

(ABSTRACT # 22), Sardinia October 2015

Optimisation of gas extraction/collection systems for a better climate; decrease of the CO₂ potential by minimising the methane emissions over (via) the surface

Wolfgang H. Stachowitz*,

DAS – IB GmbH, LFG - & Biogas - Technology, D 24113 Kiel, Germany

Summary:

Optimisation of gas collection systems appears useful in the event that the amount and quality of landfill gas decreases continuously and / or larger methane emissions over (via) the landfill surface are ascertained. This applies in particular to landfills where a CHP plant is operated for the power generation and the feeding-in. To prevent reduced operation in the first instance or subsequent dismantling, a utilisation that is as effective as possible of the available landfill gas potential should be ensured. In order to achieve this, the operators have different possibilities to manoeuvre. In the following text, in particular the optimisation of a gas collection system and the systematic approach will be presented. The possible higher expenditure means a further positive step to emission reduction, also with regards to the aftercare phase. The presentation provides an overview of “normal” gas extraction systems (horizontal/vertical systems), dewatering systems, troubleshooting regarding the blocking and watering etc. of pipe work and gas wells up to manifold stations. Furthermore, the presentation gives an impression and ideas of landfill aeration by means of venting in order to reduce the GWP: $\text{CH}_4 + 2 \text{O}_2 \rightarrow \text{CO}_2 + 2 \text{H}_2\text{O}$. The Global warming potential (GWP) of CO₂ is 28 times lower than the GWP of CH₄ (see IPCC). Finally, the presentation tries to solve problems regarding the flaring of LFG (Landfill gas) and the operation of engines/CHP units in W2E (waste to energy) projects.

At the end of the presentation, an overview is provided regarding low calorific (lean, poor, weak) gas utilisations by flaring and by special burner systems including the pre-heating of the combustion air.

Index words:

Landfill gas, optimisation, gas collection system, hazardous waste, abandoned waste disposal sites, landfill, gas extraction system, gas wells, methane emission, climate change, CO₂ potential, reduce of global warming, GWP, LFG, methane, flaring, CHP, W2E, waste to energy project