

The Aquila Multi-Functional Cell

Aquila Nuclear Engineering's Multi-Functional Cell for nuclear and nuclear medicines specification and trials.





Aquila Multi-Functional Cell

The Multi-Functional Cell (MFC) consists of a stainless-steel containment, surrounded on the front face by façade shielding and cladding, lead glass window, 2 Getinge La Calhene master slave manipulators (MT120), various windows, access ports, glove ports, gland plates and sealing arrangements to allow clients and operators to interact with and trial the In-Cell equipment. These penetrations have been designed and manufactured to both Sellafield and Aquila standards.

The decision to invest in the design and manufacture of a demonstration MFC derives from the level of interest from our nuclear and nuclear medicines clients who want to experience the use of a shielded facility 'hands on'. Also, this facility is available to use without having to enter a licenced nuclear site. The MFC will allow our clients to test their own process or equipment inside the cell to gauge ease of use in operation and for maintenance purposes.

Aquila Nuclear Engineering Ltd is the sole UK distributor for Getinge La Calhene products, all of which are used on containment and shielded facilities. Getinge La Calhene is the world's leading supplier in manipulators and containment-related equipment and are a principal partner in the production of the MFC. Aquila personnel have received training in France on the full range of Getinge La Calhene products on offer, including manipulators and DPTE posting ports.

The advantages of being able to host trials with our client at our site means we can also help with the design and demonstrate our client's processes.

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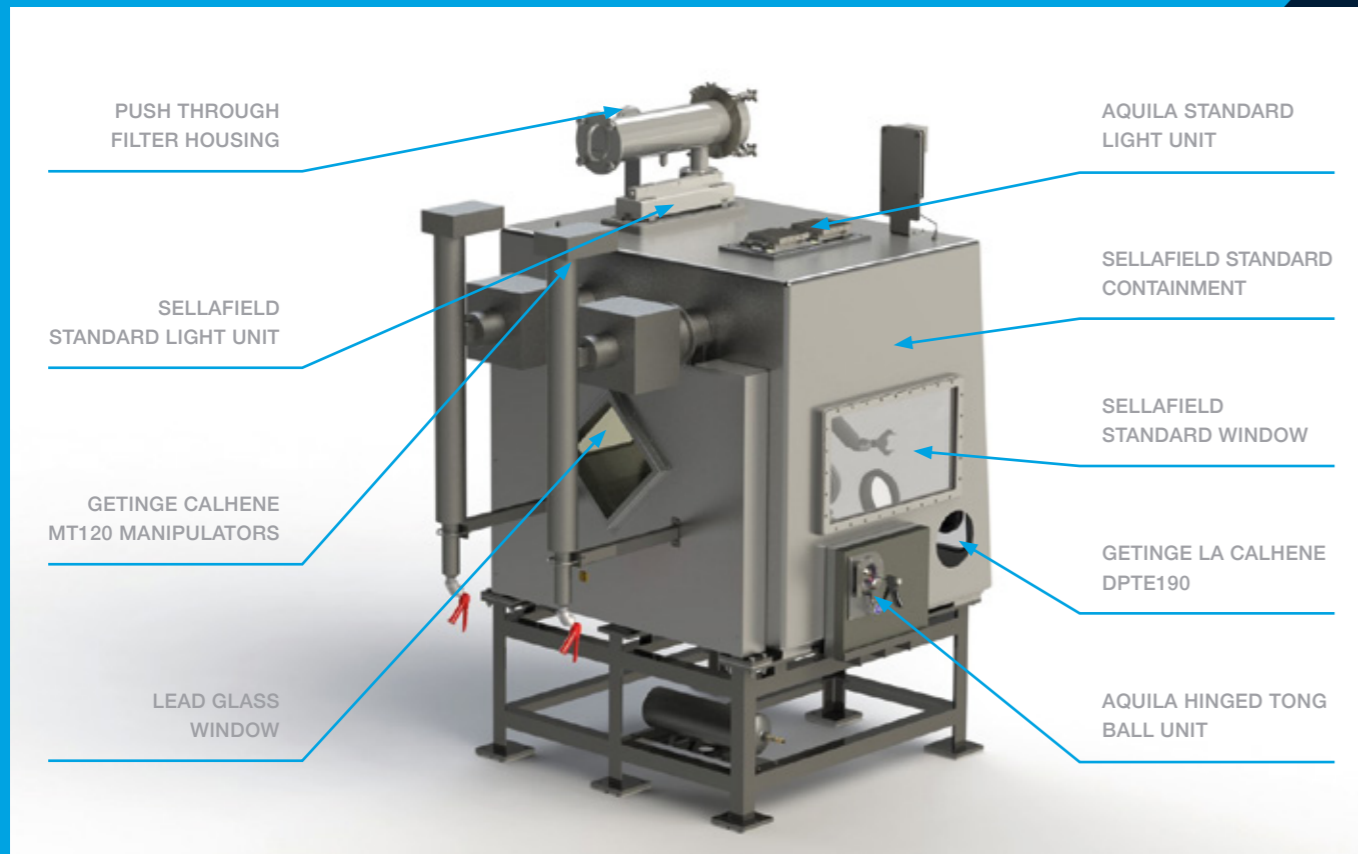
THE MFC WILL:

