

**Wasatch In-Situ Aeration Technology Add Production, Cuts Cost**

Wasatch Environmental, Inc., of Salt Lake City, a groundwater and soil remediation specialist, says it has developed a high-efficiency in-situ aeration technology that adds productivity and cost savings to cleaning up sites contaminated by petrochemicals and other hazardous wastes.

Company says this proprietary, patented technology-Density-Driven Convection (DDC)- can save 50% or more of cost of other groundwater treatment techniques and rid sites of contaminants in considerably less time.

The DDC technology addresses need for more cost-effective and thorough remediation of groundwater and soil at thousands of untreated and non-yet-identified contamination sites throughout the country. Wasatch President Les Pennington says DDC sparging is a highly efficient alternative to both pump-and-treat and forced air sparging, and already has removed a broad range of volatile organic compounds at many such sites.

Generally known as groundwater recirculation (GRC)

systems, DDC wells are installed by lowering a perforated, pipe-like casing into a wellbore that has been drilled to the lower portion of the contaminated aquifer. Installer connects an air injection tube to a compressor at ground level, and drops the nozzle down to the bottom of the well casing.

As air is injected into the ground water at the bottom of the casing, it forms bubbles that flow upwards, aerating the ground water and producing a vertical gradient within the casing. This draws water in through the lower perforations and pushes it out the upper ones.

Volatile water-borne contaminants are stripped from the ground water inside the DDC well. Volatile compounds emitted from wells in the form of gases may be released to the atmosphere or collected at the wellhead for treatment. Biodegradation of contaminants is enhanced by forcing air into the vadose zone and circulating dissolved oxygen through the aquifer.

Well systems using the DDC technology are simple to install and require very little maintenance, company says.

Systems can be incorporated into a complete grid of wells for aggressive treatment of an entire plume area, or a line of wells may be installed across a plume to act as a barrier to plume immigration by removing contaminants as they pass.

While DDC wells are considerably more efficient and economical than those using other technologies, cost vary. "All wells are custom," Pennington explains. "The size and depth of the wells depend on the depth of the groundwater table and the thickness of the contaminated water. A well site in Salt Lake City may require going down 20 feet at a cost of \$1,500, while a site in Nebraska may require a well of 200 feet deep and a cost \$50,000 per well."

DDC systems have been applied to many different hydro geological environments and over 800 wells have been installed throughout the U.S.

"DDC remediation is much less expensive than pump-and-treat systems," notes Pennington. "Those systems must pump millions of gallons of ground water to the surface for cleaning, requiring far more energy and costly surface treatment systems that DDC does not use. Plus,

getting the permits needed to return surface-cleaned water back to the ground can add substantial costs and delays."

Comparing DDC to the "traditional" high pressure air sparging process, Pennington says DDC is much more productive. "Like DDC, high-pressure air sparging process, Pennington says DDC is much more productive. "Like DDC, high-pressure air sparging involves pumping air down a well to below the water table. However, this technique is considerably less efficient than DDC because of channeling and little air-water mixing. Also, high-pressure air sparging requires many more wells than does DDC."

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