

Comparison of different air humidification systems

Dominic Giesel, Marketing Manager for DRAABE, looks at the many significant differences between air humidification systems on the market today.

The operating costs for different humidification systems are strongly influenced by their service life. The service life of ultrasonic ceramic oscillators for example is limited, if they are not operated using deionised water. After a maximum of 2000-3000 operating hours ceramic oscillators generally exhibit a significant drop in performance or indeed they may suffer a complete breakdown. The resulting demand for parts leads to a disproportional increase in operating costs for these devices. Due to their particular principle of operation, the performance and service life of steam humidifiers are restricted. Minerals and floating particles are deposited during the course of time on the base of the steam generating cylinder or on the electrodes or heater elements and thus significantly reduce the output.

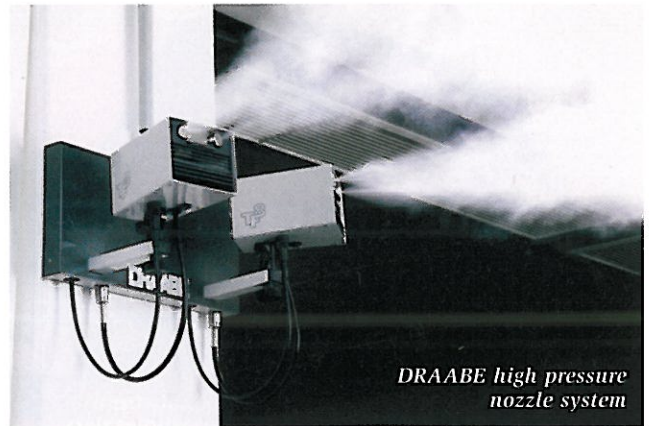
POWER CONSUMPTION

When compared with all other systems, steam air humidification, in terms of power and cost, is the least favourable. Electrically heated steam humidifiers exhibit approximately ten times the level of power consumption compared with cold atomizer

systems. In addition, steam air humidifiers exhibit an unwanted additional room heating characteristic caused by "vaporisation". In terms of power consumption, maintenance and performance, nozzle systems are far superior to steam humidification systems. Compressed-air nozzle systems are widely available in which water is atomized using compressed air. Despite their proven technology these systems are not entirely trouble free. In particular, in low-noise production premises the hissing noise of the compressed air escapes can be disruptive. In addition to this the relatively high compressed air consumption and maintenance of the necessary compressor incur expenses.

GREATER PERFORMANCE AND EFFICIENCY COUPLED WITH HIGH PRESSURE

During the course of the past few years more and more companies have converted their air humidification systems to high-pressure nozzle systems. Among the pioneers of this technology is DRAABE Humidification - a division of AxAir Climate. In these systems water is vaporized to a micro-fine degree



DRAABE high pressure nozzle system

using a high-pressure pump (85 bar) and special titanium nozzles, and is practically noiseless. In comparison to nozzles operated by compressed-air, a much greater humidification output from the atomizer (max. 35 kg/h) is achieved at a fraction of the power costs. The water supply is in an enclosed circulatory system. For hygienic and reliable operation only pure, demineralised water is used.

The various providers of different high-pressure nozzle systems can essentially be differentiated in qualitative terms by nozzle size, humidity distribution, versatility and services. Systems with extremely fine nozzles (80-100 µm) exclude any danger of droplet formation and humidity condensation, in particular for low-pressure systems. Last, but not least, a comparison should also consider that to ensure smooth and hygienic operation, regular preventative maintenance and disinfection of the water treatment and high-pressure system is necessary.

Calorex prevents sticky situation

A sticky situation has been averted at a newly extended toffee factory in Stoke-On-Trent, thanks to a high capacity dehumidifier from Calorex Heat Pumps of Essex.

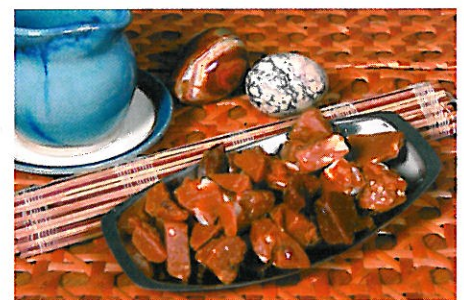
Quality toffee manufacturer Walkers' Nonsuch already has two Calorex dehumidifiers within its existing factory, which prevent its toffees from getting too sticky during the production process. Now the company has opted for a third – the Calorex DH300BY – for its factory extension, which has been built specifically for a new product.

All three dehumidifiers have been supplied by air conditioning wholesaler Ambient Technical Solutions, from Stoke-On-Trent, and installed by Newcastle-based Butler Refrigeration

"The original dehumidifiers are used primarily to keep the toffee from absorbing too much moisture from the air and sticking to the conveyor belt," explains Butler Refrigeration's John Butler.

"The new process involves melting down sugar at high temperatures, and the Calorex unit has been installed to control the humidity at 50% to stop the sugar absorbing moisture."

The Calorex DH300BY provides humidity and dewpoint control in a wide variety of situations. Typically, it is



capable of removing 300 litres of water in a 24-hour period at 20°C and 75% RH – and can play a vital role in protecting machinery and equipment from