

1600 Waste to Energy-facilities in the World

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Glossary

DRY:	Dry scrubbing
CYC:	Cyclone
SD:	Semi dry scrubbing
WET:	Wet scrubbing
FF:	Fabric filter
ESP:	Electrostatic precipitator (dry)
ESP _{wet} :	Electrostatic precipitator (wet)
FGC:	Flue gas condensation
SNCR:	Selective Non Catalytic Reduction
SCR:	Selective Catalytic Reduction
DeNOx:	NOx reduction by SNCR or SCR
OXYCAT	Catalyst for the reduction of carbon monoxide, dioxins and furans
AC:	Active Carbon, Static bed filters
ADIOX	Carbon impregnated plastics for dioxin and furan adsorption
O:	Other

Scope of the overview

Installations as defined in Annex I, article 5.2 (a), of the Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) for the incineration of non-hazardous waste and pretreated fractions of such waste. Not included specific installations for the incineration for hazardous waste, sewage-sludge, poultry-litter and cement-kilns.

Three main thermal treatment techniques are included:

- Incineration;
 - Pyrolysis;
 - Gasification;
- as subdivided in:
- grate incinerators;
 - melting systems
 - rotary kilns;
 - fluidized beds;
 - plasma techniques.

How to find them

Get the local address or facility name in Google Maps.

For facilities in Japan, Korea or Taiwan use the local writing system for the characters or Kanji. English translations have been made afterwards when the plant is found.

The overview for Japan is complete, as far as visible in Google Earth, for the Prefectures: 1, 2, 4, 6, 8, 9, 11, 12, 13, 14, 16, 17, 23, 26, 27, 37, 38, 39, 41, 45. It is still not complete for the small facilities (< 3.000 kg/h) in other Prefectures (about 200 facilities). However the list of facilities, in Japanese language, is available on my website.

Units

All units are calculated in Standard Units. US capacity from short tons in Megagram.

Names of Countries

The political and legal status of Taiwan is a contentious issue. The People's Republic of China (PRC) claims that the Republic of China government is illegitimate, referring to it as the "Taiwan Authority". The Republic of China (ROC), however, with its own constitution, independently elected president and a large army, continues to view itself as an independent sovereign state.

Colors



Waste to Energy facility of interest due to: location, capacity, energy-efficiency, architecture, history.



Facility is well known. Location is unknown or not visible in Google Earth

Categories of capacity

	Mega Factory XL > 1.400.000 ton/y
	Mega Factory > 1.000.000 ton/y
	Extra Large Factory 500.000-1.000.000
	Large Factory 250.000-500.000
	Medium Factory 100.000-250.000
	Small Factory and IED* 25.000-100.000
	Small Factory, non IED* 10.000-25.000
	Extra Small Factory, non IED* < 10.000

8 categories can be made for the capacity of waste processing. There are 10 Megafacilities in the world and 75 facilities which can be classified as extra large factories. The Waste to Energy facilities in Amsterdam and Rotterdam in the Netherlands are the biggest in the world. Incoming waste of these facilities is not only transported by truck but also by train and ships. The second largest number of facilities (638) has a capacity between 100.000 and 500.000 and can be classified as medium or large factory. The largest number of facilities (659) in the world are small factories with a capacity between 25.000 and 100.000 ton per year. Beside, there is a category of quite small factories with a capacity lower than 25.000. A special category are the extra small incinerators. These incinerators can be found on isles especially around Japan.

Waste to Energy facilities belong in most cases to local government organizations.

Totals and averages

	Number of lines	Capacity/day	Capacity/year
Totals in the world	3.406	680.497	228.239.854
Average in the world	2,11	421	141.238
Totals in the European Union	925	255.624	85.415.174
Average in het European Union	1,97	546	182.511
Average in the Netherlands	4	1.903	642.227
Totals in Japan	1.790 *)	179.732	60.135.208
Average in Japan	2,17	218	72.891

*) In my overview this is the total at this moment. In Japan there are more than 2.170 lines for incineration of waste.

Google Maps and Google Street View

A Hyperlink has been made in Excel for Google Maps. To get a good impression of the facility and its surroundings please use Google Street View, or 3D if available.

Concluding remarks

The overview of Waste to Energy Facilities in the world is still under construction. First step is a complete list of locations and facilities.

The next step is completing the information of the energy production of the plants and the information about emissions. An overview of the emissions of dioxin of Japanese facilities is available.

Note: The emissions standard for PCDD/PCDF in Japan is 1,0 ng iTEQ/m³.

The overview of waste to energy facilities in the world was not open to the public. An overview is only available to high costs, € 3.900,-, at ECOPROG Fraunhofer UMSICHT in Germany. Cewep and Iswa also don't have a complete and a public list. Therefore I have made a mix of all known list of waste to energy facilities who are public.

Modern facilities make excellent results on transparency and low emissions. There are many examples of such facilities in different countries. There is no reason to oppose modern waste-to-energy facilities.

Versions

Version	Title	Date
V0	500 Waste to Energy	2006-11-29
V 1.1	1000 Waste to Energy-facilities in the World	2011-12-29
V 1.2	1200 Waste to Energy-facilities in the World	2012-08-02
V 1.3	1225 Waste to Energy-facilities in the World	2012-10-21
V 2.0.S	1600 Waste to Energy-facilities in the World	2013-01-02

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