

AEROSPACE MANUFACTURING



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THE CLIENT

Aerospace innovators whose technologies have inspired and industrialised their industry, combining engineering excellence and technology leadership. All major aircraft and engine manufacturers rely on the client's advanced technologies – their aerostructures, engine systems and special products improve the performance of more than 100,000 flights every day.



THE BRIEF

The client wished to strip out and replace an existing cleanroom at their premises with a brand-new installation in order to increase their Aerospace manufacturing production capacity and improve their compliance. By developing a first-class cleanroom, the client would have more scope for bringing in new projects. The build was scheduled to take place over two phases – with an intelligent temporary dividing wall installed to ensure the client could resume their process as soon as possible.



“The team are delighted with how the cleanroom looks and performs...”

Guardtech Group Projects Director Sean Gaylard said: “I’d like to thank the client and my team for all their efforts in Phase 1 of this amazing project.

“We’re absolutely delighted with how the cleanroom looks and performs thus far and are looking forward to delivering the same high levels of quality in Phase 2.”

Sean Gaylard
Guardtech Group
Projects Director



Cleanroom
solutions



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THE TECH SPECS

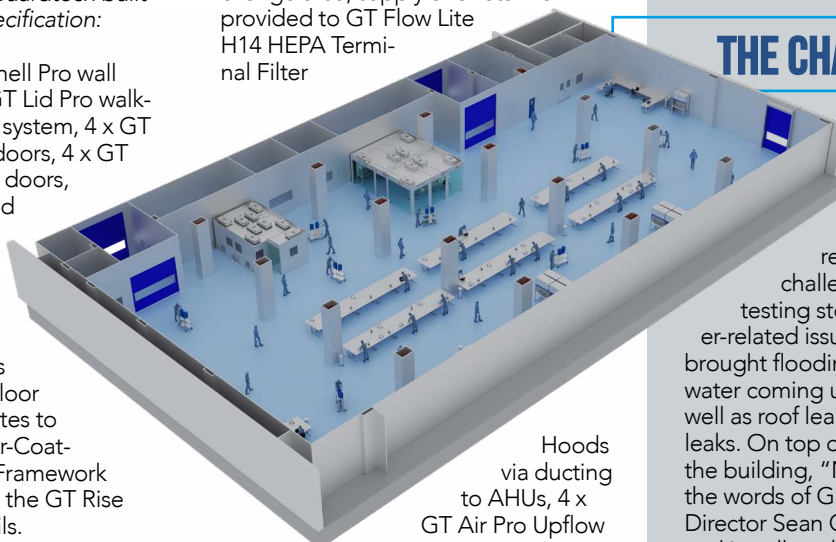
A controlled environment designed, installed, cleaned and commissioned by Guardtech built to the following specification:

◆ **Structural:** GT Shell Pro wall panelling system, GT Lid Pro walk-on panelled ceiling system, 4 x GT Access Plus single doors, 4 x GT Access Plus double doors, 2 x GT Rise Pro rapid roll doors, Span Secondary Steel Beam steelwork between Crane Rail top fixing, Secondary Steel Beams spanned between floor joists with fixing plates to beam body, Powder-Coated Steel Goalpost Framework installed to support the GT Rise doors, GRP laser rails.

◆ **Electrical:** GT Lux Pro surface-mount LED lighting units with intelligent DALI controls providing 1000 lux, electromagnetic door interlocks with status indicators, 251 x 13amp double sockets and 168 x CAT6e in surface-mount three-compartment PVC

trunking, 4 x 125-amp distribution boards, 1 x 63-amp outlet.

◆ **Mechanical:** GT Flow Pro H14 HEPA Fan Filter Units with G4 filters and Roomside Change feature in change area, supply and return air provided to GT Flow Lite H14 HEPA Terminal Filter



Hoods via ducting to AHUs, 4 x GT Air Pro Upflow CRAC Air Handling Units (AHUs) delivering 93kW cooling each with Modbus connectivity, vacuum pipework, additional trim heaters on supply air assisting with temperature and humidity control.

◆ **Monitoring:** GT Scan Pro

Environmental Monitoring System (EMS) measuring temperature, humidity, pressure & leak detection via HDMI 15" Panel with full Modbus PC integration, 4 x particle counters, Fan Filter Unit and lighting controls, in-room alarms.

