

Leachate Treatment Plant

Landfill Diebesstieg / Disposal Centre Salzgitter GmbH



Fig. 1: Oxidation tanks; 2 contact tanks with Ozonia Radial Diffusers, 1 post-reaction

Since June 1994, the Salzgitter-Diebesstieg landfill has been operated by the "Disposal Centre Salzgitter GmbH" as a municipal waste landfill for the urban area of Salzgitter. The permit for this landfill stipulated that a plant be constructed for treating the accumulating leachate. Based on the water quality requirements for direct discharge into a waterway, from Appendix 51 of the "Rahmenabwasser - Verwaltungs-vorschrift" dated 1-1-90, it was decided to install a treatment plant using the most current technology. For technical and economic reasons the treatment method speci-

fied was a combination of two-stage biological treatment with denitrification and nitrification, followed by chemical oxidation with ozone. The main contractor, Preussag-Noell Wassertechnik, Bremen Branch, was responsible for dimensioning this treatment plant to the quality targets for direct discharges.

In 1993 Ozonia Ltd, Switzerland, received the order for the supply of the chemical oxidation treatment. In order to achieve both optimum reaction control and ozone use it was decided to dose the ozone into two contact tanks

using Ozonia radial diffusers (figs. 1 and 2). During normal operation these contact tanks are connected in series, whereby both tanks are supplied with fresh ozone. In addition, one tank can operate with gas recuperation. The residual ozone concentration, measured on-line just before the vent ozone destructor, is used to control the ozone production (fig. 5). The process requires 7.5 kgO₃/h, which is produced from one Ozonia "Advanced Technology" (AT) ozone generator (fig. 3). This latest generator technology enables ozone concentrations of up to 15 wt% to be produced with only moderate energy consumption. At the design concentration of 10 wt% (148 g/m³ STP) very good mass transfer rates are generally attained. As a result, the consumption of oxygen is reduced by 30 % compared with conventional technology. Both the reaction system and the production of ozone with 'AT' have wide operating parameters which open up numerous possibilities for cost and process optimisation.

This technology concept emphasises Ozonia's constant efforts to enhance environmentally friendly treatment processes, such as chemical oxidation with ozone, by enabling the user to make

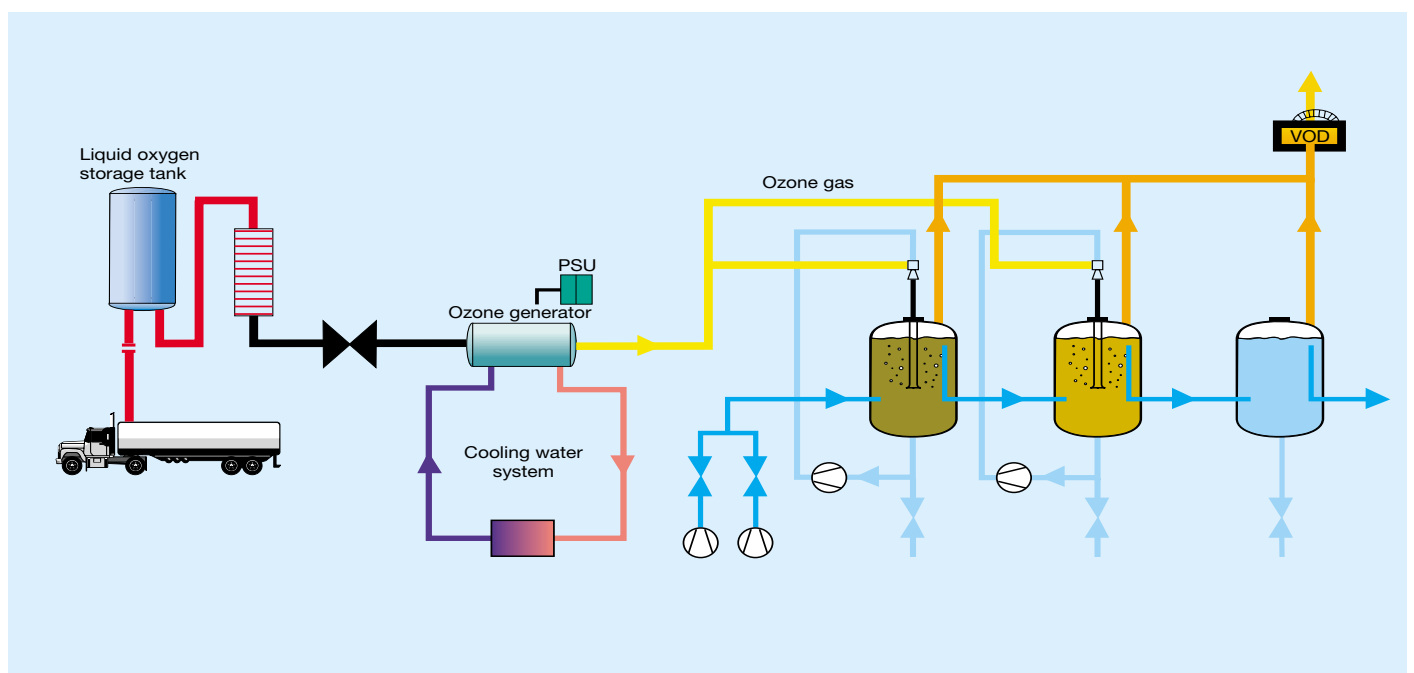


Fig. 2: Diagram of the chemical oxidation process



Fig. 3: Ozone generator

Plant Statistics

Leachate water flow rate: 3 m³/h
 Ozone production: 7.5 kg/h; Phase I
 15.0 kg/h; Phase II
 Ozone concentration: 10 wt % (148 g/m³ STP)
 Ozone contacting system: 2 stage with Ozonia Radial Diffusers
 Vent ozone destruction: thermal system with heat recovery
 Treatment standard: for direct discharge to a waterway



Fig. 4: Process control and power supply (PSU)

Ozonia's Scope of Supply

- Ozone generation equipment
- Ozone contact tanks for COD and AOX removal
- Process automation
- Vent ozone destruction
- Piping, fittings, measurement and control equipment
- Refrigeration plant for chilling cooling water

Fig. 5: Vent ozone destructor



Site

Salzgitter-Diebesstieg, Germany

Operator

Entsorgungszentrum Salzgitter GmbH

Commissioning

June 1995

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