

# Decontamination / Segmentation Boxes

## Background

Westinghouse decontamination and segmentation boxes are used to segment and decontaminate equipment, parts and other material that arise during operation and decommissioning of nuclear power plants or other nuclear facilities. The boxes are designed and developed to meet our customers' specific needs regarding the capacity, plant layout, functional requirements, logistics, dose rate of material and degree of automation by focusing on as-low-as-reasonably-achievable principles. Based on Westinghouse's broad experience in decontamination and segmentation, each box is equipped with state-of-the-art technology to fully address the needs of the customer. Several segmentation or decontamination technologies can be used inside the box to fulfill complex segmentation and decontamination tasks in a controlled environment.



Example of decontamination box internal equipment

## Description

Each decontamination and segmentation box is designed and constructed according to the required available space and the anticipated operation. No matter the size of the structure, steel parts can be assembled inside the dedicated location, and the interior walls box are welded, ground and polished. Furthermore, each box is equipped with a high-efficiency particulate air (HEPA) filter system that keeps a sub-atmospheric pressure inside the box and a directed airflow, even when the doors are open. Boxes can be modular or mobile, and used stand-alone or combined to form a series of boxes as an integrated part of a fully equipped decontamination and waste treatment process.

Depending on the desired application, a customized Westinghouse decontamination and segmentation box can be designed with:

- a box floor design to allow liquid collection (e.g., wet decontamination with high-pressure water)
- a customized water treatment system designed by Westinghouse to reduce secondary waste (e.g., to allow reusability of blasting material)
- the necessary supplies and connections for the workers' full-protective suits
- the added benefit of remote-controlled or automatic systems for decontamination or segmentation
- a customizable door opening for loading and unloading of materials (e.g., foldable roof for loading/unloading via crane)
- an internal crane to facilitate handling of heavy components
- additional internal equipment such as turntables, tooling, decontamination baths, high-pressure-systems and blasting systems
- special sealings at the doors and openings; (e.g., for work conducted in an inert gas atmosphere)
- access sluices and a change room for workers
- a separate control room as an integral part of the box

## Benefits

The advantages of having a customized Westinghouse decontamination and segmentation box include:

- Fully customizable box to address customer requirements
- Implementation into existing building structures and layouts
- Designed for easy decontamination and cleaning of the structures and the box interior
- Full integration of decontamination technology (e.g., high-pressure water, grit blasting)
- Full integration of decontamination material recycling/treatment system
- Full integration of HEPA filter system and water treatment systems
- Integrated change room/access sluice for workers
- Implementation of full worker protection suit equipment
- Different grades of automation from fully manual to highly automated for treatment of intermediate level radioactive waste
- Numerous internal features like turntable, cranes, loading/unloading device, tools, work benches and sinks

## Experience

Westinghouse has successfully implemented decontamination and segmentation boxes in several German nuclear power plants and in a German research center, some of which have included a decontamination material recycling and treatment system.



Example of a multi-function box (e.g., segmentation, workshop, decontamination) with foldable roof opening