

New standard for dry room energy costs

Manufacturing lithium-ion batteries to the stringent quality requirements in this booming market requires ultra-low humidity levels, kept under meticulous control.

From research, development and testing through to manufacture, safety requirements dictate that the air inside lithium-ion battery dry rooms is kept at exceptionally low humidity levels – often with a dew point of -60°C . This is why approx. 60% of the energy consumption involved in lithium-ion battery production stems from dehumidifier operations in key dry-room areas*.

Using conventional dehumidifiers to ensure compliance with such stringent requirements therefore usually comes at the cost of unrelenting, substantial energy bills. With the new, patent-applied-for Cotes CLD adsorption dehumidifiers, all that has changed.

STANDARDS ARE CHANGING

These specially configured dehumidifiers make it possible to achieve new standards for dew point capabilities and dry room energy costs.

For many years, the norm requirement for such operations lay at a dew point of -40°C . More recently, ambitious battery manufacturers have been seeking to implement a new -60°C dew point standard for dry room specifications. The difficulty is that using conventional dehumidifier equipment to do this is energy-intensive (and therefore expensive), as well as being difficult to manage effectively and consistently.

The innovative three-rotor setup in Cotes CLD dehumidifiers sets a completely new standard, making it possible for companies to rely on a flow of air with a dew point as low as -92°C , with very low energy costs.

The installation costs are also significantly cheaper than the traditional solutions, because you can do without big, expensive electrical installations and cable-laying, gas installations with all the exhaust gases, or all the hardware needed for using steam.

RETHINKING YOUR ENERGY PROFILE

60% of the energy used in lithium-ion battery production normally goes to powering the dehumidifiers in dry-room areas. That's why energy supplies and consumption are often a key issue for dry-room operations – sometimes even limiting factors.

Traditional lithium-ion battery production requires high-exergy sources of energy, such as steam, gas or electricity. With the new Cotes CLD adsorption dehumidifiers, you can instead draw much of the energy required from low-exergy sources, such as waste heat, solar panels or other low-cost thermal inputs.

With this breakthrough Cotes three-rotor setup, the air used for regenerating the largest of the rotors doesn't have to be heated very much – often only to 75°C – because the process air is already so extremely dry.

This low temperature means you only need very small additional thermal inputs to achieve the desired air regeneration effect. It's normally possible to do away with most of the electricity consumption, and instead make use of cheap sources of thermal energy, such as waste heat from elsewhere in your facility.

The big payoff is that you can eliminate as much as 44% of the energy costs for ensuring dry air in your lithium-ion battery manufacturing setup, and that you do so with less of an environmental impact. The installation costs are also significantly cheaper

* Ellingsen (2017): *Identifying key assumptions and differences in life cycle assessment studies of lithium-ion traction batteries with focus on greenhouse gas emissions*

**BIG REDUCTIONS
IN YOUR ENERGY COSTS**

60% of the energy used in lithium-ion battery production normally goes to power the dehumidifiers in dry-room areas.

Cotes CLD adsorption dehumidifier can change that.

- Save up to 73% of the energy consumption compared to traditional dehumidifier solutions
- Reduce the total electricity consumption of a lithium-ion battery production plant by up to 44%

44%

Save up to 44% on the total energy costs for dry-room operations

73%

Up to 73% less energy for keeping the air safely dry

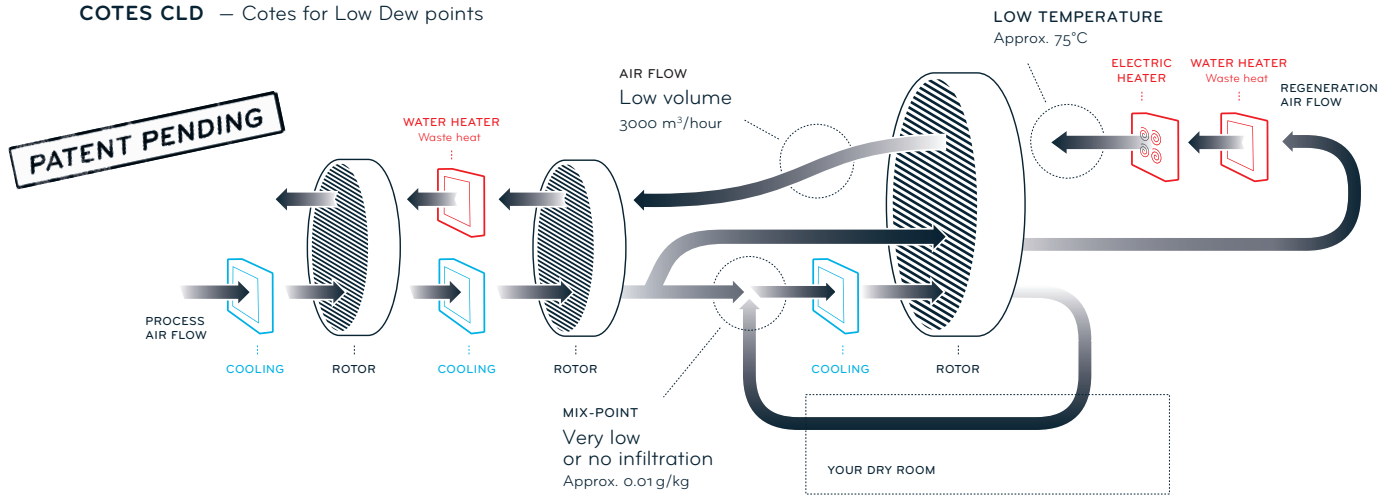
REGENERATION AIR

A flow of air is heated and used to remove the moisture from the adsorbent rotors

PROCESS AIR

Air is taken in from outside the facility. Moisture in this flow of air is removed by the three silica gel-coated rotors

COTES CLD – Cotes for Low Dew points



HOW IT WORKS

Part of the Cotes Flexible range, the Cotes CLD is a specially configured adsorption dehumidifier featuring three rotors coated with silica gel.

The first two smaller rotors remove the majority of the moisture in the incoming air flow. After that, a flow of already extremely dry air from inside the dry room is introduced. The very low levels of moisture in this air (often with a dew point close to the target condition) mean the regeneration air only needs to be heated to approx. 75°C – or sometimes even lower – in order to remove accumulated moisture from the rotor.

Because of this relatively low temperature, you can use low-cost heat sources – such as hot water, or waste heat from elsewhere – to achieve it. This means you can save up to 73% of the energy consumption and up to 44% of the energy costs normally associated with drying processes in your lithium-ion battery manufacturing setup.

WHERE YOU NEED IT

Cotes CLD dehumidifiers are ideal for installation in turnkey lithium-ion battery plants. You can also get them retrofitted into your existing setup to reduce the environmental impacts of your operations as well as to bring down operating costs.

In most circumstances, the energy savings these units provide will enable you to recoup your outlay within as little as 24 months.

CONFIGURATION COUNTS

Managing the air specifications inside dry-room facilities is complex and demanding, and usually part of a much larger engineering setup.

Cotes experts have unparalleled experience with the details of system configuration and integration, providing innovative configurations and exceptional results. We work with your own technical staff to develop, configure and implement a humidity management solution that is among the best in the world.

WORLD LEADER

Cotes is one of the world's leading manufacturers of this kind of high-stakes dehumidifier technology.

We have delivered and installed more than 100 of these specialist systems for use in lithium-ion battery production. We're experts in configuring CLD solutions to exacting needs, and providing installations that can be brought on line quickly and reliably.

WANT TO KNOW MORE?

Contact Cotes experts at T +45 5819 6322 or sales@cotes.com