

IEG Technical Briefing Note No. 6

Vacuum Vaporiser Well - IEG UVB™

Possible Areas of Application

The IEG UVB™ is an in-situ system for the remediation of contaminated aquifers, especially those contaminated with volatile and semi-volatile hydrocarbons or heavy metals, using a combination of chemical, physical and biological processes.

Description of Method

Primary Components

An IEG UVB™ process unit consists of a specially-adapted groundwater well, a negative pressure stripping reactor, an above-ground blower, and a waste air decontamination system (for example disposable filters or regenerative activated carbon filters).

Principle of Operation

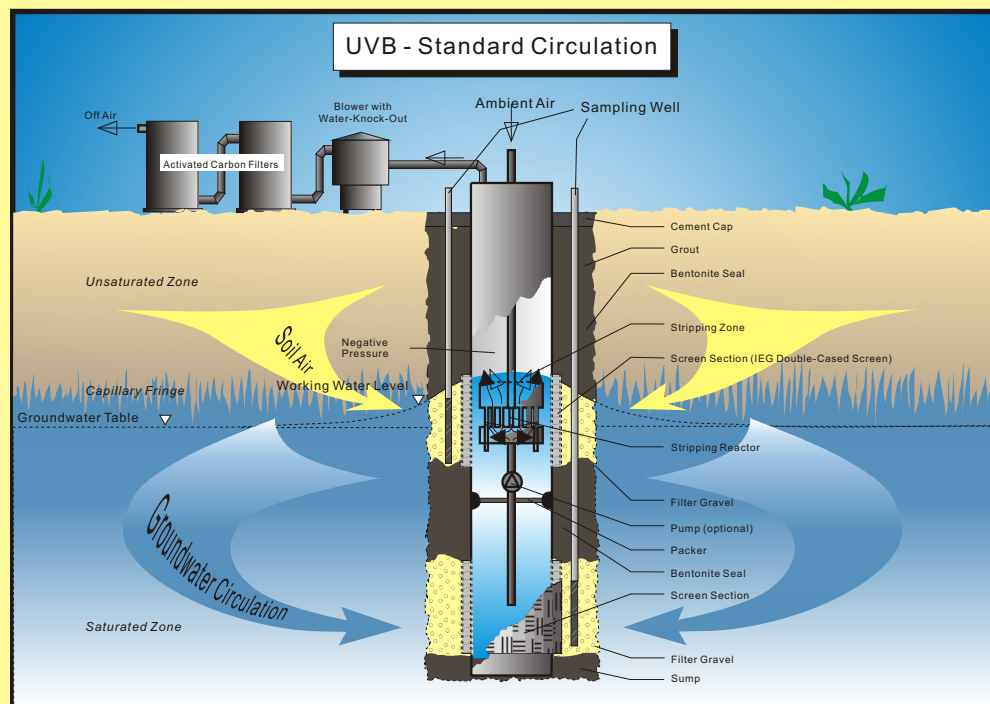
Groundwater level rises inside the well due to the application of a low negative pressure generated by a blower, typically 40-80 millibars. Ambient air is pulled through the multi-stage stripper (labyrinth stripper) via a pipe connected to the stripping reactor located in the well. The rising air bubbles enhance the suction effect at the well bottom and this effect is further enhanced by the use of an air-lift-pump.

Dry Air

As a result of the concentration gradient which develops, the contaminants vaporise into the air bubbles and are removed from the well by the air flow. The continuous expansion of the air bubbles when passing through the stripping zone causes adiabatic cooling, which results in a decrease of the relative humidity of the extracted air.

Efficient Use of Activated Carbon Filter

When the contaminated exhaust air passes through the activated carbon filter, no water condensation occurs due to the low humidity of the air. Therefore, a significantly greater part of the activated carbon filter can be utilised (typically 30-40%) for adsorption of pollutants as compared to conventional air stripping (typically only 5%).



IEG Vacuum Vaporiser Well™ System
for physical removal of volatile contaminants
(IEG UVB™ Process)

- **Patented design - proven engineering**
- **Quicker, Smaller, Smarter, Greener**

The IEG UVB™ method is a process patented by IEG.

Continued overleaf



To discuss your in situ soil and groundwater remediation requirements, or for a free remediation concept and quotation, please contact us

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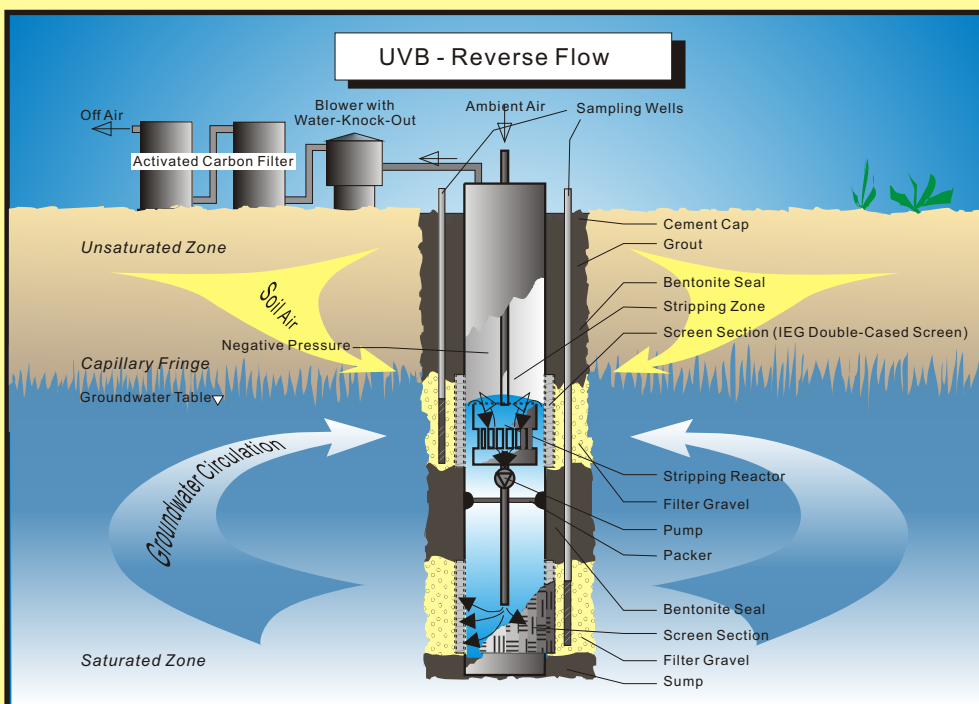
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Air-Lift-Effect

The rising of the air bubbles supplements the lifting effect of the negative pressure and further elevates the groundwater within the well. The subsequent fall of the groundwater along the walls of the well produces a significant hydraulic pressure. Pipes positioned within the well transport additional contaminated water from deeper well sections to the active remediation zone.

Transport within the Well

By adding a support pump to the IEG UVB™ system, a specific flow direction can be induced, which produces a vertical flow either upward or downward within the well. The oscillating hydraulic pressure forces the water horizontally into the aquifer along the top screened segment of the well. In the surrounding aquifer a circulation flow cells develops with water entering at the base of the well and leaving through the upper screened segment or vice versa, depending on the desired flow



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Simultaneous Soil Air Venting

The IEG UVB™ method is capable of extracting soil air during ground water treatment. The amount of soil air and groundwater passing through the decontamination system can be adjusted according to the type of contamination and the well construction.

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