



Cool mist humidification for bakeries



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This technology has been supported by the European Commission under the project name:



Our research partners in this EU project are:



Research institute for food technology and biochemical engineering [www.ttz-bremerhaven.de](http://www.ttz-bremerhaven.de)



European bakers association with 16 national baker affiliates from more than 10 European member states. [www.aibi.eu](http://www.aibi.eu)



Semi-industrial baker (France) [www.bpa.fr](http://www.bpa.fr)



Craft baker (Germany) [www.sikken.de](http://www.sikken.de)



Technological consultancy and engineering SME focused on renewable energies and water management. [www.bioazul.com](http://www.bioazul.com)



Privately founded and owned company specialized in bakery refrigeration. [www.ungermann.de](http://www.ungermann.de)

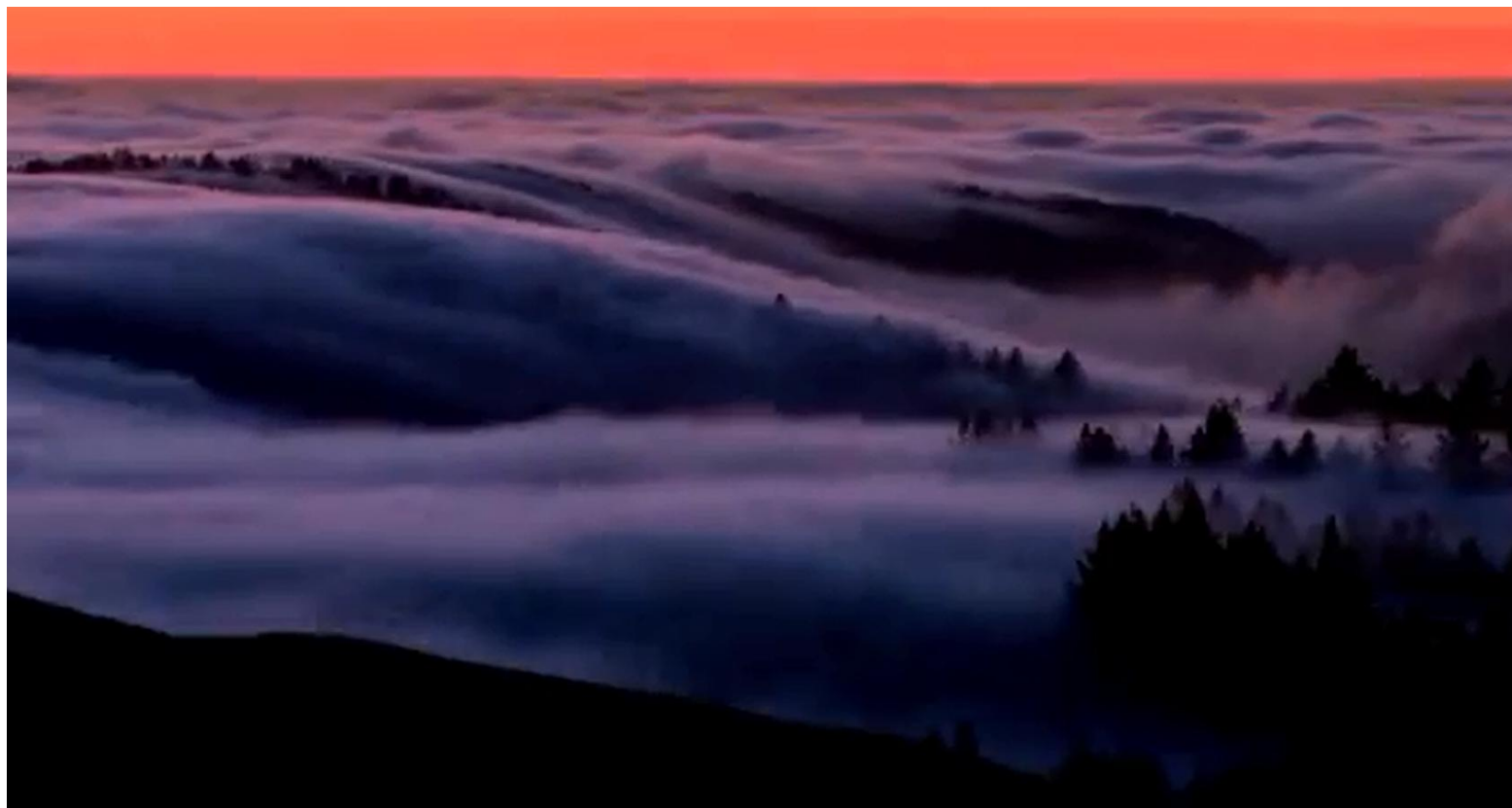


Distributor of ultrasonic humidification technology for the food retail sector and the fresh food industry. [www.rft.net](http://www.rft.net)



Environmental consultancy offering a range of related services like ecodesign, ecolabel, industrial ecology and environmental marketing. [www.to-be.it](http://www.to-be.it)

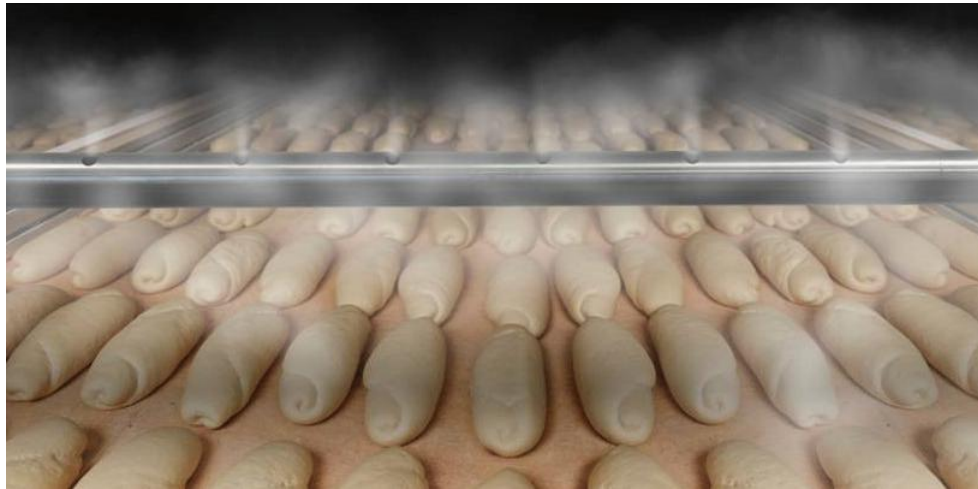
UltraBAK video



Please click this link:



Humidity is one of the most critical factors in bread production, directly affecting product quality.



Contronics makes mist.

As a natural phenomenon, mist from pure water keeps products fresh and cool like the morning mist over a field of crops.

We are the global leader in cool mist humidification solutions for the fresh food supply chain.

We have developed a unique technology for bakeries to improve product quality and the production process whilst saving energy and costs.

Humidity is one of the most critical factors in bread production directly affecting product quality.

As the leading member of the EU research project NanoBAK, we have developed a unique technology for bakeries that uses a cool mist in the proofing and cooling process.

Our ultrasonic humidifiers produce this cool mist with the finest pure water aerosols (droplets of 1 to 2  $\mu\text{m}$ ) that evaporate in the air and thereby increase the relative humidity and also cool the air.

This technology can be applied to all proofing stages at all temperatures and results in better dough and dough handling, improved baking times and energy reduction. The bread gains weight (instead of losing) and the crust formation is optimized resulting in lasting freshness and longer shelf life.

In the cooling process the cool mist will optimize humidity and can lead to lower temperatures and/or less energy consumption. There is less drying out and reduced weight loss of the product.

Our cool mist can also be used to extend shelf life by adding a special natural extract (no residue, non toxic).

This technology is relevant for large bakers and for smaller or craft bakeries and can be retrofitted to existing systems.

If you want to know more, please contact us for a personal demonstration and advice.



