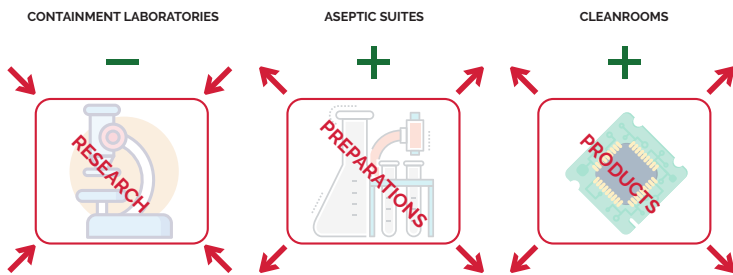
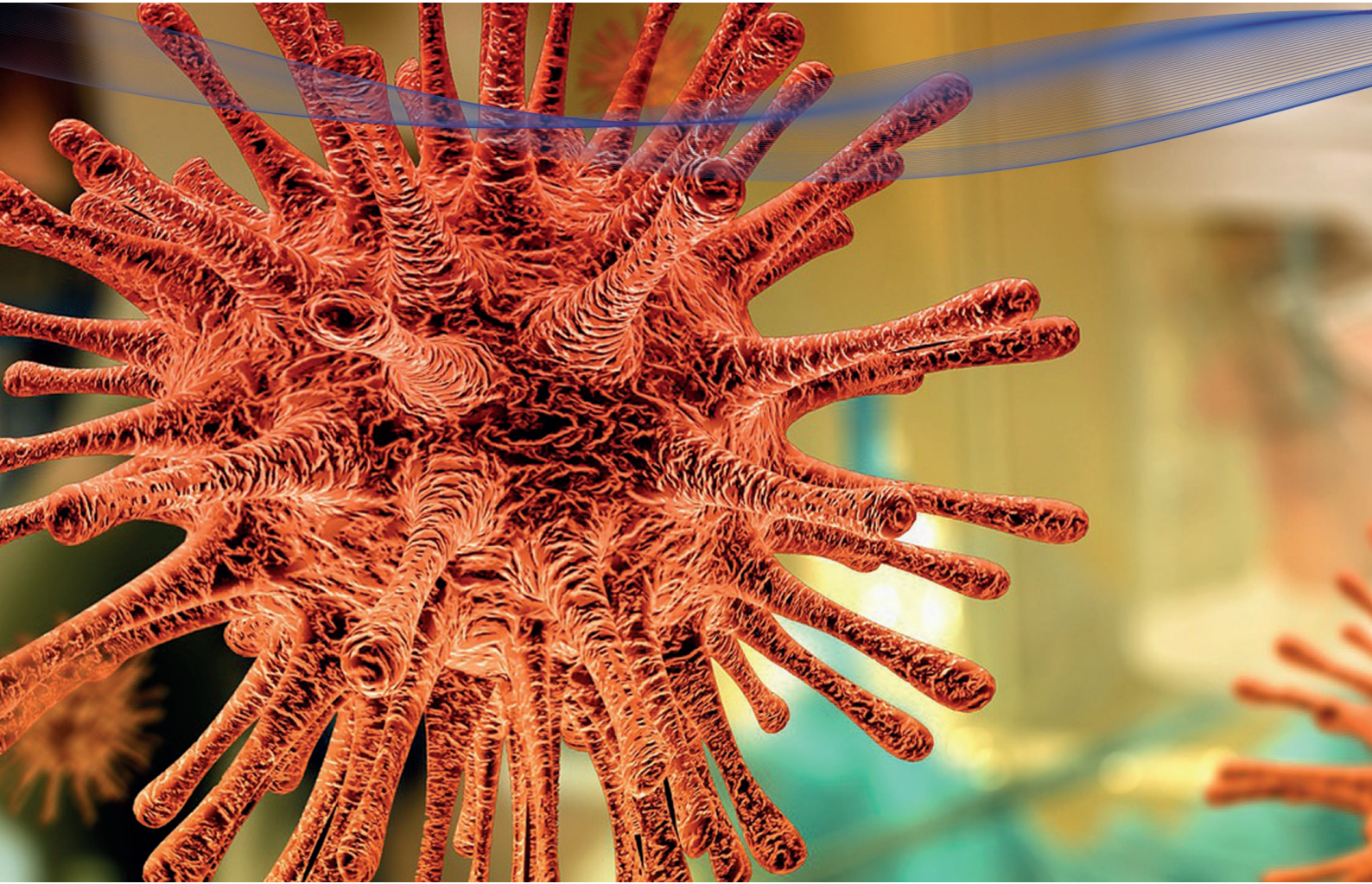


CASE STUDY

MAT WORKS TO A DETAILED AND COMPLEX BRIEF FOR NEW CL3 AND CL2 LABORATORIES



Medical Air Technology (MAT) has provided Containment Level 3 (CL3) laboratories for some of the UK's leading universities and research institutions, including the University of Warwick, Aberystwyth University, Imperial College London, and the London School of Hygiene and Tropical Medicine. This experience, combined with a strong technical response to the tender documents, made it the ideal choice when a university was looking for a specialist contractor to deliver a complex turnkey design-and-build laboratory project requiring both CL3 and CL2 facilities.

