

DEHUMIDIFICATION ADVANTAGES FOR WATER TREATMENT PLANTS

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THE CONDENSATION CHALLENGE

The condensation challenge

One of the biggest practical challenges in water treatment plants of all kinds stems from condensation – and all the problems and costs that follow with it.

When warmer air laden with water vapour comes into contact with cooler surfaces (such as cold pipework), it often condenses – and then drips, pools and accumulates on surfaces, structures and equipment. This results in an environment ideal for corrosion, along with good conditions for microbial and bacterial growths to flourish.

Cotes solutions enable you to carefully control the dew point of the air so that such condensation simply cannot arise, because of the basic laws of physics. This means you have no need for traditional energy-guzzling – but largely ineffective – anti-condensation measures such as heating and ventilation.

Effective at low temperatures

Waterworks and other water treatment plants usually use one of two different dehumidification technologies – either based on making airborne moisture condense, or by using desiccant materials, in an appropriate configuration, to absorb the moisture from a flow of air.

Unfortunately, condensation dehumidifiers aren't very effective at lower temperatures, and many have hardly any effect below 5°C.

Cotes adsorption dehumidifiers, on the other hand, are effective over the entire temperature range and all year round, and are pretty much the only viable technology at the low temperatures often prevalent in water treatment facilities.

More effective air distribution

Cotes adsorption dehumidifiers also have another big practical advantage over less-capable condensation units. As standard, they're fitted with ultra-reliable, high-efficiency fans. These create a significant overpressure that makes it easy to distribute controlled-humidity air to all the areas you specify – with no need for costly special ducting or energy-consuming extra ventilation setups.

You also avoid the kinds of unfortunate situations where a dehumidifier gets isolated in its own little 'pocket' of relatively moisture-free air.

Integrated systems – better control

Integrated control setups help you save on manpower, coordinate your optimisation efforts, reduce service/maintenance costs and avoid costly snafus – as well as speeding up reactions to any technical glitches.

You can easily integrate Cotes dehumidifiers fitted with PLC control systems into the CTS system of any waterworks, water treatment plant, water storage facility or pumping station.

Cotes units can process Modbus-compatible input/output signals about humidity measurements, operating errors, service messages and virtually any other kind of relevant data you might require. This all means they can be set to turn on/off automatically as and when the dew point rises and falls, for whatever reason.

Traditional analogue operating and alarm signals are also available, as required.

Accurate control – better results

A Cotes dehumidifier fitted with a PLC control system enables you to control levels of humidity in relation to multiple parameters, depending on outside air and weather conditions and your own particular operating requirements – all of which can change over time.

A Cotes PLC control unit lets you determine humidity on the basis of relative humidity or the dew point, or any combination of these two figures. This results in accurate, quick-response control, so that you avoid using costly energy with a dehumidifier that runs too much, or end up with practical issues because it doesn't always switch on when needed.

Good hygiene, robust build

Because of their small footprint and quiet running, Cotes adsorption dehumidifiers can be mounted virtually anywhere. The cabinets are made entirely of AISI304 stainless steel, so they're ideal for mounting in setups where good hygiene management is essential.

In addition, they're always configured with robust, high-quality components that make sure these dehumidifiers can withstand just about any operating rigours – and for a very long time.