THE CHALLENGES

Age concern: The cleanroom facility was being constructed in a 150-year-old shipyard and, as a result, presented various challenges. There were several testing storms and other weather-related issues to deal with, which brought flooding and tidal issues with water coming up through the floor, as well as roof leaks and rainwater pipe leaks. On top of all that, with the age of the building, "Nothing was square," in the words of Guardtech Group Projects Director Sean Gaylard, so all our design and install work required extra flexibility and creativity with layouts and services placements. This meant ordering new panels and other components wherever necessary. As well as design amendments, there were various inventory checks and 'panel cuts' to fit different-sized spaces. However, the team endeavoured to waste as little as possi-



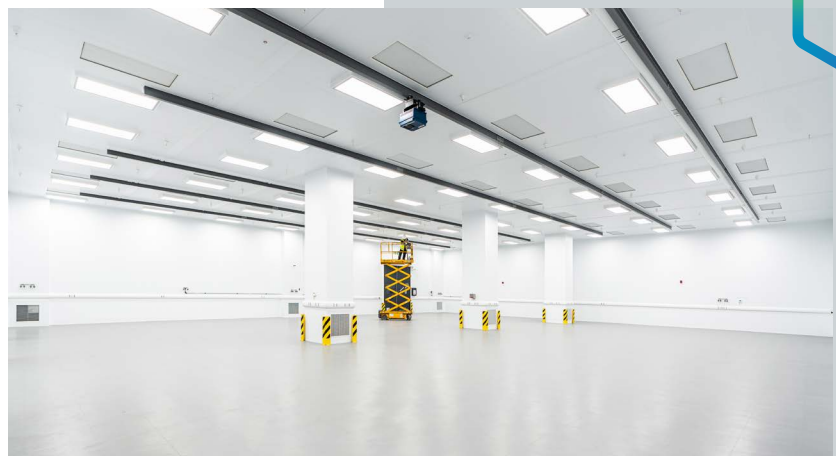
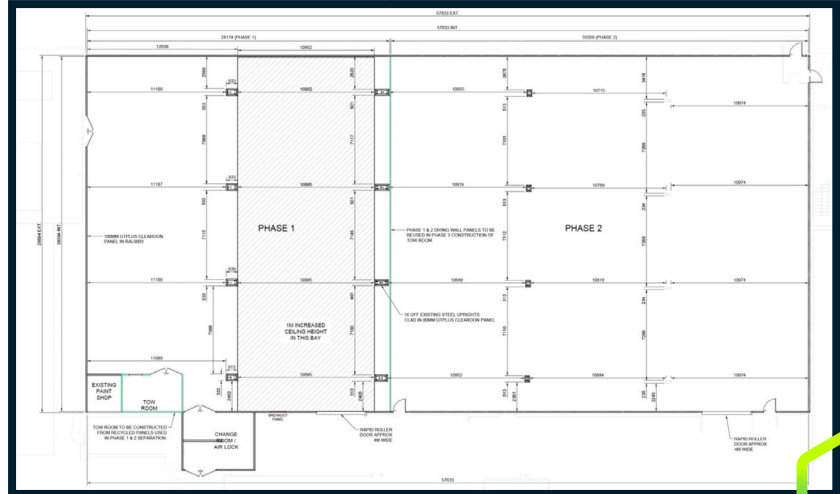
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ble and reworked the design to overcome these ‘on-the-ground’ challenges.

