PER TUA INFORMAZIONE
(FOR YOUR INFORMATION)

BY JOE SANO

TERMOVALORIZZAZIONE

BURNING TRASH FOR POWER IN ITALY

As we travel west on Washington Avenue extension towards the IACC we pass the Albany City Landfill and "Mount Trashmore" the highest point in the city. While Albany struggles with its future needs for waste disposal, I am reminded about the Italians using energy incinerators to reduce their landfill need while safeguarding the people's health. It seems that it works!

In Italy, the practice of burning garbage to generate power is known as waste-to-energy (WTE) incineration or termovalorizzazione. As of early 2026, the sector continues to evolve with a focus on modernization and regional expansion. . This process involves the combustion of municipal solid waste in specialized facilities, converting it into electricity and heat. Waste-to-energy plants help reduce the volume of landfill waste while also producing energy, making them an important component of Italy's waste management and renewable energy strategies.

<u>Here is how these Italian plants function:</u>

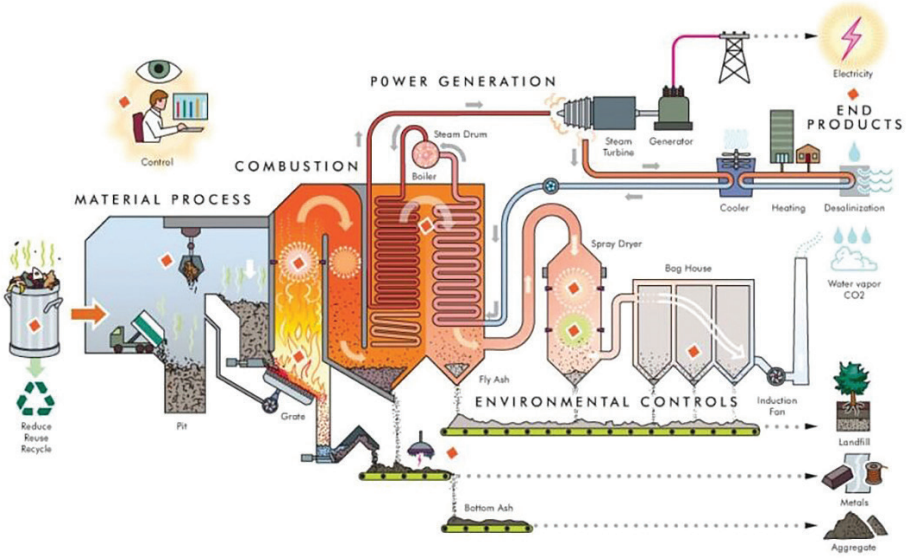
Waste is delivered to the plant, discharged into the collection, and mixing tank, and then loaded for energy recovery into the boilers, the temperature of which is regulated at around 1,000 degrees. The heat produced from combustion generates high-pressure steam which is fed into a turbogenerator to produce electricity.
The steam is also fed into the cogeneration plants to produce thermal energy which is used to heat the water for the district heating grid or to provide heat for other industrial activities instead of using fossil fuels.
All the plants are equipped with innovative emission treatment systems (i.e. the flue gas cleaning section) that lower the pollutant content continuously on the way from the combustion chamber to stack emission. The flue gases are purified using specific technologies depending on the substances to be treated:

- DE NOx systems that act on the concentration of nitrogen oxides, transforming them into natural air components such as nitrogen and water
- bag filter systems that retain dust and particulate.
- fume scrubber or dry reagent injection systems that convert and "capture" the other compounds chemically.

These purified fumes are subsequently conveyed as gaseous emissions to the stack. Here, strict emission control systems are activated, and enforced by the authorities, to constantly monitor gaseous flows and to guarantee compliance with the limits set by emissions standards.

Waste-to-energy plants also produce residues that mostly consist of a non-combustible fraction, as well as flue treatment residues. The first make up most of the residues produced, which are sent to be recovered, either as inert construction materials, or as metals (such as copper, aluminum, iron) instead of ending up in a landfill.

Major Italian cities like Milan and Rome operate modern WTE plants that comply with strict European Union environmental standards. These facilities are



equipped with advanced filtration systems to minimize air pollution and ensure the safe handling of emissions. Italy operates approximately 36–39 incineration plants. The network is heavily concentrated in the North (regions like Lombardy and Emilia-Romagna), while the South has fewer facilities, often leading to waste being transported across regions or even abroad. The country incinerates roughly 5.5 million metric tons of municipal waste annually. Between 2011 and 2023, energy generation from biomass and waste increased significantly, reaching approximately 16 terawatt-hours (TWh).

The Acerra (Naples) plant (pictured below) is one of the largest single-unit WTE plants globally, processing about 600,000 tons per year and providing electricity for local communities while reducing reliance on landfills. The plant in Brescia is historically recognized as one of the world's most efficient plants, it recovers electrical and thermal energy from 730,000 tons of waste annually.

The Mila WTE Silla 2 facility (pictured here) is a high-efficiency plant that produces electricity for approximately 150,000 families and provides district heating for 40,000 homes. Another great example of WTE in practice is the modern "third generation" plant in Turin, the Gerbido plant, which produces over 399,000 MWh of electricity annually. The drawing board has an immense project scheduled for Rome. To address long-standing waste crises, a major new waste-to-energy plant in Santa Palomba is scheduled to begin construction in early 2025, with plans to be operational by summer 2027. It is designed to generate enough energy for 200,000 homes while focusing on carbon capture (e.g., the Hera Group's project in Ferrara) to align with EU climate goals.

While the approach is viewed as a way to manage waste and reduce reliance on landfills, it is sometimes debated due to concerns about air quality and the need to further increase recycling rates and for the southern part of the nation to embrace the technology.

The regional imbalance or the "waste gap" between Northern and Southern Italy remains a major political and logistical issue, leading to high transport costs and environmental impacts. Similar to the many towns in the USA who ship trash to landfills or WTE plants, the cost of moving trash is real and the need for an increasing number of plants throughout the lower half of Italy is real.

The Mila WTE Silla 2 facility

Most recently the European Union has embarked on a policy of gradually withdrawing financial support for new WTE incineration facilities to prioritize new economic models like recycling and anaerobic digestion. Regardless Italy remains committed to WTE with strict environmental standards. Italian plants must comply with strict EU Industrial Emissions Directives, utilizing advanced flue-gas cleaning systems to remove acid gases and particulates. The EU attention to safely and health with their WTE plants is real.

Italy and the European Union nations continue to explore clean technologies using waste for power generation. Perhaps we need to pay better attention to what others are doing with their waste because our landfills are getting or are full.