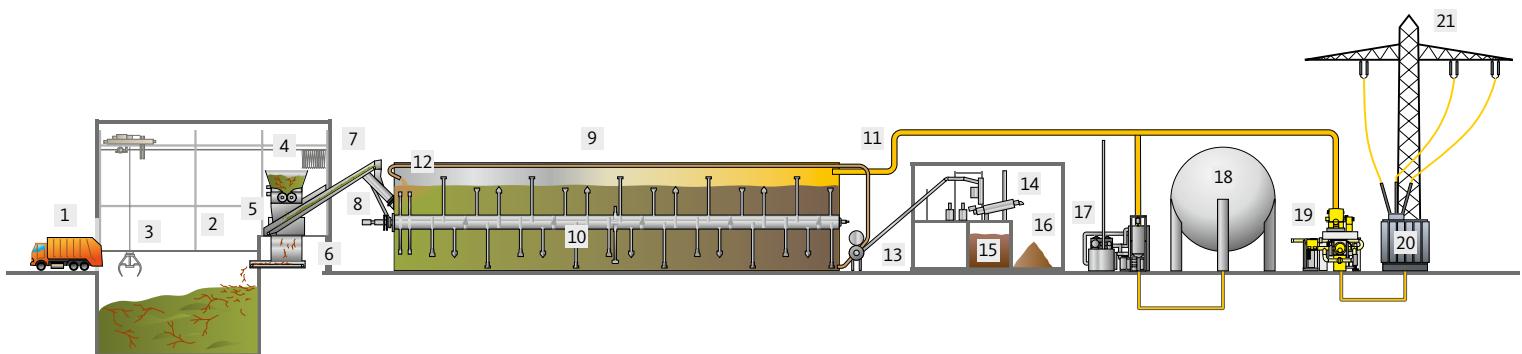
Dry fermentation with steel or concrete digesters for energy and material recovery and upgrading biogas to be fed into the natural gas grid.



Biological EfW: Kompogas® – Dry Anaerobic Digestion



Vétron Kompogas® plant / Switzerland



Waste Receiving and Storage	Anaerobic Digestion	Discharge	Energy Utilization
1 Waste receiving 2 Waste bunker 3 Waste crane 4 Shredder 5 Sieve 6 Sieve rejects 7 Conveying system 8 Feeding system 9 Digester 10 Agitator 11 Biogas pipe	12 Inoculation pipe 13 Discharge system 14 Dewatering press 15 Liquid digestate 16 Solid digestate	17 Biogas upgrading HZI BioMethan® 18 Gas storage 19 Combined heat and power plant 20 Transformer 21 Electricity export	

“The Kompogas® technology allows us to transform organic waste energetically into biogas and energy, and to recycle the waste in the form of solid and liquid fertilizer. With this technology, we are contributing to sustainable waste management in the Botarell area.”

| Hugo Urdaneta, Plant Manager, Kompogas® plant Botarell

Kompogas® is the Market and Technology Leader in Dry Fermentation Processes

The patented Kompogas® process is based on continuous dry fermentation of organic waste using a horizontal plug-flow digester. In this process the temperature in the digester is maintained at 55°Celsius. The average moisture of the fermenter's content is around 75% and the retention time is approximately 14 days. The Kompogas® process ensures that the organic waste is fully converted to biogas and that the digestate is completely sanitized. The continuous, horizontal plug-flow digester allows a high biogas yield and assures highest operating reliability thanks to simple and efficient control systems. A low-speed agitator ensures the optimum biogas conversion. The special design of the agitator paddles prevents sedimentation of heavy and undesired matter in the substrate. Fermentation involves various upstream and downstream processes. In the feed unit, the organic waste is shredded and metals and other non-digestibles are removed. A discharge pump withdraws the digestate. Around one-third is pumped back for inoculation. The rest is either dewatered to produce compost and liquid fertilizer or mixed with green waste using the liquid fertilizer free partial flow process.

The Core Component of the Patented Kompogas® Process
Our digesters are available in two series as concrete or steel digesters. Both series are equipped with the same robust agitator components and can be deployed for all input materials, bio-waste, green waste and organic elements from the general waste collection. Two, three or more digester modules can be combined to form larger plants.

Bio Gas Upgrade for Feed-in

HZI BioMethan delivers gas treatment facilities, which can also be installed as an upgrade to Kompogas® plants. Two different processes are used to separate CO₂. One of these is pressure less amine scrubbing or alternatively a pressure controlled membrane process.

1 t Organic Waste



Up to 160 Nm³ biogas



Up to 390 kWh electric power



Up to 370 kg compost

Biogas can be converted into electricity, and after upgrading it can be supplied to the natural gas grid or used as fuel for engines.





