Mobile Supercompactor

Background
Supercompaction is a viable treatment technology for volume reduction of various waste streams, including activated metals, glasses, contaminated solids, plastics, small equipment and tools, filters, compactable trash, wood, pipes, sludge and asphalt.

Westinghouse mobile supercompactors have been in worldwide operation since 1985. The supercompactor allows reliable and proven volume reduction as a mobile solution, thus providing customers with flexible and independent campaign planning and optimum space management on their sites, for both equipment and waste volume.

Description
The Westinghouse mobile supercompactor combines the benefits of a 2,000-ton supercompaction system with the highest flexibility a system of this size can offer.

The 20-foot equipment vessel is a standard container that is placed on a three-axle, low-bed trailer. The compactor is integrated on the trailer together with the ventilation system and the hydraulic and electrical components. The inside and outside surfaces of the container are treated with primer for easy decontamination. Furthermore, to protect the system from damaging environmental impacts, particularly when being transported, the mobile supercompactor is enclosed by a protective hood.

The unique design and interior of the vessel, which is equipped with a longitudinally traveling hoist for handling heavy equipment, allows it to be customized with various auxiliary equipment including cranes, transfer systems, add-on parts, additional hydraulic power units, and spare parts and tools. In addition, the following components can be added to the mobile supercompactor system, depending on the equipment chosen:
- Crane for loading and unloading of drums/pellets
- Drum and pellet grabs
- Loading device (to the supercompactor)
- Unloading device (+ grab) (from the supercompactor)
- Pellet pusher
- Pellet stopper and pellet weighing device
- Pellet height measuring device
- Transfer conveyor

The compaction process begins with the delivery of radioactive waste to the supercompactor in compactable drums. The compactable drums are then placed in the input position on the feed conveyor and transported to the input position of the loading device of the supercompactor.

To start a compaction campaign, the venting of the drum mold of the compactor has to be in operation (e.g., heating, ventilation and air conditioning or separate ventilation). The compaction process can be performed in an automatic or in a remote-controlled mode.
To load the supercompactor, the loading device (pusher) grips the compactable drum in its lower area and transfers it to the compaction position that is located underneath the press plate (piston rod), on the base plate of the supercompactor. The loading/unloading device is then moved back, outside the compaction position. After positioning the compactable drum via centering devices, the drum mold of the supercompactor is lowered over the compactable drum. The centering device then moves back into its parking position and the mold is completely lowered onto the baseplate. The piston rod is lowered down to the top of the drum and the compaction process begins. After the compaction process is finished, the drum mold is lifted up. The unloading device grips the generated pellet, transfers it to its output position and places the pellet outside the compactor for further transport.

**Benefits**

The Westinghouse mobile supercompactor offers high-volume reduction of waste with a mobile solution. The resulting pellets are easy to handle and can be put into uniform overpacks (e.g., drums or containers) according to the customer’s needs and requirements. The system can be used as a complete stand-alone system with the necessary auxiliary equipment, or can be implemented as a temporary solution into existing waste treatment processes. Furthermore, this mobile solution ensures best life-cycle cost by reducing total investment and limiting the need for operating personnel.

The mobile supercompactor offers the following features:

- Adjustable height which guarantees suitability for road transport (4 m)
- Loading of capped compactable drum (with waste) into mobile supercompactor
- Piercing of the drum, if required
- Effluent collection tank
- Ventilation line to high-efficiency particulate air filter
- Compaction of drums to pellets
- Removal of pellet from compactor
- Measurement of pellet (height, weight) for overpack optimizing
- Hydraulic unit and capping device for drums
- Use of different drum sizes (e.g., 160, 180 and 200 liter)
- Various auxiliary equipment

**Experience**

Westinghouse has been supporting mobile supercompaction operations in many different countries including the United States, Great Britain, Italy, France and Korea.