Waste Processing System

IGS
INTERNATIONAL
GARBAGE SOLUTIONS

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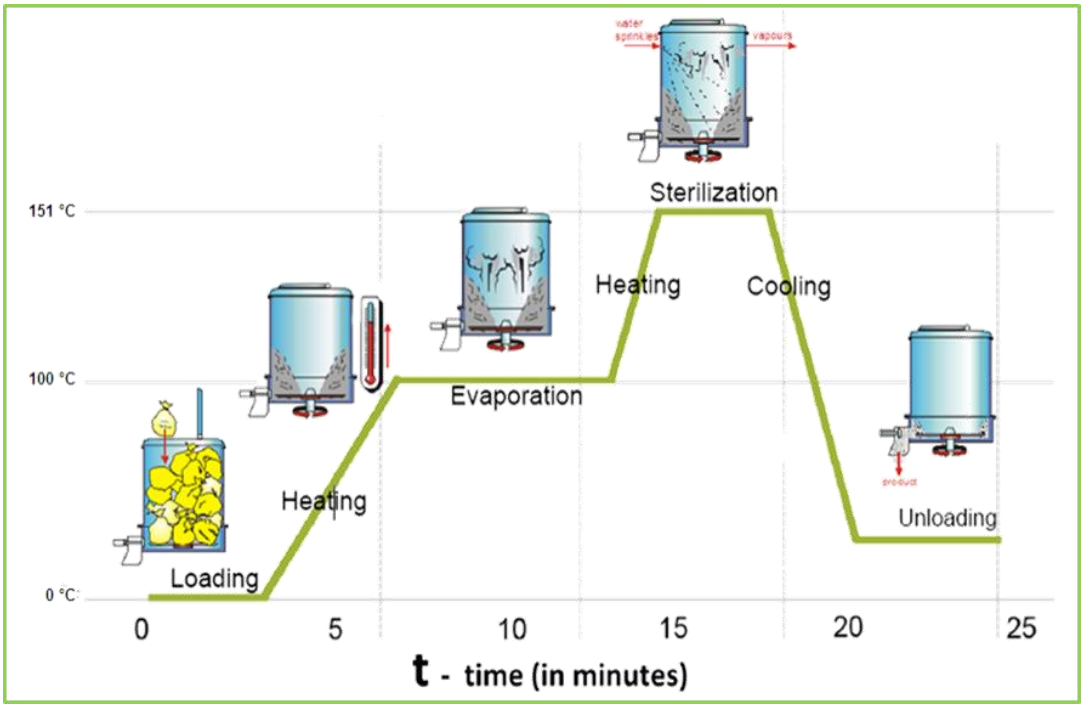
Introduction

IGS are the leading distributors of this state of the art environmental waste processing system (WPS) sold around the world to a variety of industries including oil & gas, mining, hospitals, airports, vessels, government facilities, shopping malls, military, remote islands and communities. The IGS WPS can process general household garbage, hard and soft plastics, medical waste, glass, metals, wood, fabric, paper and cardboard and food waste (organics).

The Process

The process is very simple, raw garbage, either loose or in garbage bags, is placed inside the drum of the WPS either by hand, or automatically on the larger machines, the lid of the unit then closes and seals itself forming a vacuum inside the chamber. The garbage is then macerated and crushed by the rotating blade inside the drum, the resultant friction created, causes the temperature inside the process to increase rapidly. Once the temperature reaches 100°C the moisture content of the garbage is released as steam. This steam is then drawn off from the process using a vacuum pump and is condensed back into water for either disposal into the sewerage system, used for irrigation or filtered for use in other processes. With the moisture now eliminated the temperature is able to rise which enables the waste to be sterilized using the remaining steam which destroys any bacteria and or pathogens that maybe present in the processed waste.



The sterilizing temperature is maintained at 151°C for 5 Minutes and is controlled via a heat sensing infrared water dosing system inside the chamber. The latent heat that is generated from the friction of the process now aids the final evaporation stage. The moisture is again drawn off from the contents, condensed and the product cools down naturally. The total process time is around 25 to 35 minutes depending on the moisture content of the waste. The result is dry, sterile and safe and is ready to be used as a cool dry sawdust type material known as RDF (Refuse Derived Fuel) or Organic Bio Mass compost / fertilizer depending on the waste composition at the beginning of the cycle. The condensate water is filtered and can be used for irrigation or further processed and purified. The system is fully sealed during the process and thanks to the embedded state of the art effluent treatment system and to the low processing temperatures, the WP machines can be classified as **ZEE (Zero Emissions Equipment).** The garbage has now been reduced from its original volume by up to 80% with a weight reduction (depending on original moisture content) of up to 50%. Further volume reduction (up to 60%) can be achieved by pelletizing the RDF. The process runs at a negative pressure which therefore avoids build-up of pressure inside the chamber.

