ON-SITE & REAL TIME THz MONITORING OF GASEOUS EMISSION FROM A WASTE RECOVERY CENTER

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The Dunkirk waste recovery center continuously treats all of the urban community's household waste by converting it into electrical and thermal energy through incineration. These activities are carried out with a controlled environmental impact, based on continuous improvement. The TeraWaste project explores the potential of high-resolution TeraHertz spectroscopy for continuous monitoring of gaseous emissions by developing an on-site diagnostic unit. The selectivity and the ability to detect in scattering media make it a relevant alternative to current multi-compounds monitoring solutions[a,b,c]. A new sub-millimeter wave source, acquired for this project and allowing the detection of trace gases, was characterized, the spectrometer developed and the detection limits of regulated compounds determined. Rotational spectroscopy measurements on real process and emission gases, sampled and analyzed off-line as well as in real time on-site, were performed and compared with standard reference methods and the certified continuous measurement system. Using preconcentration[d,e], a quantified multi-species mapping, extended to the various polar compounds absorbing the sub-mm waves of the plant's gaseous emissions, in particular VOCs by discriminating them, will enable the operator to better meet current standards and anticipate potential evolution in the regulations.

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