- Be the only trials and demonstration facility of its kind in the UK, to include MSMs and lead glass windows
- Provide a focal point for the UK Hot Cell and Glove Box industries
- Encourage early engagement with Aquila to focus on the contained and shielded process
- Demonstrate the capabilities of Aquila and our Supply Chain partners
- Allow clients to ‘mock up’ their containment design, train operators, trial manipulators and perform equipment trials in an inactive, safe and easy-to-access environment
- Encourage operator involvement during the design phase and validate operation and maintenance activities
- Provide a central point for Aquila and our Supply Chain Partners to display product and services information

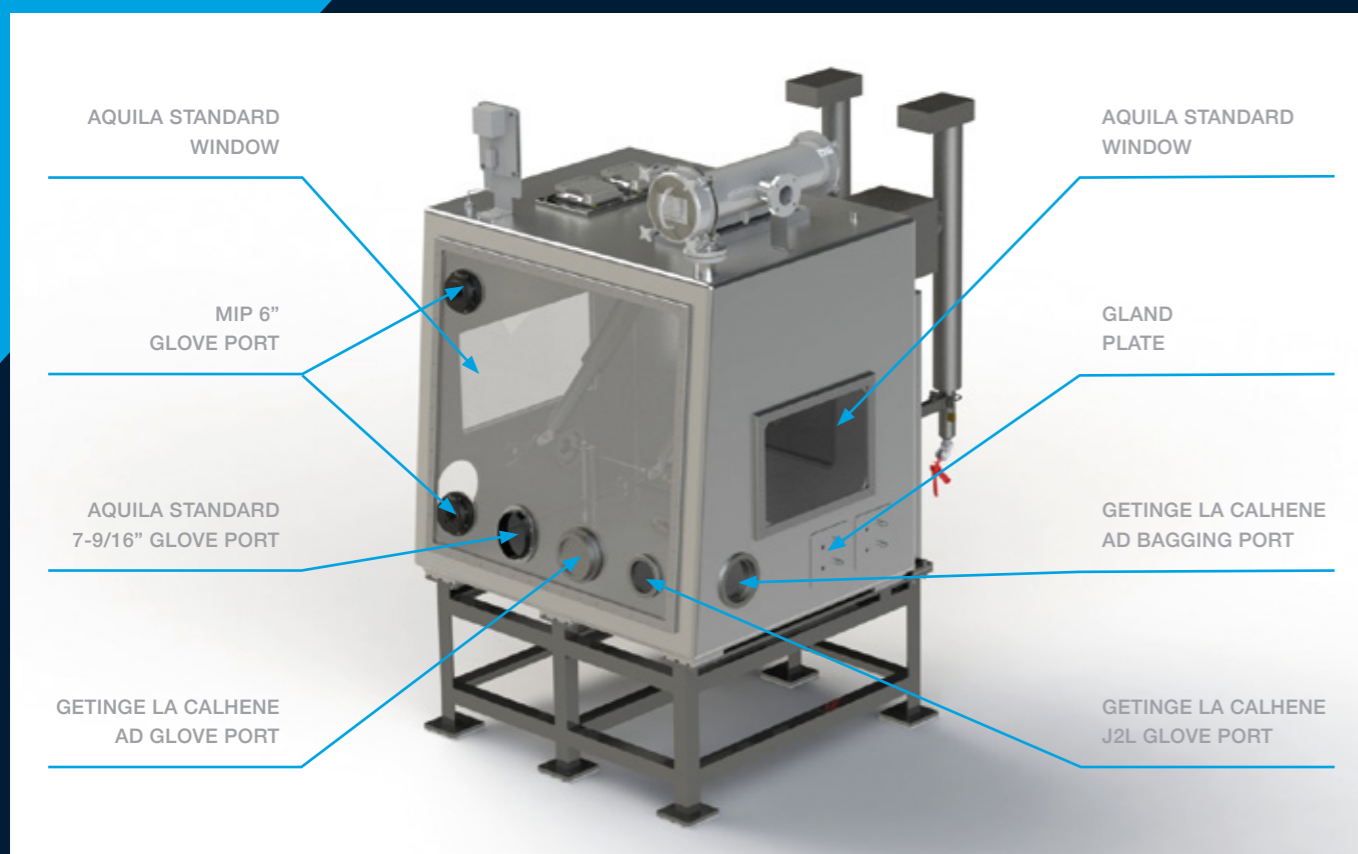
BUILT WITH OUR PARTNERS

- Getinge La Calhene S.A.S Master Slave Manipulators, DPTE ports
- Universal Fabrications Ltd Fabrication
- Hayneswood Engineering (UK) Ltd Precision machined parts
- Helander Precision Engineering Ltd Precision machines parts
- Silchester Control Systems Ltd Control system design and build
- Calder Industrial Material Ltd Lead shielding
- Röhr + Stolberg GmbH Lead wallpaper
- MC Air Filtration Ltd HEPA filters

MFC FRONT VIEW



MFC REAR VIEW



SPECIFICATION

1. CONTAINMENT

This has been designed and manufactured in SS304L in accordance with the Sellafield Alpha Glove box standard ES_0_1503_1-IMEC 1.

2. SHIELDING

Shielded cells can vary in shielding thickness from 50mm to up to 300mm of lead or lead equivalent. Rather than shield the whole facility, we have only included a section in chevron. With modern manufacturing, plant shielding is now normally supplied in single slab form. We can also supply X-Ready which is a self-adhesive lead wallpaper between 0.5mm to 2.0mm thick.

3. MASTER SLAVE MANIPULATOR

The Getinge La Calhene MT120 MSM have been installed on this demonstration facility. This model is versatile with a reach of up to 1440mm and duty of 12kg. We have installed a detachable and non-detachable Master Arm with a short length slave arm. These MSMs are powered by the control panel mounted on the front face. The long length slave arm can go up to 2040mm.

