

Standardized calculation method as the first step for comparability

Energy efficiency assessment of Swiss waste plants

A standard energy efficiency calculation in thermal waste utilization plants, waste incineration plants and waste thermal power plants allows for objective comparability and promotes the exchange of experiences among plants. This has been conducted annually since 2009.

Rytec services:

- Development of the methodology, adaptation for Switzerland
- Data collection for all participating plants
- Parameter calculation (EU and CH parameters)
- Plausibility of the initial calculations (by experts)
- Development of a data collection tool for the plants
- Annual survey and plausibility since 2009

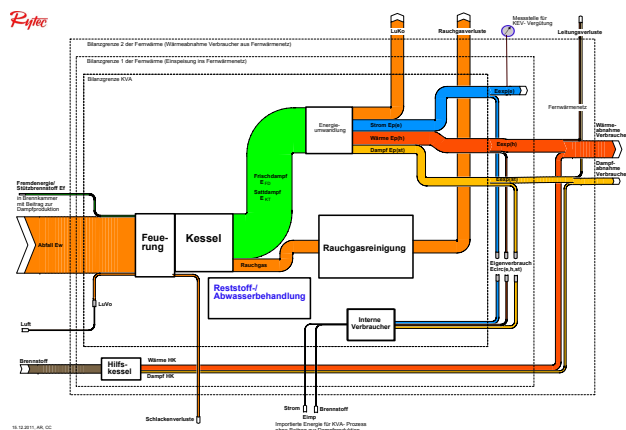


Figure 1: Simplified view of the main energy flows for a thermal waste power plant

Objectives:

- Calculation of the heating value based on the relevant energy flows in the plant
- Convince as many Swiss waste incineration plants as possible to participate in the calculation program
- Supply basic information for a comparison of the different national and international plants
- Develop a customized calculation tool for determining heating values and the level of utilization

Solution:

Close adherence to the R1 calculation practiced in the EU according to BREF/BAT with amendments for determining Swiss parameters.

Consistent application of the same system limits and simplified assumptions to ensure that all plants are treated in the same manner.

Conclusion of the first round of calculations:

More than 90% of Swiss waste incineration plants takes part in the ongoing comparative calculations. Rytec cooperates with the authorities and trade associations to regularly compile further surveys in the same input screen in order limit the constantly increasing reporting costs of the plants and ensure that the information from the wide range of statistics remains reliable.

Results:

The results for the operating year 2012 were as follows:

- Heating value range of the input material: 9.6–14.2 GJ/t (including sewage sludge)
- Range of the EU R1 energy efficiency factor: 0.41–1.01
- (If a plant has a value of 0.6 or above, it classifies as an R1 utilizer.)
- Heat and energy utilization level (including the plant's own requirements): 4.0–67.1% heat, 9.9–23.7% energy utilization levels
- The latest results are available for download at

http://www.bfe.admin.ch/infrastrukturanlagen/01079/index.html?lang=de&dossier_id=01690

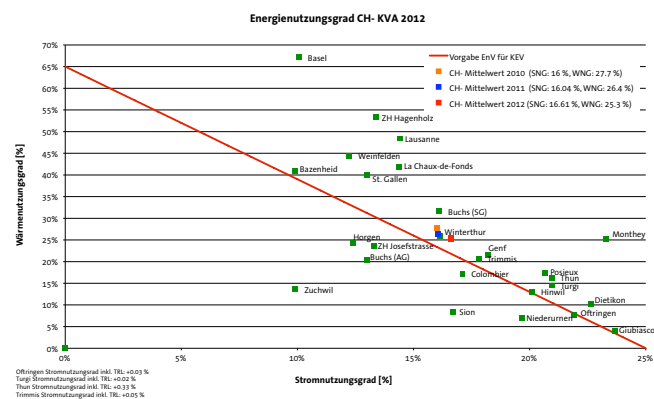


Figure 2: Energy and heat utilization level of Swiss waste incineration plants (plant-specific values for 2012 and mean values for 2010, 2011, and 2012)

Client: Bundesamt für Umwelt (BAFU), Bundesamt für Energie (BFE)
Anlagebetreiber KVA

Service period: since 2009