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THE CLIENT

iCOMAT – a spin-out company from the University of Bristol, iCOMAT provide state-of-the-art lightweighting solutions based on the Rapid Tow Shearing (RTS) process – the world’s first automated composites manufacturing process that can place carbon fibre tapes along curved paths without generating defects. The company’s innovative engineering solutions help to enable the next generation of vehicles which are lighter and more sustainable than ever.



THE BRIEF

The client had previously engaged the Guardtech Group to deliver a smaller-scale modular cleanroom for them. Having acquired a new warehouse premises in Gloucester, iCOMAT instructed Guardtech Group turnkey arm Cleanroom Solutions to deliver a new ISO7 facility to support them with upscaling their industry-leading fibre-steering process capabilities.

“We will engage with Guardtech on future builds”

Keith Fairbrass, Managing Director at iCOMAT, said: “Guardtech were instrumental in helping us get our 43,000 square foot Factory One up and running on time in only six months.

“They were the lead contractor for the build and responsible for the 8 EMAs and the 4,500 square foot Class 7 cleanroom that we now have ready for operation. The quality of the build was professional as well as the post-build snag rectification – they are proactive and have worked closely with our team. I would strongly recommend them and will certainly engage with them on future factory builds for iCOMAT.”

Keith Fairbrass
iCOMAT Managing Director

iCOMAT



Cleanroom
solutions



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GT Shell official panel system partner:



Partner

THE TECH SPECS

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

- ◆ **Structural:** GT Shell Plus 60mm Kingspan Quadcore insulated wall panels, GT Lid Lite 50mm extruded aluminium ceiling grid with powder-coated composite tiles, GT Deck Lite ESD vinyl floor with copper grounding tape, coved and capped, GT Access Plus Fire Escape single doors, GT Rise Plus PVC rapid roll doors on two-way interlock with push button activation, doubled glazed window units, steel truss goalposts & braces, edge protection.
- ◆ **Electrical:** GT Lux Lite LED Lights surface mounted on Ceiling Panel, PIR activation, 13A Double Sockets wired back to distribution board, 3 Compartment curved profile trunking around room perimeter and columns, RJ45 Ethernet Sockets fed back to network switch, Control Panels for Electromagnetic Interlock System.
- ◆ **Mechanical:** GT Air Pro

Downflow Air Handling Units with Digital Display controller on the AHU for setting target temperature, humidity and fan, GT Air Lite fan coil units providing air conditioning and heat recovery in CNC rooms, GT Flow Plus H14 HEPA FFUs with Roomside Change, compressed air, vacuum pumps with pipework carried to mezzanine.

- ◆ **Monitoring:** GT Scan Pro Environmental Monitoring System measuring Temperature, Humidity & Pressure via Digital Touch Screen Displays with alarms.

THE CHALLENGES

Wireless wonders: The client was keen for us to develop the most aesthetically pleasing facility possible in their brand-new warehouse space. Critically, in Phase One of the installation, this meant developing modular structures with no suspension from the host building ceiling or implementation of a top hat system. This was done utilising a variety of panels with different thicknesses, from 80mm right up to 175mm in places. The panels were 9.5m wide and 4m tall and, at certain spans,

PM Arran Williams says: "This all meant that rather than using a coving system,

we used a thicker angle – and so rather than using a track to join the panels together at the wall joints and the ceiling joints, we used a 50x50mm angle, that was rivetted every 300mm. After a lot of careful planning, it was decided that this was the safest route – to use a fixing at certain intervals that gives it the strength it needs to support that span."

Laser quest: The cleanroom, a 450sqm ISO7 process space that was developed in Phase 2 of the build, features impressive 5m high wall panels to ensure there is adequate clearance for two robots operating in the space. Another special aspect of that space is that it boasts a bespoke lightweight laser rail system that was designed and engineered by Guardtech.

