

# BATTERY DRY COATING



## THE CLIENT

Producers of composite powders via chemistry-based approach for dry coating of battery electrodes – know as their propriety Dry Coating Precursor (DCP). The structure of their DCP powders is optimised for electrode film formation and electrochemical performance. Compared to traditional wet coating methods, dry coating electrodes removes 30% of the energy required to make cells. Dry coating cuts the huge capex and environmental costs of battery manufacture, creating cheaper cells with a smaller carbon footprint.



Battery



21+/-1C  
-40C dewpoint



60m<sup>2</sup>



## THE BRIEF

The client required a new two-person process room for their battery cell dry coating procedure. They had obtained an empty warehouse space and wanted an additional dry room to expand their operations and provide their service to a wider client base.



## “We showed Guardtech our unique skills...”

DryR Design Consultant Phil Laking said: “We were supported by two experienced Guardtech Installation Engineers on this project – who were extremely well versed in best practice when it comes to cleanroom installations. But because this job was all about introducing them to our unique dry room sealing techniques, we used this as an opportunity to train the Guardtech team in the way we do things. So it was a great opportunity for them to learn new skills that will help to level up the teams on both the Guardtech and DryR sides of the partnership – which in turn elevates the provision we can offer to a wider client base.”

**Phil Laking**  
DryR Design Consultant



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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 Quad-core insulated wall panels, top plenum return air design featuring GT Lid Lite T50 ceiling grid with powder-coated mild steel ceiling tiles, GT Deck Lite floor tile system capped & covered, GT Rise Pro rapid rise freezer door with ultra-low leakage, GT Access Plus single doors.
- ◆ **Electrical:** GT Lux Lite LED lighting panels achieving 1000 lux, 13A Double Sockets wired back to distribution board, 3 Compartment curved profile trunking around room perimeter, 3-phase power sockets.
- ◆ **Mechanical:** GT Flow Plus Fan Filter Units with H13 HEPA filters achieving 60 air changes per hour, GT Air Pro DryR Handling Unit (DAHU) – industrial low dewpoint desiccant dehumidifier specially designed for low temperature and low humidity operation. Unit includes

desiccant rotor, EC-fans, reactivation heater, filters and controls. Panels insulated with 40mm rock wool insulation. Casing made of aluzink steel, coated by powder painting.

## THE CHALLENGES

The actual cleanroom envelope and DryR HVAC set-up for the project was fairly standard for both teams. Therefore, there weren't many major challenges to overcome. However, the process did involve some highly

sophisticated sealing techniques that allowed the Guardtech Group engineers the opportunity to take our understanding of dry room provision to exciting new heights.

**Sealed to perfection:** "With our process, which is far more technical and sophisticated than standard cleanroom sealing methods, it's all about how you build up the layers and the attention to detail you give to that," said DryR Design Consultant Phil Laking.

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“What we do is a far more thorough and complex, multi-stage process. There are more silicone beds, more sealing points and various inside secrets that we can’t divulge as well as our own propriety ducting penetrations.

“The reality is, when it comes to dry rooms and the level of complexity that’s involved, if you don’t follow our procedures, you can potentially lose air underneath the structure – so it’s critical that you do everything the right way in order to get that incredible low dewpoint that we achieve.”

**Multi-stage sealing:** “It’s all about attention to detail and committing thoroughly to that multi-stage approach to sealing – there’s a lot more silicone in one of our dry rooms than in a standard cleanroom build.”

**Low infiltration:** “The room operates on a -65C supply rate with a -40C return,” Laking added. “During testing, whilst the space was unoccupied, we achieved -63C – which is superb. We ended up with 8 grams of infiltration, which is incredibly, incredibly low.

“How do we achieve something so remarkable?

Well, the methodology is obviously DryR’s

intellectual property and that proprietary knowledge is part of our USP.

“But we can say at the very least that it’s all down to specially engineered, advanced sealing techniques that have been tested, honed and perfected over a number of years in the industry. These enhanced sealing techniques far, far exceed the industry standard.

“The infiltration, or leakage if you like, is so incredibly minimal, it’s gone beyond

three decimal places.”

**Ductwork innovation:** The DryR team developed some brand-new ducting transition pieces on this project. The benefit of creating this new penetration system for the ductwork was to incorporate a far tighter seal to ensure fewer remedial works were required post-install.

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Guardian House  
Unit 1A Homefield Road,  
Haverhill, CB9 8QP

0330 113 0303

sales@guardtech.com

www.guardtechgroup.com



**Tight squeeze:** Because of how tall the internal walls needed to be (3.5m with a 1m plenum above) the finished modular system installation ended up quite close to the top of the host building ceiling. "There was around 450mm of clearance from the structure roof to the dry room in the end," said Laking. "So it was a bit of challenge to fit in everything we needed to. But everyone involved was experienced enough to make it work effectively."

## THE RESULT

DryR Psychrometric Design Manager Phil Laking said: "We were supported by two experienced Guardtech Installation Engineers on this project – who were extremely well versed in best practice when it comes to cleanroom installations. But because this job was all about introducing them to our unique dry room sealing techniques, we used this as an opportunity to train the Guardtech team in the way we do things. So it was a great opportunity for them to learn new skills that will help to level up the teams on both the Guardtech and DryR sides of the partnership – which elevates the provision we can offer to a wider client base."

