

## Comparative use of different emission measurement approaches to determine methane emissions from a biogas plant - DTU Orbit (09/11/2017)

### Comparative use of different emission measurement approaches to determine methane emissions from a biogas plant

A sustainable anaerobic biowaste treatment has to mitigate methane emissions from the entire biogas production chain, but the exact quantification of these emissions remains a challenge. This study presents a comparative measurement campaign carried out with on-site and ground-based remote sensing measurement approaches conducted by six measuring teams at a Swedish biowaste treatment plant. The measured emissions showed high variations, amongst others caused by different periods of measurement performance in connection with varying operational states of the plant. The overall methane emissions measured by ground-based remote sensing varied from 5 to 25kg<sub>h</sub><sup>-1</sup> (corresponding to a methane loss of 0.6-3.0% of upgraded methane produced), depending on operating conditions and the measurement method applied. Overall methane emissions measured by the on-site measuring approaches varied between 5 and 17kg<sub>h</sub><sup>-1</sup> (corresponding to a methane loss of 0.6 and 2.1%) from team to team, depending on the number of measured emission points, operational state during the measurements and the measurement method applied. Taking the operational conditions into account, the deviation between different approaches and teams could be explained, in that the two largest methane-emitting sources, contributing about 90% of the entire site's emissions, were found to be the open digestate storage tank and a pressure release valve on the compressor station.

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