

Summary

In the Netherlands, the annual quantity of household residual waste that is produced amounts to nearly 4 Mtons. Where in the past much of this waste was land filled, along with environmental consequences, this waste stream is nowadays treated in various manners in order to put its contents to better use. This report is the result of research on the logistic streams of household residual waste, the treatment processes for household residual waste and the properties of the required equipment for these treatment processes.

The household residual waste stream in the Netherlands is either directly incinerated, accounting for 75% or ~3 Mton, or is treated (mechanically & other) at waste treatment facilities, accounting for 23% or ~0,9 Mton (the remaining 2% is land filled). Both incineration facilities and treatment facilities are susceptible to a number of regulations, primarily concerning safety, noise production and emissions.

Two of the treatment facilities in the Netherlands, so called *mechanical biological treatment facilities*, are focused on the production of Refuse Derived Fuel (RDF) and Wet Organic Fraction (WOF) from household residual waste. The former is used as an alternative fuel and the latter is used to extract biogas that, in turn, is used for the generation of electricity.

The equipment that is used for mechanical biological treatment is researched in more detail and is classified according to the following seven categories:

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| 1. Size reduction equipment | 5. Compacting equipment |
| 2. Separation equipment | 6. Digestion equipment |
| 3. Washing equipment | 7. Other equipment |
| 4. Drying equipment | |

Within each category, the different available types of equipment and their operating principles are described. For each operating principle, an overview is given of characteristic equipment properties, such as capacity, dimensions, weight and energy consumption. This is done with information obtained from a wide variety of equipment manufacturers.

Finally, a comparison is made between the different operating principles within the categories described above. This comparison is based on a number of properties of the waste treatment equipment; the properties are dependant on the treatment process for which the equipment is intended, and include:

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| • Machine capacity | • Dimensions |
| • Suitable feed materials | • End Product quality |
| • Energy Consumption | • Noise production |
| • Maintenance requirements | |

It can be concluded that the comparisons made in this report provide a mere indication of equipment performance. A more thorough comparison of waste treatment equipment requires additional research such as conducting interviews with industry experts. Also, experiments with pre-defined waste streams (i.e. waste streams with known composition) on the various equipment types would provide a better insight into machine performance.