

ISTD/ I-22-07

Context & Project Description

Haemers Technologies (HT), has been appointed by Signify (client) to take on the role of technical leads of the in situ thermal desorption remediation works at the former Philips site in Sittard, the Netherlands. HT was accompanied by Greensoil (GS) as a subcontractor and support during the treatment. The site's soil and groundwater are contaminated with Chlorinated volatile organic compounds (Cl-VOCs or VOCl). This specific phase exclusively focuses on the thermal desorption treatment of the target area of the site, as previously defined by B.V. TAUW (environmental consultancy). Thermal treatment will be applied in this area at a depth ranging from -1.5 m to -15 m below ground level (bgl).

Equipment

272 remote flame Smart Burners with an interdistance of 3.5m working with natural gas. All vapors are routed towards a vapor treatment unit (VTU), with three cooling steps, that consists of condensing and collecting non condensable gases on activated carbon. 30 MPE wells (multiphase extraction) wells are used to pump contaminated water from the area to be treated. This contaminated water, along with the condensate created in the VTU, is sent to a condensate treatment unit (CTU).

Treatment target

The treatment objectives were established based on local standards, aiming to restore the subsurface to an average total VOCl (PCE+TCE+cis-DCE+VC) concentration of less than 5 mg/kg_dm (with a maximum of 20 mg/kg_dm). A target temperature of 90°C also had to be reached on average in the TTZ (thermal treatment zone).

Monitoring

A set of 55 thermocouples were scattered across the area to measure temperatures at every meter of depth. Analyses were also carried out on the VTU chimney and extraction container. A PLC was used to control temperatures and pressures throughout the VTU.

Planning

The heating phase lasted from 5 November 2024 to 31 July 2025. However, the average target temperature of 90°C was achieved in many places as early as March.



Key words

Contaminants
Volatile halogenated organic compounds (TCE/PCE/DCE)

Max. concentration
90,000 mg/kg_dm

Volume
26 068 m³ m³

Tonnage
51 540 T

Nb of heating tubes
272 heating tubes
30 MPE wells

Temperature Target
90°C

Depth
-1,5 m to -15m

Heating Duration
268 days

Treatment targets
An average total VOCl content of 5mg/kg_dm, with a maximum of 20mg/kg_dm

Location
Sittard

Future use
Offices

Client
Signify

Consultant
Tauw

Date
From January 2024 to March 2026