Uses for RDF (Refuse Derived Fuel)

These pellets can be used as fuel, as in most cases, depending on the original garbage content they contain a high calorific value. The RDF, depending on the original garbage content, could be used in the following ways:

- To produce electricity alongside traditional sources of fuel in coal power plants
- As a fuel substitute to generate energy
- In the cement kiln industry
- In plasma arc gasification modules & pyrolysis plants
- Be used as fertilizer or combusted cleanly

Advantages & Benefits

Reductions in waste save transport and processing costs whilst reducing environmental impact.

The WPS is much more convenient than any other treatment plant not only for the cheaper disposal cost but also for its environmental and safety aspects:

Economical

- One operator can control several machines
- Reduces waste volume up to 80%
- Reduces weight of garbage by up to 50%

Safe

- No use of pressure or steam
- EC conformity
- Closed structure to avoid powder or odours
- Sterilization procedure even in case of breakdown
- Noise under law limits (65 a 80 dB)
- Protection against vibrations, shocks, fire and non-authorized access to the control panel
- Sterilization level higher than an autoclave

Convenient

- Completely automatic cycle
- Self-contained plug n play containerised design available in 10′ & 20′ DNV configurations.
- Control by means of PLC (Programmable Logic Controller)
- Remote control and assistance
- Vacuum packed allowing extended storage of up to 12 months

Clean

- NO EMISSIONS
- Opportunity to eliminate water consumption
- Air reuse
- Kills germs and harmful bacteria through sterilization process
- No smell during or after processing

Comparison Chart

	Autoclave	Incinerator	Microwave	WPS
Dry	🔴	🟢	🔴	🟢
Weight Reduction	🔴	🟢	🔴	🟢
Volume Reduction	🟢	🟢	🟢	🟢
Safety	🔴	🔴	🟢	🟢
No Civil Works	🔴	🔴	🟢	🟢
No Emission	🔴	🔴	🟢	🟢
Treatment Duration	60min	Non Stop	45min	Under 30min
Environmentally Friendly	🔴	🔴	🔴	🟢
Pressure	High	Neutral	Neutral	Low/Negative
Easy to Operate	🔴	🔴	🔴	🟢

Waste That Can Be Processed

General Household Garbage / Medical Waste / Hard and Soft Plastics / Glass / Metals / Wood / Fabric / Paper and Cardboard / Food Waste (Organics).

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WPS 2000

WPS 5000

Technical Information

The WPS is CE marked and complies with all associated standards for low tension equipment (72/392 CE,91/368 CE, 93/44 CE, 93/68 CE, 98/37 CE, 2006/42 CE).

The treatment chamber is cylindrical in design and is loaded from a vertical position.

