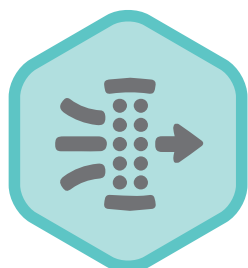
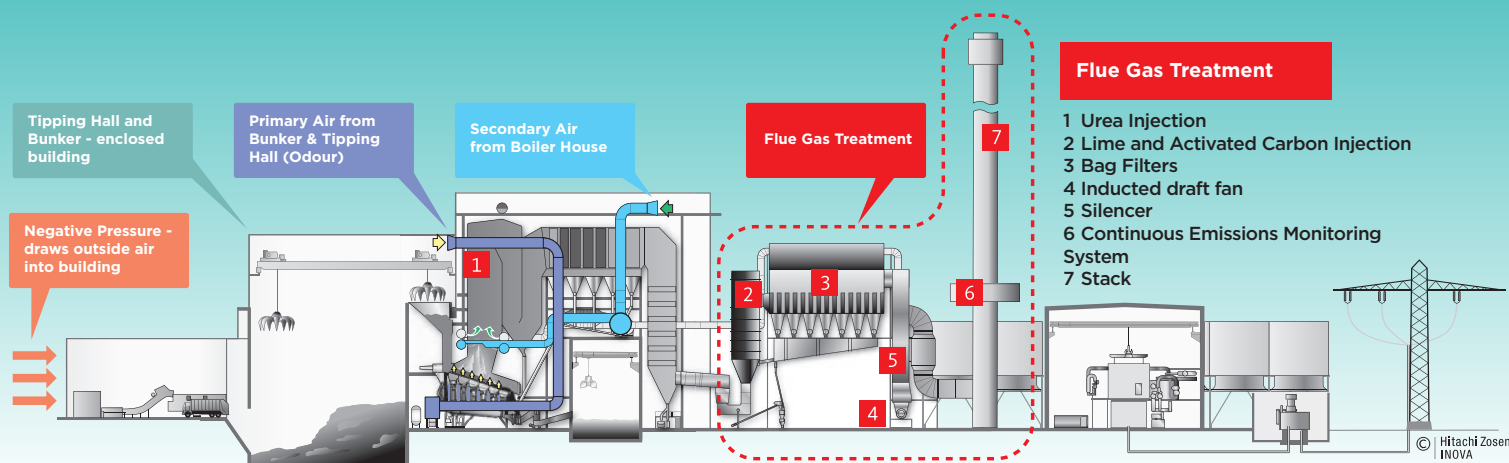




# Flue Gas Treatment

Update: 06/2021



Energy from Waste (EfW) facilities produce flue gases from the combustion process, which are captured and treated by sophisticated pollution control equipment, before being emitted from a chimney stack. This is to ensure that the air emissions have minimal negative impact on air quality and the environment.

The stack air emissions are governed by stringent regulatory air pollution limits which include particulates, organic carbons, carbon monoxide, nitrogen oxides and sulphur oxides. The Environment Protection Authority (EPA) of Victoria states that compliance with the European Union's Industrial Emissions Directive 2010/75/EU (IED) is the best practice for setting emission discharge limits and for monitoring emissions from EfW plants.

Flue gas is treated using a series of devices and steps. A combination of primary (combustion related) and secondary (abatement) measures are used to manage the emissions that are eventually discharged through the chimney stack.

### These measures include

- Achieving a minimum of 850°C for at least two seconds to completely combust organic compounds and destroy dioxin and furan generation
- Selective Non-Catalytic Reduction (SNCR), a treatment that involves spraying urea into the furnace to convert nitrogen oxides back to nitrogen, which is the major component of air
- Flue gas cooling with boiler Economiser section

- Burnt or hydrated lime injection systems to neutralise acid gases (HCl, HF and SO<sub>2</sub>)
- Activated carbon injection to absorb trace heavy metals and hydrocarbons such as dioxins in the flue gases
- Single stage bag filters to collect particulates, lime and activated carbon solid residues

Emissions are monitored throughout these processes using certified, sophisticated in-line instruments for many of the pollutants (CEMS), as well as rigorous auditing techniques for the others.

### Flue gas treatment residue and by-products

Modern EfW facilities produce two forms of ash residues. The first is ash collected at the bottom of the boiler and is called 'bottom ash'. Any residual metal is recovered from this material using magnetic separators and can be recycled. The remaining ash may then be used as a component in road base, cement or landfill cover, subject to appropriate testing. Otherwise it is disposed of safely in landfill.

The second is the flue gas treatment residue collected at the bag filter and includes fly ash, and spent lime and carbon. This by-product is disposed of to appropriately licensed landfills.



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