4. DOUBLE LIDDED POSTING PORT

The Getinge La Calhene DPTE190 has been installed on the containment shell. This allows for the safe transport of active material into and out of the containment. A shielded version of the DPTE can also be provided and used in conjunction with the Getinge La Calhene PADIRAC flask which is a certified package type B(U).



5. VIEWING

SHIELDED WINDOW

We have incorporated a standard 300mm thick lead glass window and mounting system for viewing. In addition, we have also included a radiation-hard camera inside the cell, together with viewing options from outside the cell.

NON-SHIELDED WINDOW

The MFC incorporates a range of non-shielded windows designed and manufactured to either the Sellafield or Aquila specification.

6. LIGHTING

A minimum of 500 Lux lighting is provided with both the standard Sellafield unit, or the Aquila unit.

7. SHIELDED TONG BALL

Traditional tong balls have been installed over the years to match the Cell shielding thickness. Aquila has a design for a hinged sphere tong unit which enables the whole tong assembly to move away from the cell. This is employed in the nuclear medicines industry where access to the inside of the cell is safe, once the isotope has been removed from the environment.

8. CONTAINMENT PORTS

The MFC includes a range of glove ports, including 6" and 7-9/16" standard glove ports and Getinge La Calhene AD and J2L glove ports together with an AD bagging port.

9. PENETRATION

Standard penetrations have been included in the design for:

- Gland Plates: Electrical/Pneumatics and Hydraulic command
- Push Through Filter Housing: This connects to the active ventilation
- Vertical Posting Out Port: Typically used to post out waste from the cell to transport container positioned under the box floor.



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ACCREDITATION, APPROVALS AND MEMBERSHIPS



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