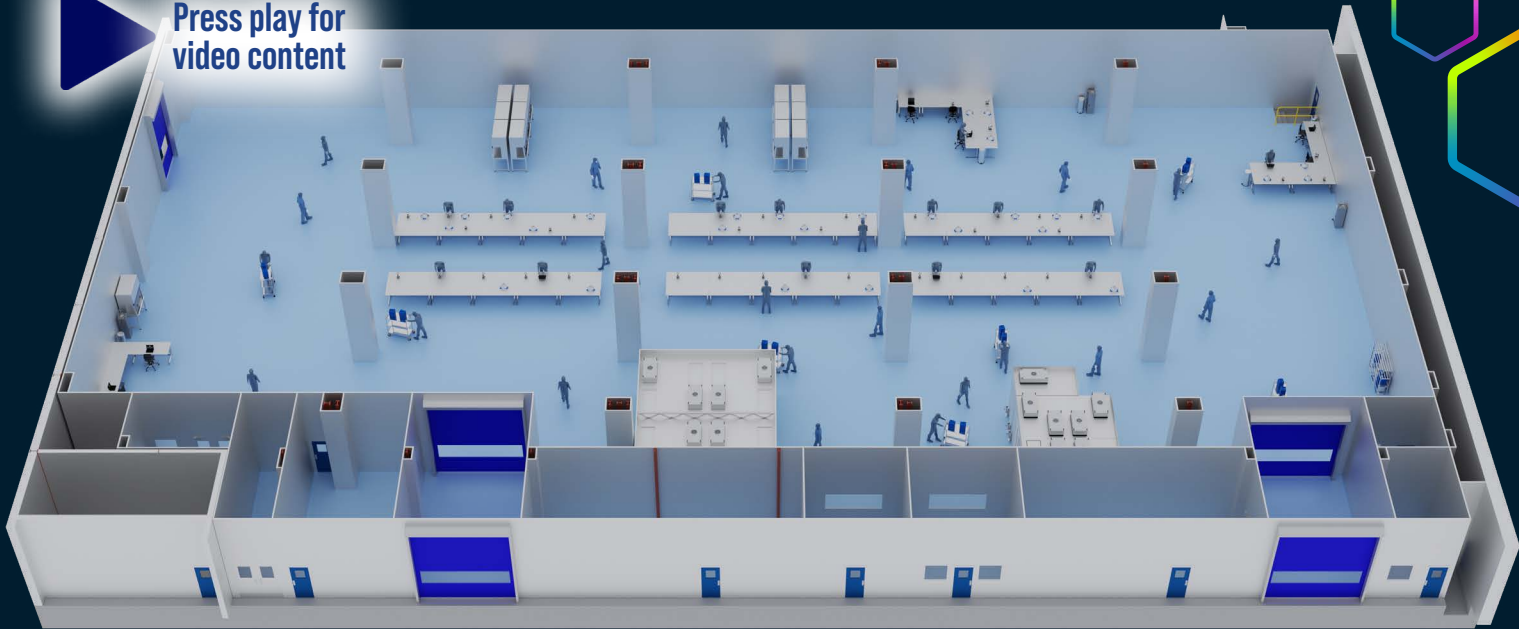
Temporary wall: On that same thread, to save the client money whilst also demonstrating our commitment to sustainable working practices, the Clean-room Solutions team installed a temporary dividing wall in such a manner that 90% of the panels could be repurposed for the plant room and front elevation during the second phase cleanroom installation. The temporary wall would allow the client to resume their process in half of the newly constructed space whilst the second half was installed.

Steely determination: The facility features a complex steelwork arrangement which the Guardtech Group oversaw the design and installation of in conjunction with outside specialists. We came up with a unique steel truss design to suit the client’s internal cleanroom requirements and allow a walk-on panelled ceiling. The idea behind the intelligent 12m truss steelwork spans was that additional vertical supports wouldn’t be required within the room – which was critical to the client’s plans to retain as much process space as possible.

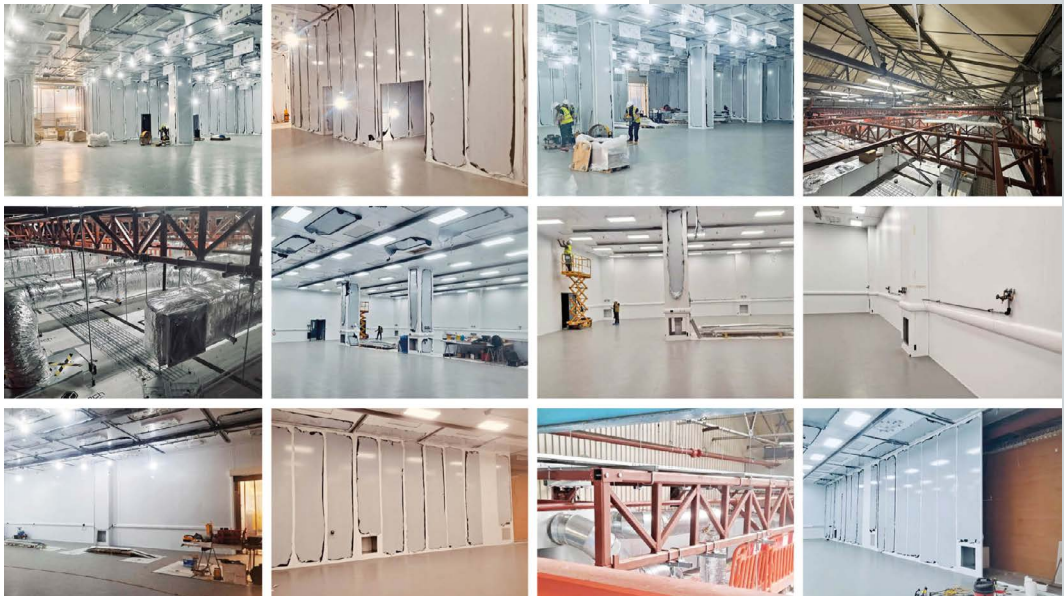
Heights and lows: Again, because of the aged nature of the host building, the team had to be incredibly flexible when reworking the plans to fit with



