

TechBriefs

Savannah River National Laboratory

U.S. DEPARTMENT OF ENERGY • SAVANNAH RIVER SITE • AIKEN • SC

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At a glance

- > Long operating life
- > Solar powered
- > Remediates shallow areas
- > Remediates vadose zone
- > Excellent for treatment polishing
- > Offers significant cost savings
- > U. S. Patent 6,971,820

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MicroBlower:

Subsurface remediation tool

The MicroBlower uses a small, low power vacuum blower to extract or inject gases into the subsurface for characterization or remediation. Because the components of the system have a long operating life, the system is useful for long-term cleanup operations, particularly where mass transfer limits the rate of remediation.

The unit can be powered by small batteries, small photovoltaic panels, or wind generators.

Ideal for long-term remediation

The MicroBlower addresses these considerations for long-term remediation systems.

Pumping: The pump is capable of producing environmentally relevant flows (i.e., greater than 1 scfm) at pressures or vacuums typical of subsurface situations.

Power: The system requires only between 20 and 40 watts of power, which can be easily produced by a small photovoltaic panel.

Size: The pumps in the system are small and unobtrusive for long-term operations – 4 inches in height and 3 inches in diameter.

Reliability: The mean time between failures for the pumps is on the order of 15,000 to 20,000 hours.

Widespread potential

The MicroBlower enables the use of simple, low-cost soil vapor extraction in shallower areas than previously considered possible.



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Technology transfer

The Savannah River National Laboratory (SRNL) is the U.S. Department of Energy's (DOE) applied research and development laboratory at the Savannah River Site (SRS).

With its wide spectrum and expertise in areas such as homeland security, hydrogen technology, materials, sensors, and environmental science, SRNL's cutting edge technology delivers high dividends to its customers.

The management and operating contractor for SRS and SRNL is Savannah River Nuclear Solutions, LLC. SRNS is responsible for transferring its technologies to the private sector so that these technologies may have the collateral benefit of enhancing U.S. economic competitiveness.

Perhaps the greatest potential for the MicroBlower is in treatment polishing of an area treated by an expensive, large blower system that still has residual contamination. Installation of an economical MicroBlower system to finish the cleanup at greatly reduced costs allows the larger systems to be used where they can produce greater returns.

The MicroBlower also can remediate sites that are smaller than the capacity of typical, large blower systems.

Offers cost savings

This technology has the potential to offer significant cost savings to the groundwater remediation industry. Presently, there are no regulations concerning the contaminants in the vadose zone. However, if the vadose zone is not remediated, contamination will migrate downward and recontaminate the groundwater. With the groundwater no longer in compliance, the responsible parties must bear the cost of remediating the groundwater again. By installing the MicroBlower, the risk of the groundwater being recontaminated from the vadose zone would be alleviated.

Verified performance

During a 10-month period, a MicroBlower removed 234 pounds of volatile organic compounds from a contaminated groundwater plume beneath the Savannah River Site (SRS).

Partnering opportunities

SRNS invites interested companies with proven capabilities in this area of expertise to enter into a licensing agreement with SRNS to market this nuclear material detection system. Interested companies will be requested to submit a business plan setting forth company qualifications, strategies, activities, and milestones for commercializing this invention.

Qualifications should include past experience at bringing similar products to market, reasonable schedule for product launch, sufficient manufacturing capacity, established distribution networks, and evidence of sufficient financial resources for product development and launch.

SRNL-L9100-2009-00174



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