

Decontamination & Cleanroom Solutions by PBSC

Solutions for the new Autolus facility to enable treatment of cancer.



Delivering life-changing treatments to cancer patients

The first Autolus manufacturing facility in the world, and the first UK CAR-T-cell manufacturing facility.

Autolus is a leading T-cell programming company, developing cancer therapies to offer patients substantial benefits over existing standards of care.

The company was founded in 2014, based on advanced cell programming technology from the University College London. Since then, it has experienced rapid growth, steadily acquiring the resources needed to manufacture, develop, and bring to market its programmed T-cell product candidates. The company is at the forefront of a cancer treatment revolution.

Expanding its capabilities by opening a new facility in Stevenage, the facility spans over 7,500 square meters and its objective is to develop CAR-T cell therapies for the treatment of cancer. These therapies are designed to re-program the immune system of patients, enabling easier identification of cancer cells.

PBSC, which is the leading manufacturer of cleanroom, high containment, and material decontamination products worldwide, in association with [Northumberland-headquartered Merit](#), which is an industrialised construction and digital manufacturing specialist, used their expertise to provide cleanroom and decontamination solutions that are now an integral part of the decontamination of equipment utilised in the manufacture of Autolus Biopharmaceutical products.

Products

2 x MAL50 Decontamination Chambers

- Inlet and extract air ducted into customer HVAC – By ducting straight onto the chamber inlet and extract valves, the air intake is temperature and humidity controlled. The customer ducts straight onto the PBSC inlet and extract valves from and to their HVAC system.
- PBSC - 3 Valve air handling system (AHS 800) – the 3 valve system enables a bypass mode during a cycle, enabling a constant air flow speed from the HVAC.
- Aeration units – The aeration units support the removal of H₂O₂ during the aeration phase of a H₂O₂ decontamination cycle, thus decreasing the overall cycle period.
- BMS I/Os – Our volt free signals are available if the customer wishes to be informed of alarms via their BMS (building management system)
- Pressure Relief – The pressure relief HEPA/CAT filter pack enables pressure to bleed from the chamber during a cycle.

- H₂O₂ Generator – The generator is mounted to the internal central panel of the chamber for distribution of vaporized Hydrogen Peroxide throughout the chamber, aided by stirrer fans mounted at height. The bottle housing is integrated into the loading side stainless steel external frame.
- Remote control panel and pneumatics panel – Remote panels allow installation into the customers technical areas, away from production and higher classification areas.
- Customer specific door design - The unloading door on chamber 2 is positioned perpendicular to the loading door as per the customer's cleanroom configuration.

Both chambers were successfully commissioned by PBSC during Site Acceptance Testing.

The development of the gas cycle in chamber 1 yielded a cycle time of slightly over 1 hour - Gas cycle development for chamber 2 is to take place in Q1 2024.

11 x Wall Mounted Pass Through Hatches

- 304L grade stainless steel.
- 10mm thick toughened clear glass.
- Polished visible surfaces.
- 600w x 1200h x 1009d

PBSC's wall-mounted pass-through hatches included HEPA filters on the input and extract, which subsequently required a deeper design to allow for the double filter housing, enabling equipment to be passed easily between the different grade rooms.

The refined design is strong and robust, providing easy cleaning and maintenance with a reliable interlock system to aid in the reduction of cross-contamination and pressure loss.

Solutions & Results

The client selected PBSC's MAL50 chambers and cleanroom pass through hatches due to PBSC's ability to offer custom designs along with durable and dependable products.

PBSC's chambers and hatches are now an integral part of the decontamination process for equipment used in the manufacturing of Autolus biopharmaceutical products, giving potential to deliver life-changing benefits to cancer patients.



Emma Gibbons - Senior Project Manager for PBSC

"We at PBSC are proud to be part of this development and wish Autolus every success with all their future research and developments".