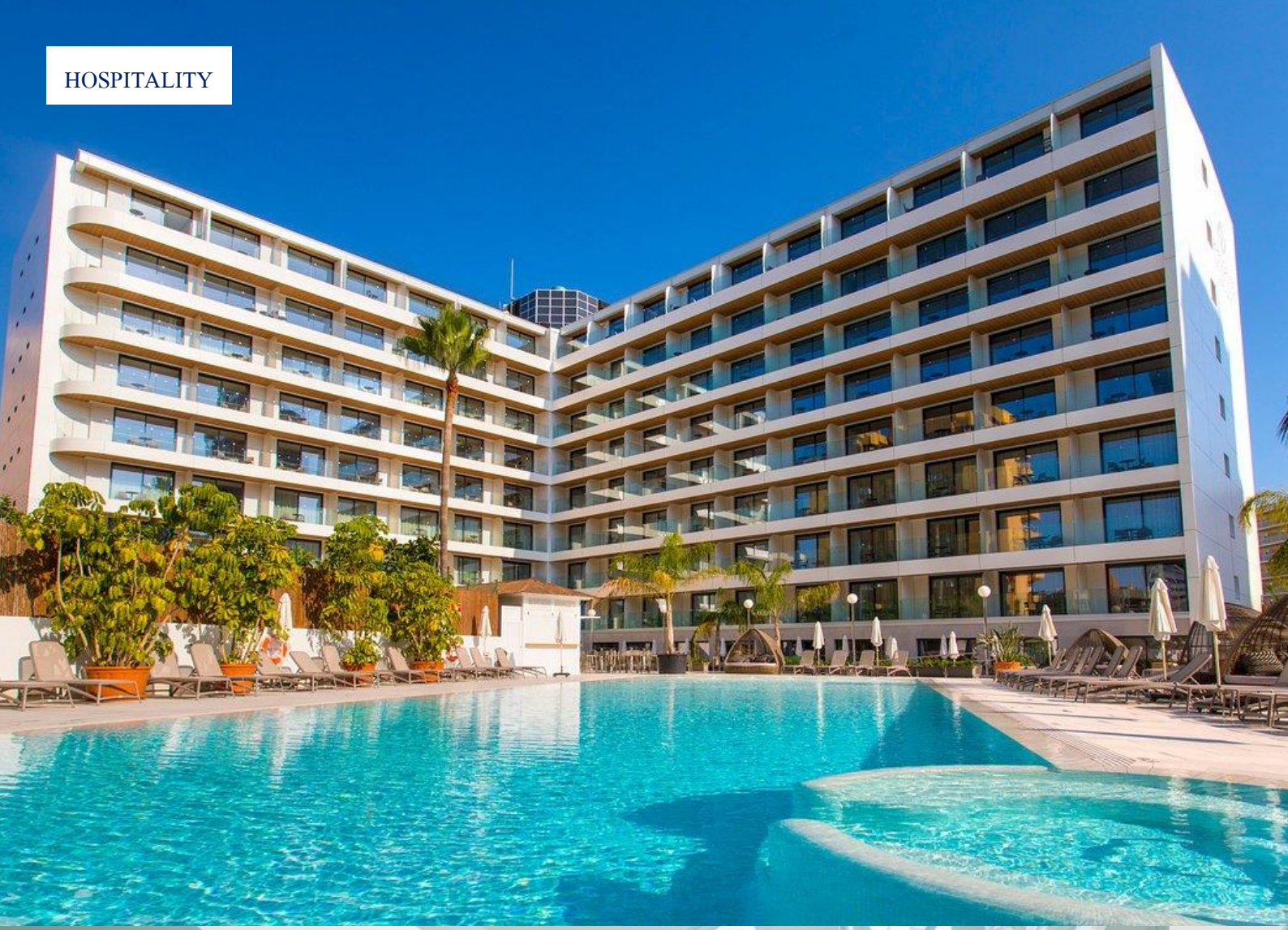
The construction particulars are as follows

- Main Drum - Stainless steel AISI 316L
- Lower Drum and chamber bottom is designed to be easily replaced HARDOX 500
- The base contains a servo which opens at the end of a cycle allowing the processed waste to be discharged into the holding bin
- The drum is connected to the frame of the equipment via anti vibration mountings
- The AC motor which powers the rotor shaft and blade is a variable speed AC type
- The main rotor blade is manufactured from HARDOX 600 wear proof steel

The vapour scrubbing system which is designed to treat, sterilize and condense the water vapour produced as part of the process incorporates a vertical Raschig ring condenser AISL316L molybdenum stainless steel dust filter containing active charcoal filters which are 99.995% DOP, these are H14 filtering class. The non-containerised units are prefabricated and ready for re assembly at site. The unit is mounted on anti-vibration mountings. The frame is designed to protect the system whilst making it easy to access. The control and operating systems are remotely installed and interconnect with the unit installation. This allows the operation of the unit from one location.

The system is fitted with remote monitoring and sensors covering all aspects of the operation as well as for maintenance purposes. The utility connection points are easily accessible and ready for connection once the installation has been completed. The process is controlled through a PLC monitoring system. The system can be programmed with several user access settings to avoid interference from un-authorised personnel. The controls are all touch screen design. Every aspect of a cycle is logged and can be downloaded to a central database.

HOSPITALITY



MEDICAL

MINING

OIL & GAS

Quality Standards

Global Quality Policy Statement

The WPS process effectiveness was tested at the Second University of Naples during a trial period in the hospital of Massa (Tuscany region) Stabilimento Ospedaliero della Fondazione Toscana Gabriele Monasterio Ricerca Medica e di sanità Pubblica, Ospedale del Cuore. After the test process was completed and the end product tested, it was declared that “Not a single spore or pathogen had survived in any one of the 5 monitored treatment cycles”. The condensed discharged water “was examined and found that it was well within the limits accepted by the rule D. Lgs 152/06, and was suitable to be discharged directly to a grey water sewerage treatment facility or alternatively it was safe to be collected for remote processing in a waste-water facility”. The WPS are built to the highest industry standard, using only first-class EU components, materials and craftsmanship. The WPS are CE certified and eligible for the industry 4.0 programme. The WPS are compliant to the following European standards: 89/392 EEC, EN60439, 72/23 EEC, 89/336 EEC

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