"We used known components initially," says Williams, "but we've specially engineered them in a manner to fit a system which meets the client's specific requirements. We actually went through two designs, which allowed us to flex our R&D muscles quite a bit."

The first incarnation of the laser rail wasn't as solid as it needed to be, but after some smart engineering from the team, a system was developed that worked for the client and was successfully commissioned by an external specialist.

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AEROSPACE COMPOSITES



“It was a successful design that didn’t involve expensive GLP beams,” Williams continues, “or a separate portable frame.

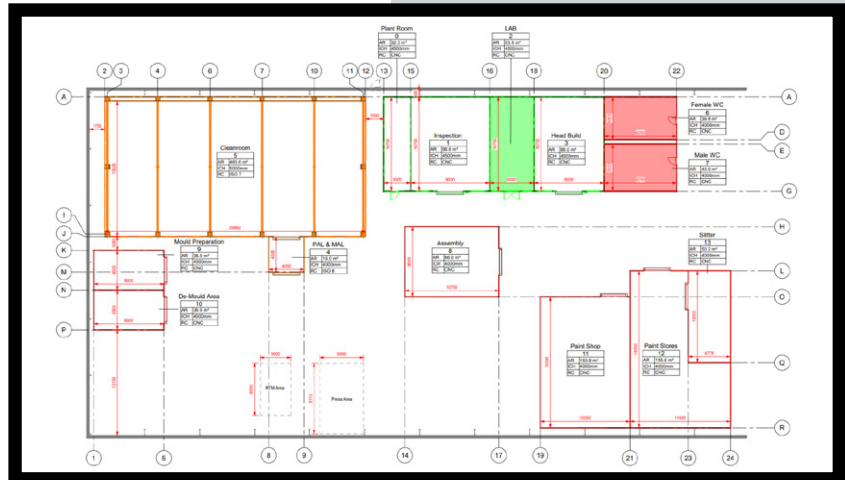
“It’s not overly engineered – it’s simple and effective. One of the key benefits is that it’s much more accessible and moveable as what we might’ve opted for. We’ve integrated special brackets that allow you to alter the laser position from the room side, via a bracket system.”

The team utilised a thread inside the GT Lid Lite ceiling grid channel to create the bespoke rail system, but Williams is confident the innovation will be replicated in some way for future laser rail set-ups.

Equipped for action: One of the biggest challenges faced by the team throughout this project was having to work around the client’s various bits of large-scale equipment – including robots for the cleanroom. “Those robots were big,” says Williams, “we had to work over them, we had to build over them. We had to keep them clean.”

What’s more, because the robots needed to be in their final positions from as early on as possible, the team had to lay the GT Deck Lite ESD vinyl floor immediately.

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This meant working with protective floor covering – and therefore having to take extra care not to damage the ESD vinyl during construction.

Williams says: “When you’re driving in scissor lifts and forklifts, or bringing in other bits of equipment like that, it requires a high level of care and attention, but the team worked diligently to ensure no major incidents occurred.”

Bog standard stuff: As part of the Guardtech Group’s growing reputation as a Principal Contractor, we were once again asked by the client to install toilet blocks for this project. This is beyond what has been our usual scope as cleanroom construction specialists, but having done a similar job for Elis Cleanroom, we felt confident to deliver an even more comprehensive turnkey package for the client than what we have previously provided. “We worked with trusted, specialist sub-contractors for the areas that aren’t within our realm of expertise. We designed everything and fitted a toilet partitioning system that was all pre-plumbed.”

Contract negotiations:

Among the many great achievements on this project was the team’s



ability to work seamlessly and professionally alongside myriad different contractors all at once. “We were very accommodating of all the client’s other contractors,” adds Williams. “The same goes for all the machinery that had to be

installed. Overall, this was a busy site for a client that needed us to move quickly – and we’re delighted with the end result. An aesthetically pleasing and innovative cleanroom solution that meets all the needs of a client that’s really going places in their field.”

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THE RESULT

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