CAREL

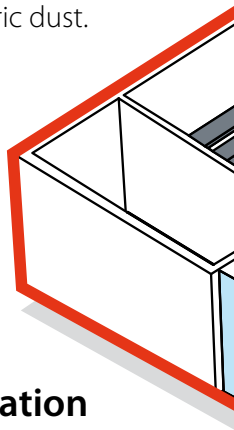
Humidity control in textile applications

Technology & Evolution

Greater productivity with the right humidity

A correctly humidified environment guarantees an increase in productivity and, in the case of adiabatic humidification, significant cooling of the environment.

Controlling the ambient humidity ensures an increase in productivity due to the greater strength and elasticity of the textile fibres when processed at 65 to 70 % relative humidity. These conditions furthermore guarantee a decrease in atmospheric dust.



CAREL, specialists in humidification

With thirty years' experience in the production of humidity control systems, CAREL is a solid and reliable partner for the textile industry. The company's in-depth knowledge of the applications and experience acquired in the field allow CAREL to design and propose the best humidity control solutions for the production processes.

Productivity
strength of the fibres

The breakage of threads requires time-consuming manual interventions in the textile processing industry. When the relative humidity is below 50%, there is a reduction in the strength and elasticity of the threads: increasing the relative humidity to 70% reduces breakages by around 40% and increases the productivity of the systems.

Dustiness
dust in the environment

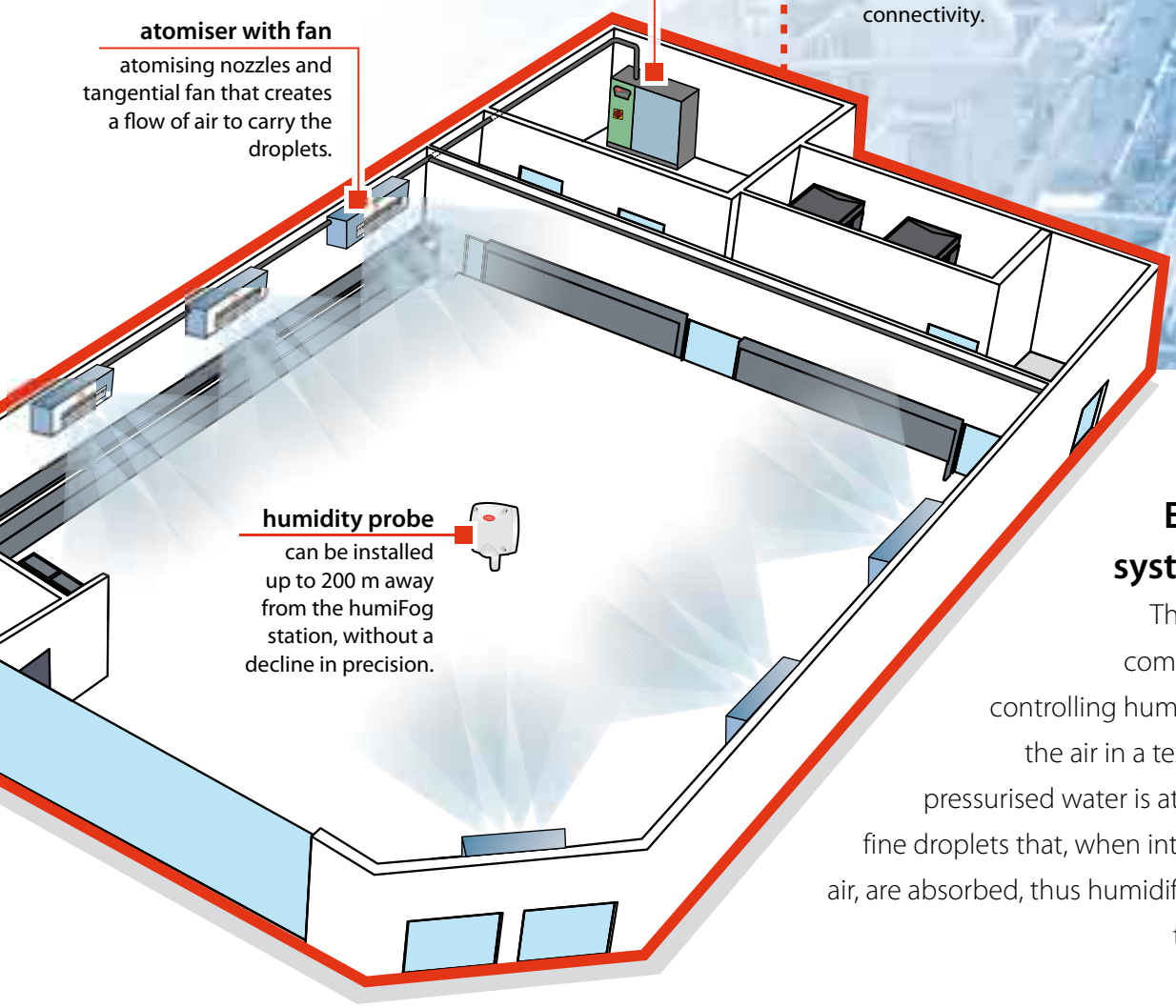
The correct relative humidity level helps limit the dust in the air generated when processing fibres that do not have the correct moisture content; this improves the conditions of the work environment and reduces the maintenance times involved in cleaning the filters.