MAT was brought in to develop basic concept designs to full construction documentation over a very tight programme. This included assessing requirements, developing room layouts, and taking into account the needs and opinions of laboratory, teaching, research and estates teams.

Work began in spring, with a phased handover to allow the teaching laboratory element of the build to be ready for the return of students for the new academic year in October. The research facilities were then handed over following full fumigation efficacy testing shortly before Christmas, as per the schedule.

The laboratories

The client wanted to replace a large existing teaching laboratory with two CL3 labs, one to be used for virology and the other for bacteriology, and a CL2 teaching laboratory. The CL3 labs would be handling Schedule 5 pathogens, toxins and relevant genetic materials. Schedule 5 covers high risk biological agents and hazards, and genetically modified organisms, animals and plants, which must be securely managed and controlled according to Home Office security standards. The labs would need a lobby and self-contained plant.

CL2, the rating given to the teaching lab, is required when handling medium risk biological agents and hazards, which are generally not transmitted through the air. This means that no specialist ventilation is required, though other safety measures such as special equipment and user cleanliness are necessary.

Project challenges

As with any project of this size, scope and complexity, there were some particular challenges for the highly experienced MAT design and installation team to identify, address and overcome along the way.

The first stage of the build was to take out the old lab, ready for work on the new. The biomedical science building in which the work was being done dated back to the 1940s. There were some issues around asbestos, and a structural survey was needed to ensure that the building could withstand the weight of the additional Security Rating 5 (SR5) steel panel security walling system that would form part of the new laboratories. A SR5 rating means that the facility can withstand serious attempts at forced entry with the sort of heavy-duty battery power tools used by, for example, fire and rescue teams.

Making containment laboratories as secure as possible is now an essential part of their design, in accordance with the Anti-terrorism, Crime and Security Act 2001 Part 7: Security of Pathogens and Toxins. Due to the nature of the work that would be undertaken in these new laboratory facilities, not only did they have to achieve the SR5 standard, but government Counter Terrorism Security Advisers (CTSAs) were also brought in to assess the site and provide counter-terrorism protective security guidance, which MAT then incorporated into the design and build.

As well as being able to withstand hostile external forces, the laboratory suite had to be designed for full fumigation in the event of accidental contamination. The chemicals used for fumigation, such as formaldehyde, are very hazardous, so to ensure fumigation could be carried out safely, rooms were proven leak-tight and then a full fumigation efficacy test was undertaken.

In addition to having to fulfil the needs and requirements of all the various groups within the university who had an interest in the new laboratories, MAT had to work within the constraints of a live site, in which staff and student safety was paramount, and it was important to cause as little disruption as possible. This was achieved thanks to careful planning and close liaison with the client throughout.



Need solutions? Let's work together

What is Containment Level 3 (CL3)?

A CL3 laboratory is a gas-tight, leak-proof room that uses specialised airflow design to ensure biocontainment by operating under a negative pressure air regime. Level 3 containment is required when handling human pathogens that may be transmitted via a number of routes including inhalation, that often have a low infectious dose to produce effects, and that can cause serious or life-threatening disease. CL3 is the highest containment level in common use in the UK and requires certain features to be incorporated into the design to ensure appropriate containment.

A specialist contractor

MAT designs, manufactures, and installs bespoke critical ventilation systems and turnkey project solutions for new build and refurbishment healthcare and life science projects. As a specialist contractor with many years' experience, the company is passionately committed to improving patient protection and operator and product safety in demanding clinical, research and drug production arenas. The team has extensive experience of working in live environments and fully understands the challenges around delivering a project within an operational scenario.

In addition, the company's facilities management division, MAT FM, provides a range of competitively priced and highly effective service and maintenance packages for all core products and turnkey solutions offered by MAT or other suppliers, ensuring that equipment is maintained, serviced and validated correctly for optimum performance and efficiency.



Written and distributed by:	Medical Air Technology Ltd
Further information:	Will Evans
Call:	+44 (0)844 871 2100
Email:	will.evans@medicalairtechnology.com

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