

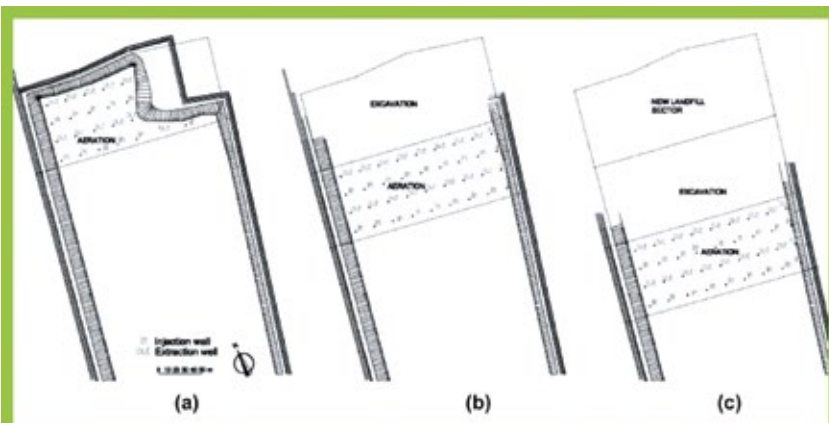
## Landfill aeration in the framework of a reclamation project in Northern Italy

In situ aeration by means of the Airflow technology was proposed for landfill conditioning before landfill mining in the framework of a reclamation project in Northern Italy. A 1-year aeration project was carried out on part of the landfill with the objective of evaluating the effectiveness of the Airflow technology for landfill aerobization, the evolution of waste biological stability during aeration and the effects on leachate and biogas quality and emissions.

The main outcomes of the 1-year aeration project are presented in the paper. The beneficial effect of the aeration on waste biological stability was clear (63% reduction of the respiration index); however, the effectiveness of aeration on the lower part of the landfill is questionable, due to the limited potential for air migration into the leachate saturated layers.

During the 1-year in situ aeration project approx. 275 MgC were discharged from the landfill body with the extracted gas, corresponding to 4.6 gC/kgDM. However, due to the presence of anaerobic niches in the aerated landfill, approx. 46% of this amount was extracted as CH<sub>4</sub>, which is higher than reported in other aeration projects. The O<sub>2</sub> conversion quota was lower than reported in other similar projects, mainly due to the higher air flow rates applied.

The results obtained enabled valuable recommendations to be made for the subsequent application of the Airflow technology to the whole landfill.



First stages of the reclamation project proposed for landfill C. a: old landfill sector where the 1-year in situ aeration project described in the paper was carried out; b and c: planned activities.

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Main research topics:

- Sustainable landfill management
- Remediation of old landfills
- Treatment of contaminated soil