

Precise reporting of fossil CO₂ emissions with FCTS

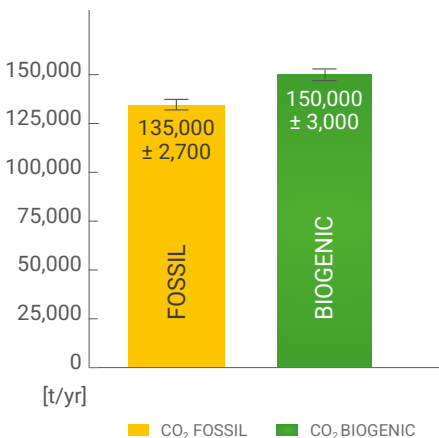
Fossil Carbon Tracking System



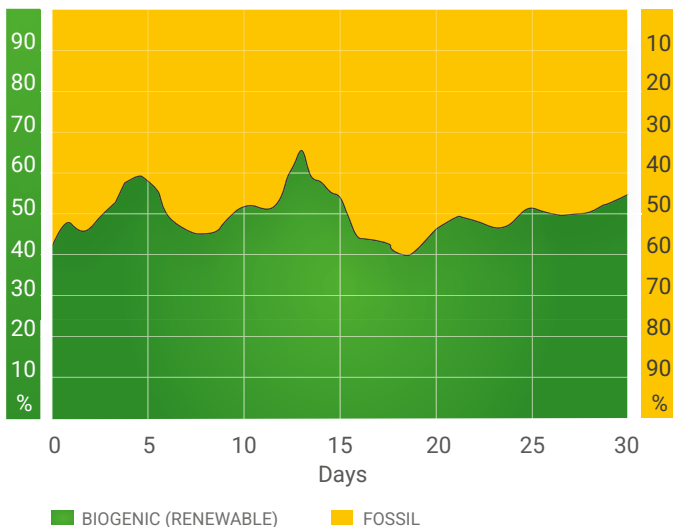
PRECISE CO₂ REPORTING

Annual amount of fossil and biogenic CO₂ with high precision

uncertainty lower 2.5%



Biogenic/fossil energy shares in daily resolution



BENEFITS of FCTS

Waste-to-Energy plants are faced with rapidly changing waste compositions due to the implementation of waste separation systems prior to incineration, which increases the biogenic fraction in the waste. By monitoring fossil greenhouse gases, FCTS enables operators to account for the increasing biogenic shares in their waste.



Highest precision of results

< 2.5% uncertainty due to the combination of independent methods



Realtime checks

continuous plausibility check of WtE operating data



Improved operating data

reconciled operating data incl. improved flue gas volume flow



Fossil and biogenic CO₂ emissions

with temporal resolution down to monthly or daily values



Share of biogenic based „green“ energy and CO₂ emission factors



Accurate flue gas volume flow

high precision flue gas values due to smart data reconciliation

FCTS

Fossil Carbon Tracking System

FCTS is a newly developed combination of the Radiocarbon Method (EN13833) with the Balance Method (ISO 18466:2016) to measure the fossil CO₂ emissions from Waste-to-Energy (WtE) plants. It combines the PmCTrace® instrument (Radiocarbon Method) with selected material and energy balances. As a result, the share of fossil and biogenic CO₂ (in %) as well as the quantity of fossil and biogenic CO₂ (tons/year) are measured with an uncertainty below 2.5%.



fossil CO₂

=

fossil fraction CO₂

X

total CO₂

determined via
combination of
both methods

determined via
Radiocarbon Method

determined via
mass and energy
balances

REQUIREMENTS

The application of FCTS requires little infrastructure and offers a user friendly process of application.

Measure fossil fraction with PmCTrace®

A proportional share of the flue gas (< 1 ml/min) is collected in a cartridge, which is subsequently evaluated in a C14 laboratory to obtain the PmC-value. The latter correlates to the share of biogenic Carbon. To representatively assess the annual fossil/biogenic CO₂ share, 12 samples are required.

Operational data required

- ⊗ Amount of combustibles
(waste, sewage sludge, natural gas etc.)
- ⊗ Amount of solid residues
- ⊗ Volume of flue gas
- ⊗ O₂ and CO₂ content in the flue gas
- ⊗ Steam production
- ⊗ Steam pressure and temperature
- ⊗ Temperature of the feed water
- ⊗ Boiler efficiency

Genius5

30 years experience with the installation of representative sampling Systems with worldwide references. 10 years experience with the exact evaluation of the biogenic fraction in wastes.

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Vienna Institute for
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20 years experience with the calculation of fossil CO₂ from WtE plants.

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Selected Publications:

Fellner, Cencic & Rechberger 2007. A New Method to Determine the Ratio of Electricity Production from Fossil & Biogenic Sources in WtE Plants. ES&T 41, 2579-2586.

Schwarzböck, Rechberger, Cencic, & Fellner, J, 2016. Determining national greenhouse gas emissions from WtE using the Balance Method. Waste Management 49, 263-271.