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non-level existing steelwork. There were numerous height issues to overcome, with the team constantly having to reconfigure sections to account for differing levels. There was a lot of 'thinking on our feet' on site, identifying issues early on, investigating them and reacting swiftly in conjunction with our subcontractor teams to find cost-effective resolutions.



Daring ductwork:

Because of the sheer scale of the facility, the design included some highly complex ductwork arrangements. The Guardtech Design and Install teams worked brilliantly with the ducting subcontractors to deliver a high-performance solution. "A lot of clash detection went on throughout Phase 1,"

added Gaylard. "There were a lot of existing services and infrastructure that we had to work in and around – services that couldn't be

removed. The team needed to be as diligent and careful as ever to ensure we delivered a high-quality build."

Sprinkling some magic: The client asked for a sprinkler system to

be installed fairly late in the process. As a result, we had to manage that variation effectively, working with the client's appointed contractor to

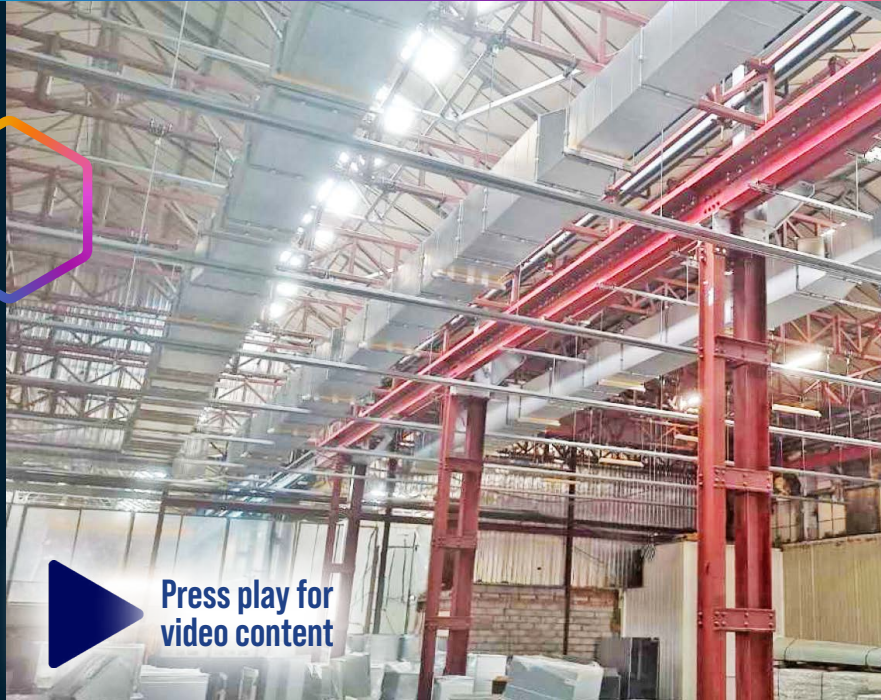
ensure the installation fitted in with our designs and didn't compromise any existing services or infrastructure. This was generally a highlight of our working practice throughout Phase 1 – co-operating supremely well with all of the client's designated contractors to

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ensure a well-structured, safe and CDM-complaint, collaborative installation.

Secure and shipshape: All operatives had to be chaperoned on site, which brought a lot of different challenges, particularly in terms of logistics and moving plant, materials and operatives in and out of the working area. However, the Guardtech Group, Cleanroom Solutions and all of our associated brands have a great deal of experience working in different environments with high levels of security and restrictions/limitations and this was a challenge the team were well equipped to overcome.



THE RESULT

Guardtech Group Projects Director Sean Gaylard said:
"I'd like to thank the client and my team for all their efforts in Phase 1 of this amazing project. We're absolutely delighted with how the cleanroom looks and performs thus far and are looking forward to delivering the same high levels of quality in Phase 2."

