

# Transformation of a formerly built basin into a PURE-Sewage Sludge Treatment System



BAUERUmweltgruppe

<b>Client:</b>	Verbandsgemeinde Hermeskeil, Verbandsgemeindewerke, Germany
<b>Engineering Design and Supervision:</b>	Ingenieurbüro Spoo & Partner
<b>Scope of Works:</b>	Construction of a PURE-Sewage Sludge Treatment System
<b>Contract Period:</b>	May 2004 until June 2004



## Project

A previously existing basin was transformed into a PURE-sewage sludge treatment system for 1,035 m<sup>3</sup> of sludge with up to 5 % dry substance content annually.



*Filling system with high-grade steel pipes on support stands, forged pipe with ventilation valve and wedge gate valve.*

7 points of discharge. By the use of emergency shut-down valves each point of discharge is individually controllable. The potential gradient of the discharge lines can be adapted to the sewage sludge consistency. Frost resistance is reached in this way.



*The drainage system for ventilation and drainage of sewage sludge has to be installed carefully to avoid damage of the sealing foil.*

## Treatment Site

In the course of the redevelopment of the sewage treatment plant Hermeskeil the sewage sludge treatment was also aligned in a forward-looking way.

## Result

In order to get a laminar grip between the naturally grown soil and the base sealing on top, the embankment surface and the base-level surface of the existing basin were levelled off. The basic sealing, about 3,000 m<sup>2</sup>, consists of 2.5 mm strong HD-PE foil with a protection fleece of 400 g/m<sup>2</sup> on both sides. Seal foil and fleeces were fixed in a containment ditch at the top of the embankment. In order to protect the sealing from UV radiation and mechanical damage the embankment surfaces were covered with talon meadow and on average covered with a 20 cm strong layer of topsoil which was sowed with grass.

On top of the base sealing a drainage system consisting of drainage pipes was installed. The drainage pipes discharge into a controllable PURE soil drain. For the ventilation of the filter body the drainage pipes lead upwards along the slopes of the basin. The pipes are locked by means of sleeve plugs with vents. Along the slopes they are completed as UV resistant full pipes.

The main drainage performance is achieved by a layer made of coarse-grained lava. The drainage pipes are installed in between the lava layer and either of those discharge into the PURE soil drain. A layer made of fine grained lava was installed by BMU on top of the drainage layer for the pre-filtration of larger particles. The lava was delivered by silo trucks and then blown through tubes to the place of destination and finally incorporated by hand into the basin.

The 1,800 m<sup>2</sup> large surface of the filter body was put with altogether 5,400 reed plants (3 Pcs./m<sup>2</sup>).

The uniform distribution of the sewage sludge is ensured through the PURE filling system made of high-grade steel with



*A protection fleece and a HD-PE foil serve as a base sealing. The drainage system is incorporated into a layer of coarse-grained lava.*

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