



478 tonnes of CO₂
saved at QinetiQ
QinetiQ, England

QinetiQ is a world leader in providing technology-based independent advice and support to customers in aerospace, defense and security industries. Based in the UK, QinetiQ's power sources research and development team works with a wide range of industry and academic partners to develop advanced battery systems. To enhance their capability, QinetiQ tasked Munters to design an air treatment system to get low dewpoints in battery production dry rooms while also reducing their existing energy consumption and carbon emissions. And here's how Munters, the experts in climate control, did it.

Background

The production of advanced battery systems such as lithium-ion batteries requires very dry conditions. The components are extremely moisture-sensitive and will quickly react with the smallest amount of moisture from the air. In fact, if conditions are not strictly maintained, moisture-related damage and deterioration can occur in minutes. With advancements in technology and the need to reduce energy consumption, QinetiQ's challenge was to deliver a reliable air treatment system capable of maintaining performance of the existing system but using less energy. So Munters designed a replacement solution that would achieve the lower dewpoint conditions while still maintaining operating efficiencies. The main objectives of the replacement system were to:

- Achieve and maintain a dewpoint of between -25°C dpt and -40°C dpt (depending on operational requirements)
- Reduce energy consumption to achieve payback within three years
- Consistently maintain conditions no matter what the ambient conditions



Design

Working closely with QinetiQ, Munters expert team re-engineered an existing design to create a packaged air treatment solution using Munters MDU modular technology. The Munters MDU2000 is a low dewpoint system that incorporates energy efficient features, cooling, heating, chillers, ducting and controls. The low dewpoint system is fitted with Munters PowerPurge™, a patented recovery system that's proven to reduce energy consumption by up to 30%*. The MDU2000 system operates by using pre-cooled air that is partially dehumidified (by virtue of the cooling) and is then passed through the desiccant wheel (rotor). The air passing through the purge sector is further dehumidified, and then moves into the reactivation sector.

The overall effect maintains the required drying performance, whilst utilizing heat recovered in the purge sector (the dehumidification process produces heat) to reduce the reactivation heater power required. Using Munters PowerPurge™ helps the system to achieve the same conditions but in a more energy efficient manner. In addition to creating a more energy efficient system, the MDU2000 system features a wall-mounted dewpoint monitor. If conditions fall below the specified dewpoint, the operator is alerted, enabling close controls and strict management of the overall system. A sensor fitted on the return duct ensures conditions remain constant throughout the entire room.

Case study

- Reducing carbon emissions and saving energy at QinetiQ

Advantages:

- Reduce CO₂ and achieve low dewpoints
- Stable conditions and reduce energy consumption
- Dewpoint monitoring and alerts
- Modular systems and PowerPurge™ technology

Would you like to find out if Munters has a solution for your company too? If so, please visit our website, www.munters.com

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