We Take Care of Your Plant

Hitachi Zosen Inova Service Group

Operation, maintenance, retrofit, manufacturing, spare parts,
and laboratory services



Hitachi Zosen Inova Service Group



Operation and Maintenance

For owners of EfW plants, the focus is on achieving maximum efficiency coupled with the highest economic benefit. HZI's clients are benefiting at the best from their invest. We work together with our clients to develop an efficient strategy that will ensure their EfW plant performs optimally in terms of availability, waste throughput, and energy recovery.

Remote support is possible with our special tool Pamela®. The plant can be monitored from our offices, giving us the full picture of all operational data. This allows us to make efficient decisions on interventions and optimizing the operating conditions. HZI's interactive training tool ITS simulates plant operations, and also covers health and safety aspects.

Retrofit

Tighter legislation and more stringent environmental and economic requirements are constantly presenting new challenges for plant owners. Together with Hitachi Zosen Inova Kraftwerkstechnik, we provide holistic solutions and the latest technologies to help tap the full potential for efficiency and performance gains at any plant. This includes modernization for

extended service life, emission reductions for maximum ecological compatibility, and increased efficiency and higher steam output through constant supervision of heat exchangers. We focus on leveraging our resources to maximize your plant's performance.



“With the retrofit on the grate, boiler, bottom ash extractor, and flue gas treatment executed by HZI, we will be able to operate our plant for another 15 years with greater energy efficiency and a higher recycling rate.”

| Romano Wild, CEO of the EfW plant in Horgen

Manufacturing

Hitachi Zosen KRB is specialized in manufacturing boilers parts and piping, and pride ourselves on maintaining long-standing partnerships with our customers. Since 1997, we have been providing products and services around thermal waste treatment to our customers in Switzerland and abroad. The spectrum includes manufacturing for steam generators, fabrication of membrane walls and tube bundles, cladding for boiler and combustion systems and constructing of standard or customized components.

Spare Parts Management

Spare parts management is complex, cost-intensive, and requires storage space. That is why it makes sense to entrust us with procuring and delivering wear components – we are quick, reliable, and experts in the field. Original spare parts are provided directly from stock. For our clients, this translates into savings in terms of expenditure and time.

Laboratory Services

HZI's laboratory is equipped to meet the demands of EfW plant operators. Our range of services is as broad as the variety of questions arising in connection with

thermal and biological waste treatment. We check compliance with emission limits and performance guarantees, measure the relevant process parameters, and carry out root cause analysis in cases of operational problems. We bring together all the relevant EfW testing and analytical methods under one roof, including sampling, measurements and analysis on site, leading to very quick turn-around times.



Hitachi Zosen Inova – Our Commitment



“What fascinates me about working at HZI is successfully tackling complex projects in interdisciplinary teams.”

| Tobias Ruchty, project lead engineer, HZI

“Thanks to the implementation of Hitachi Zosen Inova’s sophisticated HSE strategy, the incident statistics during the realization of the Renergia project were much lower than is usually the case.”

| Ruedi Kummer, CEO, Renergia Zentralschweiz AG

HZI as Employer

Our employees come first: They are the key to our outstanding solutions. We offer our highly trained and qualified employees a rewarding environment where motivation, team spirit, creative involvement, and a philosophy of leadership are all actively fostered and encouraged. We value our people, and draw our strength from their drive, their passion for engineering, consulting and project management, and their in-depth expertise and experience.

HZI as Partner

We strive to be a trusted partner to our clients and stakeholders all over the world. With over 80 years of experience our aim is not only to build thermal and biological EfW plants worldwide, but also to be a fair partner towards our stakeholder Hitachi Zosen Corporation. The HZI commitment encourages us in the daily business and makes us a reliable partner for all kind of situations.

Code of Conduct

HZI will not tolerate discrimination, conflicts of interest, bribery and corruption, insider trading, political contributions, or non-compliance with the law. HZI and its employees respect the rules of fair competition and intellectual property rights. The business assets of HZI are used carefully and protected in accordance with good business practice.

Health Safety and Environment

HZI's HSE strategic and operational focus is on providing a safe and healthy working environment for all our employees and partners. HZI respects the natural environment, and we work to minimize our negative impact on it and our use of natural resources wherever possible. Built around our value of actively caring for our people and the environment, and coupled with our aim of zero incidents, our strategy is based on three core principles: **competence, compliance, and community**.

Our HSE strategy, policies, and procedures provide orientation, but it is our actions that demonstrate how we actively care for all our employees and partners, ensuring that they return home safely to their families every day.



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