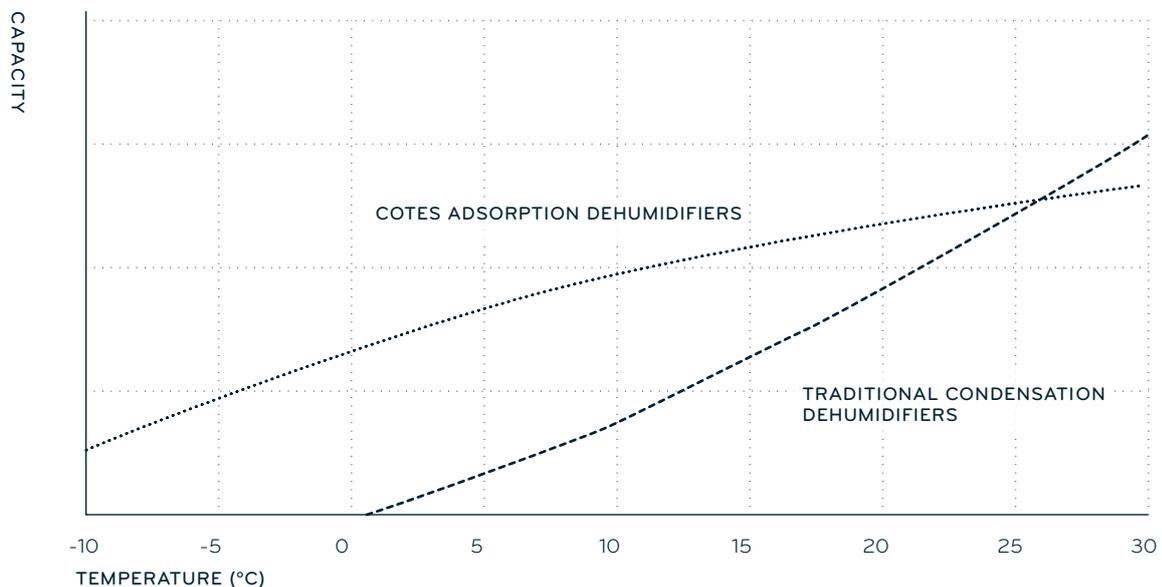
Cotes adsorption dehumidifiers can also be fitted with a special closed-circuit module, doing away with the need for costly, space-hogging pipework to dispose of the moisture extracted from the air.

Get real

The specs given for ordinary dehumidifiers can be deceiving. A unit with high capacity at high temperatures is often much less effective at low temperatures.

At Cotes, we recommend the greater efficiency and operating benefits available with a Cotes adsorption dehumidifier that's effective and stable all year round, and at all temperatures.

CAPACITY CAPABILITIES



THE BENEFITS ADD UP

Effective control of humidity in water treatment plants brings you big benefits:

1. All-year-round prevention of condensation, corrosion and mould
2. Protection against condensation affecting sensitive electrical and electronic equipment
3. Lower energy costs because you no longer need heating, cooling or ventilation units
4. No problems, service requirements or costs associated with refrigerants
5. Better hygiene standards, ensuring easier compliance with appropriate standards
6. Fewer interruptions to normal operations, resulting in less service downtime
7. Improved health and safety conditions for staff and visitors

And Cotes adsorption dehumidifiers have the big added advantage – particularly in relation to low-cost, simple condensation dehumidifiers – of being equally effective all year round and over the entire temperature range

COTES TECHNOLOGY

Cotes in Denmark is the world's leading expert in adsorption dehumidification technology, providing high-quality, low-maintenance humidity management solutions that are remarkably energy efficient. The best technology, along with in-depth know-how about how to apply it effectively, makes a potent combination.

Cotes dehumidification systems make it possible to maintain stringent control over the levels of relative humidity in any room, building or facility used in conjunction with any kind of water treatment – whether in the water supply or for waste water.

A Cotes adsorption dehumidifier is a sleekly designed, fully enclosed unit that includes a rotor, geared motor, ventilator fans, heater, air filters and an integrated electrical control system.

We can also add other equipment, special heating/cooling capabilities and modular energy recovery units to meet your specific requirements.

*All-Round C35
with heat recovery module*

*Energy savings
Cotes dehumidifiers provide
you with with substantial
energy savings compared
with traditional air conditioning
or ventilation.*

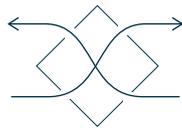


THE COTES ADVANTAGE



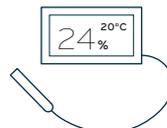
The energy advantage

Cotes dehumidifiers provide you with substantial energy savings compared with traditional air conditioning or conventional second-generation industrial evaporative cooling systems – which don't really even deal with humidity issues at all.



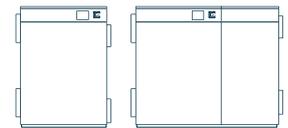
The heat recovery advantage

You can also choose Cotes dehumidifiers fitted with a highly efficient aluminium cross-flow heat exchanger to recover heat from the regeneration air leaving the unit. This valuable thermal energy – already generated and paid for – can then be reused to preheat incoming regeneration air. This heat recovery can save you an additional 20–25% on your humidity management energy bills, and therefore bring you surprisingly quick payback on any initial outlay. Cotes adsorption dehumidifiers are the only units on the market to feature this energy-saving, cost-reducing heat recovery capability, which makes them the only such solutions that can comply with the latest generation of energy consumption requirements now emerging.



