

CASE STUDY

PROJECT TITLE: SHIELDED CONTAINMENT CELL

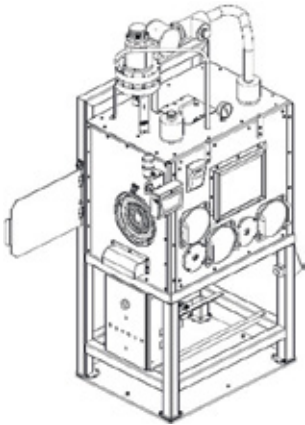


AIMS AND OBJECTIVES

The Shilded Containment Cell (SCC) was required to protect operators involved in manipulating radioactive closed and open sources, related to the necessary analysis of nuclear material sampled in the field.

Historically some samples have been supplied that exceed radioactive levels that can be handled safely in a standard glove box.

PROJECT OVERVIEW



Aquila Nuclear Engineering Ltd was engaged to design and manufacture a shielded containment that could operate as a glovebox in normal conditions, but if a higher radioactive activity sample is received, the cell can be remotely operated using tongs.

The plant consisted of a stainless steel shielded containment with 10mm lead shielding, clad with stainless steel. The containment was mounted on a stainless steel support frame. This support frame had an additional temporary bolt on frame that allowed it to become part of a lifting frame,

that could be used for lifting the containment into position. Space restrictions in the laboratory prevented the use of additional lifting equipment.

The containment cell will protect operators involved in manipulating radioactive closed and open sources, related to the necessary analysis of nuclear material sampled in the field during inspections. This works by providing a safe containment box in which they can safely control and manipulate the radioactive substances, using appropriate equipment.

The Shielded Containment Cell incorporates the following features:

- A shielded front window to enable the operator to view the inside of the cell
- A top window to allow light into the cell from an LED floodlight situated outside the cell
- Integration of cell control systems, HMI, activity measurement, cell temperature, ventilation, and instrumentation controls
- A La Calhene DPTE 105/270 combination port for the safe loading/unloading of samples
- Interfaces for power and comms. 3 x 230V feedthrough electrical outlets, 2 x 6 pin hermetic panel connectors and 1 x 25 pin hermetic panel connector
- Welded glove port and tong ball gaiter rings integral to the cell structure
- A slope at the front bottom edge to ease retrieval of items inside the cell
- 20mm radius on all edges for ease of cleaning
- A tong change station and alpha adaptor release tool
- A fire suppression CO₂ system
- Shielded Glove Port covers and storage rack

SUMMARY

Upon specification, Aquila designed and manufactured a highly adaptable and flexible shielded containment cell. The cell provides a safe system in which operators can safely control and manipulate the radioactive substances they encounter, while delivering the client goals. The result, a safe pragmatic, cost effective solution.



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ACCREDITATIONS



Aquila Nuclear Engineering is part of
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Pragmatic, cost effective solutions, always