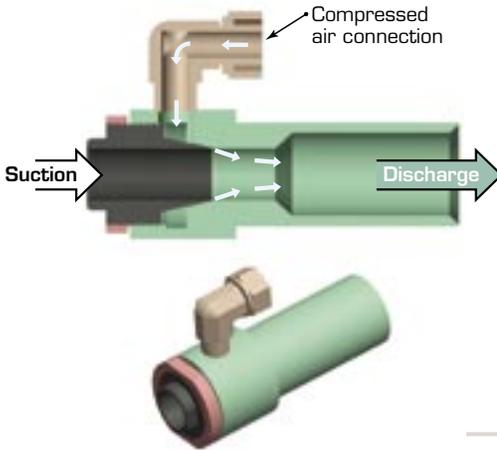




Pneumatic Conveyance Device



The Pneumatic Conveyance device is capable of dislodging, capturing, and conveying solid material, wet or dry, from a depth of 70+ feet, while discharging through a 100+ foot conveyance hose. The device was developed to remove water and solid material from the annular space between the tank and liner of a buried, double-hulled tank. The device relies on pneumatic “push” technology rather than the “suction” technology that has been traditionally used in pneumatic conveyance devices.

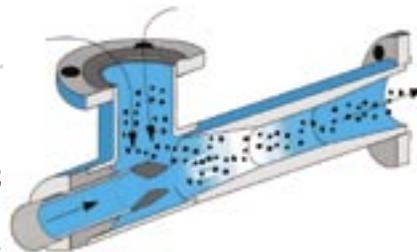
Improved Conveying

While suction devices create high vacuum at the expense of high air consumption, this device utilizes a different design which creates a significantly stronger “push” on material and better material conveyance (at the expense of reduced suction). The advantage of this device over similar suction devices is its performance—it provides the capability to carry the material to heights of 70 plus feet; suction devices are limited to 25 feet.

The primary component of the system is a pneumatic conveyance nozzle. The system was tested and successfully removed a mixture of sand, rock, wet sand, and water from a barrel to a collection tank elevated 70 feet above the barrel. Additionally, the system was attached to a scarifying tool, and performance tests were conducted on a cured mixture of plaster, sand, and aggregate, to simulate the hardest anticipated material that might be encountered. The suction port of the nozzle was blocked sporadically, but a port valve at the discharge end of the conveyance hose can reverse the flow temporarily to free the blockage.

Data/Specs

- Height: 70 feet plus
- 1 inch diameter nozzle connected to 100 ft. of 2 inch diameter PVC hose – dust collector and barrel
- Nozzle annulus air supply and flow rate: 50 SCFM at 80 psi
- Nozzle suction inlet velocity: 11,400 SFPM
- Outlet discharge flow rate: 130 SCFM
- Outlet velocity: 6,600 SFPM
- Estimated mass flow rate: 300 – 500 cubic inches/minute at a supply pressure of 80 psig and supply flow rate of 50 SCFM



at a glance

- superior lifting capability to 70+ feet
- simple construction with no moving parts
- lower air consumption than vacuum devices

Adaptable for many applications

The device was developed to remove water, and solid material, and miscellaneous debris from the annular space between the tank and liner, of a buried, double-hulled tank. Other applications for this device are:

- Transporting debris
- Removing mixtures of sand, rock, wet sand, and water to an elevated collection tank
- When paired with a scarifying tool, breaking up waste and then removing it to an elevated collection tank
- Removing waste material from remote locations where other methods (electric, steam, water) are less desirable
- Tank farm applications
- Under liner sump cleaning
- Heel removal
- Bulk Waste Removal

Technology transfer

The Savannah River National Laboratory (SRNL) is the applied research and development laboratory at the Savannah River Site (SRS). With its wide spectrum of 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.

SRNL and SRS are managed for the U.S. Department of Energy by Washington Savannah River Company (WSRC). WSRC is responsible for transferring technologies to the private sector so that these technologies may have the collateral benefit of enhancing the U.S. economic competitiveness.

Partnering opportunity

WSRC invites interested companies with proven capabilities in this area of expertise to enter into a licensing agreement with WSRC to manufacture and market this device as a commercial product. 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.

for more information

John Olschon, Licensing Associate

Savannah River National Laboratory
Bldg. 773-41A, Rm. 239, Aiken, SC 29808

Phone: 803-725-8125 or 800-228-3843

Fax: 803-725-4988

E-mail: john.olschon@srnl.doe

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