Facility picture Leachate treatment centres around the VACUDEST system.

VACUDEST treats landfill leachate

Innovative vacuum distillation technology from H2O reliably ensure compliance with strict limits for disposal of water into watercourses.

On landfills leachate occurs from condensation, which normally is heavily contaminated with pollutants. Percolation into the ground-water is, because of the nitrogen compound and organic contamination, not allowed. To keep the strict values for disposal such leachate needs to be collected and trated.

In November 2009, an ultramodern leachate treatment system was installed in Mallabia (Basque country) by the disposal-consortium BETEARTE, which consists of the 3 biggest waste-companies in Spain.

The picture below shows the plant, which has been built by SIDASA. The objective was to use most modern technology, working economically and keeping the strict legal limits for disposal reliably.

The leachate occuring at the 2 million ton landfill is collected in a 5.000 m³ tank before it is pimped to a chemical/physical pretreatment. By precipitation and floculation the contaminat concentration in the leachate is reduced; however the strict legal limits for disposal can not be reached. This is achieved by treating the leachate with vacuum distillation. In the copre part of the plant the process water is evaporated under vacuum at 700 mbar by 2 VACUDEST L 6.000. Heavy metals, organic components, as well as salts will get separated reliably from the clean water. The steam that occurs, is compressed inside a roots pump to ambient pressure. During compression the steam temperature raises to 120° C. This superheated, sterilized steam is reused as heating medium for the leachate entering the VACUDEST vacuum distillation

system. In this way, energy circulation arises which uses – compared to atmospheric distillation – 95 % less energy.

The 2 VACUDEST L 6.000 (treating 12.000 m³/a), which are installed at BETEARTE especially got optimies to recycle landfill leachate. Because of the high chloride concentration in the distillate, a special material had to be used, to avoid corrosion. The integrated, hydrodynamic, optimised Activepowerclean – System ensures a clean heat exchanger and allows high evaporation rates. Compared to conventional vacuum distillation systems, the energy consumption is reduced by 15 % and high evaporation rates allow reduced disposal costs for the concentrate.

During start-up, the process water could be concetrated 20 times, which was far better than expected initially. The quality of the treated water is so high, that it can get disposed of into a river.

When treating landfill leachate, there are many different methods. Typical treatments contain reverse osmosis, or ion exchanger.

To make sure, the strict disposal limits can be kept, VACUDEST vacuum distillation systems are recommended, capabel of separating numerous harmful substances. With a VACUDEST vacuum distillation system it is possible to concentrate these substances with lowest energy consumption. Because of that, several waste management companies e.g. Befesa from Spain or Veolia from France already decided to treat their process water with the H2O VACUDEST vacuum destillation systems.

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Landfill leachate requires reliable purification: Thus Sidasa has decided in favor of a VACUDEST vacuum distillation system from H2O GmbH.

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