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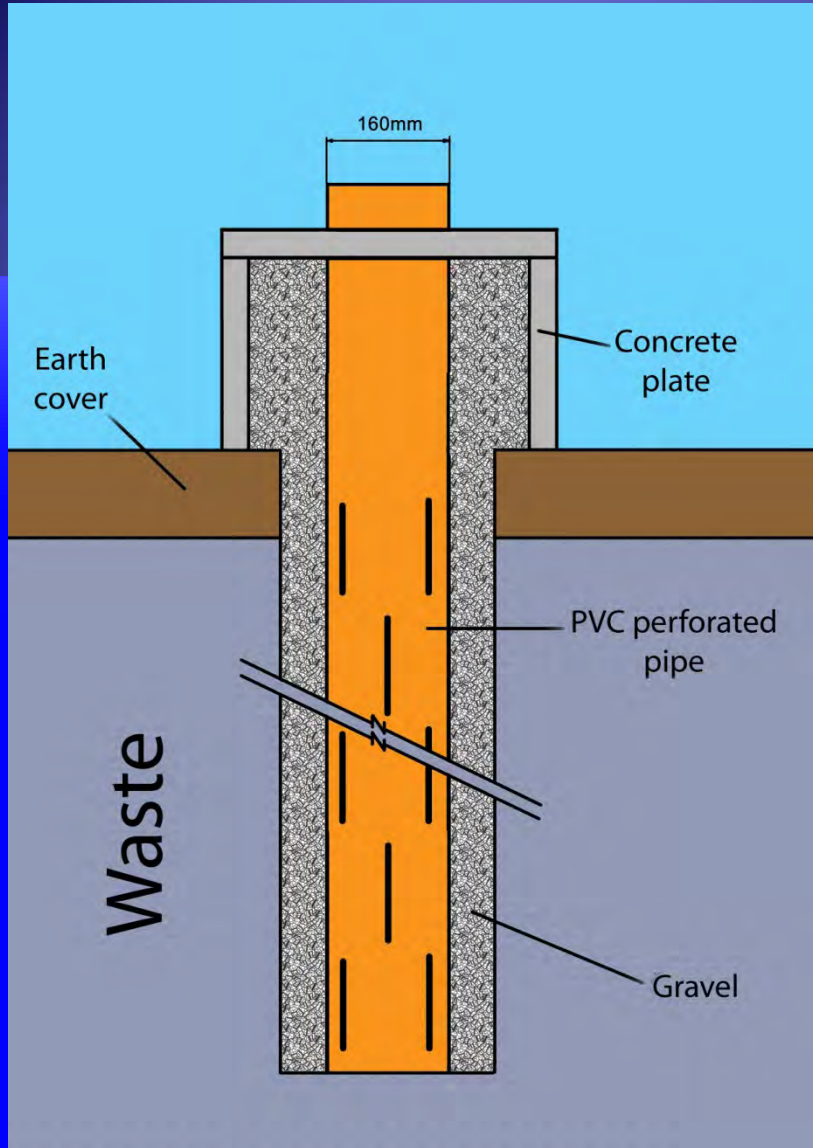
EKSPERIMENTAL PIPELINE FOR LANDFILL GAS COLLECTION AT NOVI SAD LANDFILL

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Novi Sad landfill

- ◆ Novi Sad landfill has approximate volume of 2.000.000 m³ and it takes around 28ha of surface area.
- ◆ Landfill gas had been monitored for several years at Novi Sad landfill, especially in last three years.
- ◆ During the reconstruction of gas extraction wells in 2009. 43 new wells were constructed, which makes a total of 96 gas wells with previously built wells. 67 of 96 gas wells are actively giving off LFG.





Initial data

- ◆ Of 96 gas wells, 14 have methane concentration higher than 25% and 17 wells have methane concentration between 10 and 25%.
- ◆ The idea of connecting the gas wells and possibility of LFG utilization was born.
- ◆ Field 3 of Novi Sad landfill is most suitable for this kind of experiment.



Initial data

- ◆ There are 10 gas extraction wells at field 3 with methane concentration higher than 25%.
- ◆ At first 4 gas wells, which fulfilled certain criteria, were connected into a single pipeline.

Original pipeline and first measurements



Original pipeline and first measurements



Original pipeline and first measurements



Original pipeline and first measurements



Original pipeline and first measurements

- ◆ 250m of HDPE pipes, 90mm in diameter and 120m of HDPE pipes, 75mm in diameter were used for connecting these 4 gas extraction wells.
- ◆ A sidechannel blower with a frequency regulator was used for gas extraction.
- ◆ First measurements after connecting the wells were unexpected.

Original pipeline and first measurements

- ◆ Measurements were taken at different RPM (frequencies) of the blower.
- ◆ Methane concentration at individual wells ranged from 23 to 40%, depending on the well, while methane concentration at blower exhaust was 36% at flow rate of 26m³/h. Oxygen concentration at this flow rate was around 7%.
- ◆ First collected gas analysis results showed that there are some flaws in pipeline construction.

Connecting additional gas wells with the original pipeline



Connecting additional gas wells with the original pipeline



Connecting additional gas wells with the original pipeline

- ◆ Methane concentration at additional gas wells ranges from 27 to 53%, depending on the well.
- ◆ Collected LFG analysis at same blower RPM (frequency), after connecting 4 additional gas wells to the pipeline showed not much improvement.
- ◆ Considerable change in LFG composition was noticed at half the previously used flow rate.
- ◆ Methane concentration rose to 47% and oxygen concentration dropped to 3,4% at flow rate of 13m³/h.

Current state



Current state

- ◆ 8 gas extraction wells connected into a single pipeline.
- ◆ 400 m of main pipeline (HDPE, Ø90mm).
- ◆ 200 m of Ø75mm HDPE pipes for connecting the wells with main pipeline.
- ◆ Main pipeline connected to sidechannel blower with frequency regulator.

Sidechannel blower	3.228 €
Pipes	2.303 €
Connections and other elements	716 €
Total expense	6.247 €

Conclusions

- ◆ Minor modifications to the wellheads are needed.
- ◆ Overcoming the faults in landfill design.
- ◆ High cost of this type of work.
- ◆ Lack of experience and of practical knowledge in this area.