

Semi-hot Cell



The Semi-hot Cell represents a complex workplace for treating solid or liquid radioactive emitters and provides personnel with maximum radiation protection.

The actual model can be adapted to the particular needs of the user.

Purpose

The Semi-hot Cell is designed for working safely with radioactive materials; it permits work with both solid and liquid radioactive emitters.

The shielding is designed with respect to the presumable activity of emitters which will be the subject of work in the chamber. The lead layer thickness is typically up to 100 mm. (Thicker shielding is usually installed for hot chambers).

The particular spatial arrangement and equipment of the chamber is designed and implemented in accordance with the customer's requirements and with customer cooperation. Multiple-chamber disposition can be added if useful, to allow concurrent work at several adjacent work stations.

The Semi-hot Cell is equipped with aids and tools, depending on the purpose, within the project, and with respect to safety and relative comfort during routine work. Usually, such specialized handling devices, monitoring and safety features, distribution systems of technical gases and liquids, laboratory instruments, etc. are included.

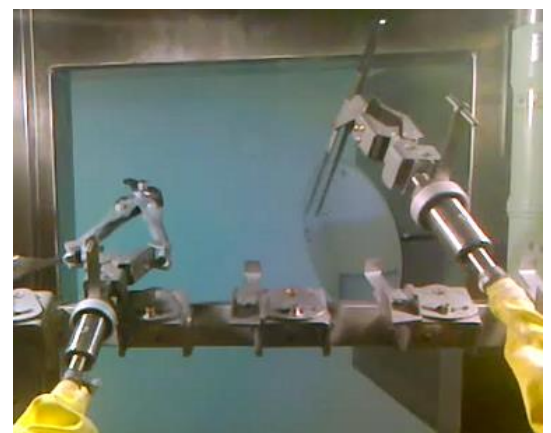
Description

The basic construction components of a Semi-hot Cell are a bearing steel frame and appropriately thick lead shielding. There are technological apertures located in the enclosure walls and on the front observation window, made of lead glass with an appropriate shielding equivalent. Optionally, the workplace can be equipped with a camera system to observe the manipulation.

The Semi-hot Cell is equipped with technology for controlled air flow. The air is pulled in through the input HEPA filter from the ambient environment; the system maintains a slight constant depression in the chamber and the air leaves the chamber through the output HEPA filter. The air flow is monitored by pressure sensors. Optionally, the workplace can also be equipped with an output air activity monitor.

Main Advantages

- Safe shielding of the workplace with radioactive emitters: providing a safe dose rate on the surface of the chamber
- Minimizing the risks of radioactive leaks
- Adjustable dimensions, customized solutions, with the possibility of a multiple-chamber arrangement
- Optional technical equipment, including specialized tools to make work more comfortable
- Actual dose rate measurements of both inside and outside the chamber; with the possibility to connect into a monitoring host system



Description

The workplace is generally equipped with various mechanical elements. The key work tools are manipulators, by means of which the operator handles the sources inside the cell. The concept of manipulators, manipulator model, and the availability of work adaptors is handled individually within a given project. Depending on workplace needs, other elements can be installed: door-opening mechanisms (access or between the chambers), a lifting mechanism for manipulation of source containers, container-lid-opening mechanism inside the cell, cranes, pincers, lab-tool holders and materials, and so on. Air-tight gloves for work that does not require higher radiation protection can be installed into the cell's front wall.

Mechanisms for manipulation with shielded source containers and particular interior disposition in the cell are optimally adapted for particular container types to be applied. Inside the cell, there is a work-table at a comfortable height (usually 80 cm (31½ in)); tools are located in their respective holders within easy reach of the manipulators, as well as other required technology. All materials and surface treatments in the interior space are intended for work with alkalis and acids (stainless steel) and for decontamination procedures.

The cell equipment includes an embedded shielded vessel for short-term radioactive waste storage and reservoirs for operative storage of the sources. If required, an immediate sample activity monitor can be suitably integrated into the work area, eventually interconnected with a database system for archiving measured values, printing labels and editing appropriate documents.

The operator receives current status information of the dose rate inside and outside the cell on a well-arranged information panel (screen) and, optionally, the measurement can be connected to the host monitoring system.

Safety elements are interconnected: e.g. the door-opening mechanism is blocked if a dose rate detected inside the cell exceeds the safety limit.

A camera system can be installed to further increase safety and comfort.



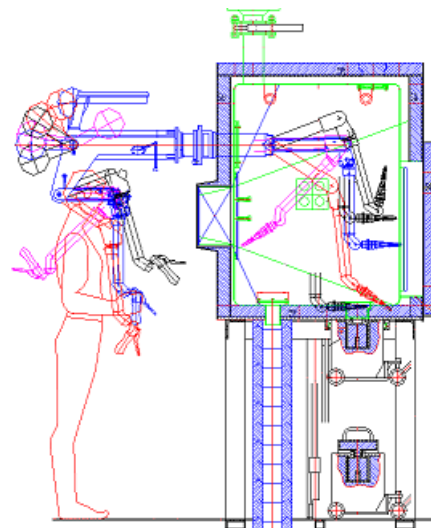
Flexible solutions

Specification

Dimensions	according to the design
Frame structure	steel structure
Shielding	lead, thickness according to the design
Manipulators	manual, adaptors as required
Air flow	controlled
Basic security	monitoring of the radioactivity, inside and outside the chamber

Models and Accessories

Type	Description
K1222	Semi-hot Cell
Optional Accessories	
K0982	AGM-02 Area Gamma Monitor
K1039	MK-30P Measuring Chamber
K0743	LZJ-22 Local Display Unit
K010X K121X	MDG-0X series Dose Rate Meters
<ul style="list-style-type: none"> ▪ Dose rate monitoring system ▪ Security system ▪ Camera monitoring system 	



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