AVANTech

Water Treatment Services

High Velocity Vacuum (HVV™) and Ultra-Rapid Vacuum (URV™) Dewatering Systems

AVANTech offers three options for wet waste container dewatering systems:

The Conventional Dewatering Method

The air-operated diaphragm (AOD) pumps used for "pump-and-wait" dewatering draw a vacuum and also a low volume of air. Water that collects in and around dewatering internals is pulled into and through the dewatering piping. Any air entrapped in the system may prevent the water from being pulled up and out of the piping unless there is a good water seal on the internals. When this seal is broken, any water entrained in the unit will drop back down the piping into the container. For many applications, this process scheme may be adequate, but sometimes the demands are greater.

HVV™ Control Skid

The HVV™ Method

The HVV™ system enforces assured regulatory compliance. By providing a stronger vacuum force, the HVV™ can offer shorter process periods with the economy and simplicity of conventional dewatering. This powerful vacuuming action pulls any water near the internals into the piping and sweeps it out of the container the same way a shop vacuum removes water off the floor. This unit provides a faster operation due to its high flow capabilities. The HVV™ system is less complex, more economical, and more effective in meeting disposal site free-standing liquid (FSL) requirements than other dewatering methods.

URV™ Skid

The URV™ Method

The URV™ system incorporates the advantages of the HVV™ plus the addition of dry conditioned air that allows for "ultra-rapid" dewatering and significant time savings. This automated system can be mated with a standard or a remotely operated fill-head for additional radiation dose savings, enhanced operator safety, and ease of use.

HVV™ and URV™ Dewatering

Optional Fill-Head

While the HVV™ and URV™ are designed to operate without a liner fill-head, an optional automated remote disconnect fill-head can be used to aid in process control efficiency and in human performance factors. Available additional accessories include:

- ✓ Color camera and light source
- ✓ Influent/effluent connection ports
- ✓ Waste inlet isolation valve
- ✓ Thermal monitor
- ✓ Electronic level monitor
- ✓ Lifting device (removable post attaches in center of fill-head)
- ✓ Wheeled transport dolly

The fill-head mates to the HVV™ or URV™, or it can be used as a "stand-alone" for transferring material to containers.

Should the electronic level monitor sense that water/resin has risen to a predetermined point within the container, a pneumatic influent valve automatically closes to prevent overfilling of the container. This valve can also be actuated with a hand-held pendant. With loss of air or power, the sluice valve actuates to a fail-safe closed mode.

The fill-head's remote and automatic features help reduce exposure to ALARA by making it easy for personnel to monitor and operate the unit at a distance from the dewatered liner.

Elegant Simplicity

The single-unit vacuum design of the HVV™ and URV™ has no complicated controls, blowers, heaters, rheostats, or other equipment. This unit will come complete, having just an ON/OFF switch to operate, making the entire simple design reliable and almost maintenance-free.

Compatibility

The basic HVV™ or URV™ system, dewatering internals, and optional fill-head are compatible with any steel liner or high integrity container used by the nuclear industry today. The optional fill-head can also be used with AVANTech's Advanced Polymer Solidification (APS™) process.

HVV™/URV™ Fill-Head

Dewatering Time

Liners are ready to ship by the second day of HVV™ and URV™ dewatering.

Regulatory Compliance

To assure compliance with disposal site FSL requirements, AVANTech has performed extensive full-scale testing of the HVV™ and URV™ with liners up to 200 ft^3 (5.66 m^3) in volume. After a road test simulating a trip to the disposal site, liners dewatered with the HVV™ and URV™ were checked for FSL and found to comply with site requirements by a factor of 25 to 50 times. Data from these tests is available for inclusion in your plant's records.

The systems have been approved by the State of South Carolina Department of Health and Environmental Control for dewatering waste for disposal at Barnwell.

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▪ 803.407.7171 ▪ 2050 American Italian Way, Columbia, South Carolina 29209
▪ 865.539.9000 ▪ 2680 Westcott Boulevard, Knoxville, Tennessee 37931
▪ 509.943.6706 ▪ 2155 Robertson Drive, Richland, Washington 99354
▪ info@avantechllc.com ▪ **www.avantechllc.com**