The control advantage

In modern water treatment facilities, you can achieve big practical benefits by installing modern digital control systems and sensors so that you are fully informed about humidity conditions – and any fluctuations in these. Cotes C35 and C65 dehumidifiers are available equipped with combinations of sensors and PLC controllers that automatically turn the dehumidifier on and off as the dew point changes. You can also choose smaller units (such as C22 and C30 dehumidifiers and basic models in the C35 and C65 range) equipped with DA20 or DH24 control units.



The modular advantage

With the larger models of Cotes dehumidifiers, you can also opt for key additional capabilities in the form of easy-to-integrate plug-in modules for pre- and post-heating/cooling, energy recovery and closed-circuit condensation.

HOW IT WORKS

The effect of Cotes adsorption dehumidifiers stems from the action of two separate flows of air.

Process air – drying the air flow

The incoming moisture-laden flow of air (process air) enters one side of the cabinet – driven by a fan – and passes through a filter.

The air then passes through a slowly turning rotor whose inner surfaces are coated with an amorphous silica gel material that attracts the water molecules passing through. When the moist air passes through the rotor, water molecules are adsorbed and lodge in the pores on the surface of the silica gel.

This means the air leaves the rotor containing less moisture (humidity) than when it entered. And because the adsorption process releases energy to the air, the temperature incr

Regeneration air – drying the rotor with warmer air

The second air flow (the regeneration air) – driven by a fan – is also filtered, and heated by heating elements.

On its way through the rotor, this heat evaporates the moisture previously adsorbed by the silica in the rotor.

The resulting water vapour now leaves the dehumidifier in the outgoing regeneration air.



WHICH COTES DEHUMIDIFIER IS BEST FOR YOU?

There are, of course, lots of different parameters (such as openness to surrounding air, ventilation systems, exposed water surfaces, surface areas of piping and tanks, etc.) involved in choosing the model of Cotes adsorption dehumidifier best suited for your particular water treatment facility and the kind of setup (water supply, water treatment, waste water, etc.) you operate.

The table on the right gives you an indication, but we recommend (especially with large installations) you confer with a Cotes dealer or an expert from Cotes for specifics about which configuration would give you most 'bang for your buck.'



*All-Round C35
with closed-circuit module*

*These are some of the Cotes
adsorption dehumidifier units
most widely used in water
treatment facilities.*

All-Round C35



CAPACITY OVERVIEW

DEHUMIDIFIER RANGE	CAPACITY kg/hour	VOLUME OF BUILDING m ³
C22	0.5	0–300
C30	0.8–1.3	300–800
C35	2.5–4.2	800–2,500
C65	6–15	2,500–9,000

This table is based on an outside temperature of 25°C and 60% relative humidity, and an indoor temperature of 20°C and a dew point of 5°C.



All-Round C35 installed

EXPERIENCE COUNTS

Cotes dehumidification systems are in use in more than 2600 water treatment facilities – mainly in Europe.

Cotes experts have loads of experience helping customers specify and configure dehumidification systems to meet the unique operating requirements encountered in water-works facilities.

COTES CONTROLS THE HUMIDITY – SO YOU CAN CONTROL EVERYTHING ELSE

If you want to establish full control over air conditions in important spaces in any waterworks, water treatment plant, water storage facility or pumping station, Cotes are the experts to get in touch with. Cotes adsorption dehumidification technology puts you in control over an important invisible parameter with big effects on operations – the levels of moisture in the air.

If you are involved with water treatment, well-controlled humidity helps you eliminate a whole swathe of practical problems, reduces operating costs and can pave the way to new benchmarks for operating efficiency and your return on investment for a wide range of systems in your plant.

CLOSE TO YOU

We have a worldwide network of Cotes experts ready to provide you with solutions to virtually any humidity management requirement.

YOUR LOCAL COTES REPRESENTATIVE

TALK TO US ABOUT WHAT'S POSSIBLE

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