Cutting Edge Dry Room for Lithium Battery Testing & Training

WMG’s Energy Innovation Centre comprises a battery characterisation lab plus an electric / hybrid drives test facility. The Centre includes a cutting edge £13m Battery Materials Scale-Up Pilot Line. This provides a one-stop-shop for the development of new battery chemistries and detailed industrial evaluation for target applications such as, automotive, power grids and consumer electronic products.

Munters specialist air treatment team, designed, supplied and installed the energy efficient Dry Room with Munters high efficiency MDU system with innovative heat recovery design at the heart of the system.

A constant -45°C dewpoint provides a stable environment, which is critical for keeping the electrolytes as dry as possible while producing and testing lithium pouch cells. Any moisture ingress at electrolyte filling can be detrimental to battery performance.

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Complete supply and installation of a Dry Room:

- Consistent and accurate conditions
- Turn key supply of complete dry room
- Achieves an ultra low dewpoint of -45°C
- Cutting edge design
- MDU2000 desiccant dehumidifier
- User friendly precise monitoring and control
- Energy Efficient

Case study: WMG, University of Warwick
Dry Room for Lithium Battery Testing
The 9m x 5m Dry Room is just one part of the Pilot Line, accommodating up to 6 personnel, with a relative humidity of less than 1% and a continuous dewpoint of -45°C.

The Dry Room contains all the pouch cell making equipment where moisture sensitivity on cell materials becomes an issue after drying of electrodes such as:

- Electrode Drying and Cropping
- Stacking into cell stack
- Insertion into pouch
- Electrolyte filling

Conditions are maintained using Munters MDU system located next to the dry room, from here all moisture levels are monitored using an integrated Siemens control system.

Munters MDU2000 with a built in high efficiency energy recovery design has a desiccant wheel at the heart of the air treatment system.

Munters specialist heat recovery coil design reclaims around 100KW of heat whilst the unit is running, channelling this to post heating of the dry room, removing the need for a similar sized electric heater.

Inside the Dry Room staff enter and exit through an airlock. Once inside the air flow is maintained via laminar flow of 25,000m³/h, moving from a supply wall at one end of the room to an extract wall at the other end.

Paul Blackmore, WMG Project Manager, comments...

“I want to know what moisture my products see at any point of production so, I always put the control sensors in the return air side as I know it’s the worst case scenario.”

With a single supplier for all the components of the drying chamber, WMG could realise construction in a very short time. Munters took over all details such as, cabling, lighting, flooring, windows and connections, completing the entire installation within a demanding time frame.

Munters also incorporated energy efficient LED ceiling lights and a Static Dissipate flooring into the design for added energy efficiency and practical static control. Extensive service and maintenance options are available for peace of mind.

Paul Blackmore knew he needed to find a supplier to fit the demanding needs of a low dewpoint desiccant wheel system with a proven track record in the battery industry for the state of the art dry room.

"I selected Munters due to their historical experience in providing low dewpoint solutions within battery applications.

Munters partnership approach delivered us a product that not only came within budget but also within a short time frame. The team coped well with the added difficulty of working within a confined space" says Paul.

Munters team is dedicated to the improvement of low dewpoint solutions in the Lithium Battery manufacturing and research industry. Their continuous development of desiccant wheel (rotor) materials and in-house air circulation tools provide the lowest energy consumption whilst meeting the highest requirements of battery manufacture.

The Energy Innovation Centre will be the training ground for the next generation of battery chemists and one of Europe’s leading centres of Lithium Battery Testing.

Energy Innovation Centre:
www.wmghvmcatapult.org.uk

For more information on this and Munters’ other low dewpoint applications visit:
www.munters.com/WMG
www.munters.com/dryairforchemicals