humiFog station
this contains the electronic controller that manages the humidification system automatically, and the volumetric pump that delivers water at high pressure to create a very fine spray.

PlantVisorPRO

optional supervisor
intuitive navigation interface, relational database, XML protocol for data exchange between applications, Modbus®, TCP/IP connectivity.

atomiser with fan
atomising nozzles and tangential fan that creates a flow of air to carry the droplets.



humidity probe
can be installed up to 200 m away from the humiFog station, without a decline in precision.

Example of a system diagram

This is a simple and complete solution for controlling humidity and cooling the air in a textiles factory. The pressurised water is atomised into very fine droplets that, when introduced into the air, are absorbed, thus humidifying and cooling the environment.

Adiabatic cooling
absorption of heat

The atomisation of water directly into the room both ensures the required relative humidity and provides adiabatic cooling, due to the heat absorbed by the water when evaporating. A typical application with the atomisation of 100 l/h of water removes around 70 kW of heat from the air.

Product quality
dimensional changes in the fabric and static electricity

Imprecise humidity control causes dimensional changes and makes certain processes more difficult, such as cutting the fabrics to size. In addition, the correct humidity level eliminates the problem of electrostatic charges, which cause electrical discharges and sticking of the threads.

Recommended temperature and humidity values for various textile applications

material	application	air temperature (°C)	relative humidity (%)
cotton	-	20 to 25	60 to 70
wool	carding/combing	20 to 25	65 to 80
	ring spinning	20 to 25	55 to 60
	weaving	22 to 25	55 to 65
linen	carding	20 to 25	50 to 60
	spinning	20 to 25	60 to 70
	weaving	20 to 25	70 to 75
perlon/nylon	-	25 to 27	65 to 70
ribbons	-	22 to 25	70 to 75
knitwear	-	20 to 25	50 to 60
carpets	-	20 to 25	65 to 70

Our solutions

isothermal

gaSteam

Gas-fired steam humidifier at atmospheric pressure (45 to 180 kg/h).

humiSteam

Immersed electrode steam humidifier at atmospheric pressure (1.5 to 130 kg/h).

ultimateSteam

Centralised steam distributors (3 to 900 kg/h of steam, 0.14 to 4 bars).

adiabatic

humiFog

High pressure water spray humidifier (60 to 500 kg/h standard; up to 5000 kg/h custom).

mc

Water spray humidifiers using compressed air (60 and 230 kg/h).

humiDisk

Spinning disk humidifier (1 and 6.5 kg/h).

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