Our technology covers three areas:

1. Proofing
2. Cooling
3. Bread surface treatment



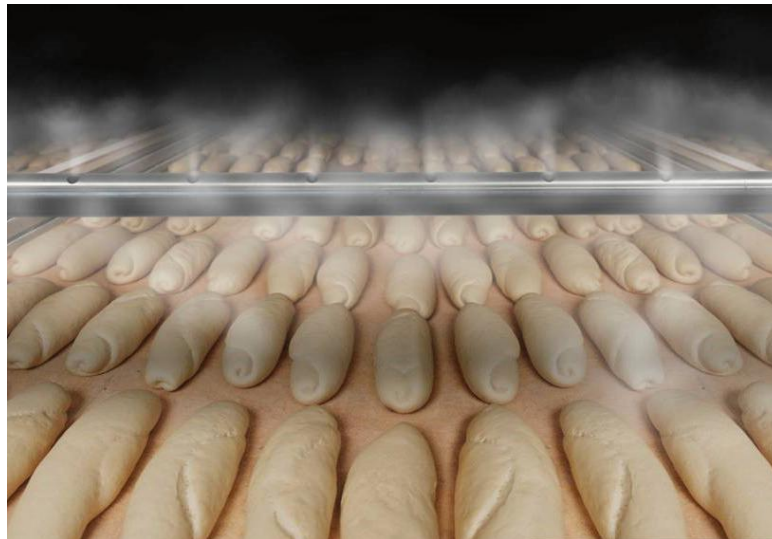
Our ultrasonic humidifiers produce a cool mist of the finest water aerosols (droplets of 1 to 2  $\mu\text{m}$ ).

The aerosols are ventilated into the proofing chamber by a targeted air stream.

Some of the aerosols evaporate almost immediately and thus increase the relative humidity up to 100 %, or to the level of desired relative humidity.

Other aerosols keep floating in the air and settle on the dough.

This ensures homogeneous moisture distribution all over the proofing chamber, avoiding the problems of drying out and premature crust forming of the dough.





## Proofing: Process benefits

- As we can provide mist at all temperatures, our technology can be applied to direct proofing, interrupted proofing, retarded proofing and also during thawing/freezing.
- During proofing floating aerosols settle on the dough, preventing early crusting of the skin.
- Improved dough processing because the dough surface is not sticky (as is the case with conventional proofing) and more stable, making it easier to handle.
- Reduction of energy consumption during proofing of up to 60% when proofing at low temperatures
- Due to the aerosols on the dough the crust is formed later in the baking process. This enables deeper and faster heat penetration which results in improved baking times with less energy.
- Most importantly this technology results in better product quality!



# Proofing: Product quality benefits

Conventional

Contronics  
humidification



- Weight gain during proofing instead of weight loss
- Optimal formation of crust
- Longer shelf life and freshness as the crispness of the crust lasts longer
- Thinner dry out zone under crust
- Better and finer windowing

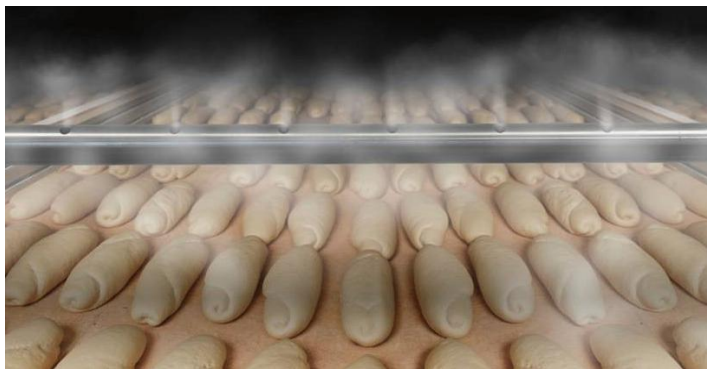
- Even browning
- Higher specific volume

- Increased and finer pores
- Better rising of the bread
- Improved stability of dough pieces after proofing

# How to apply in your proofing process:

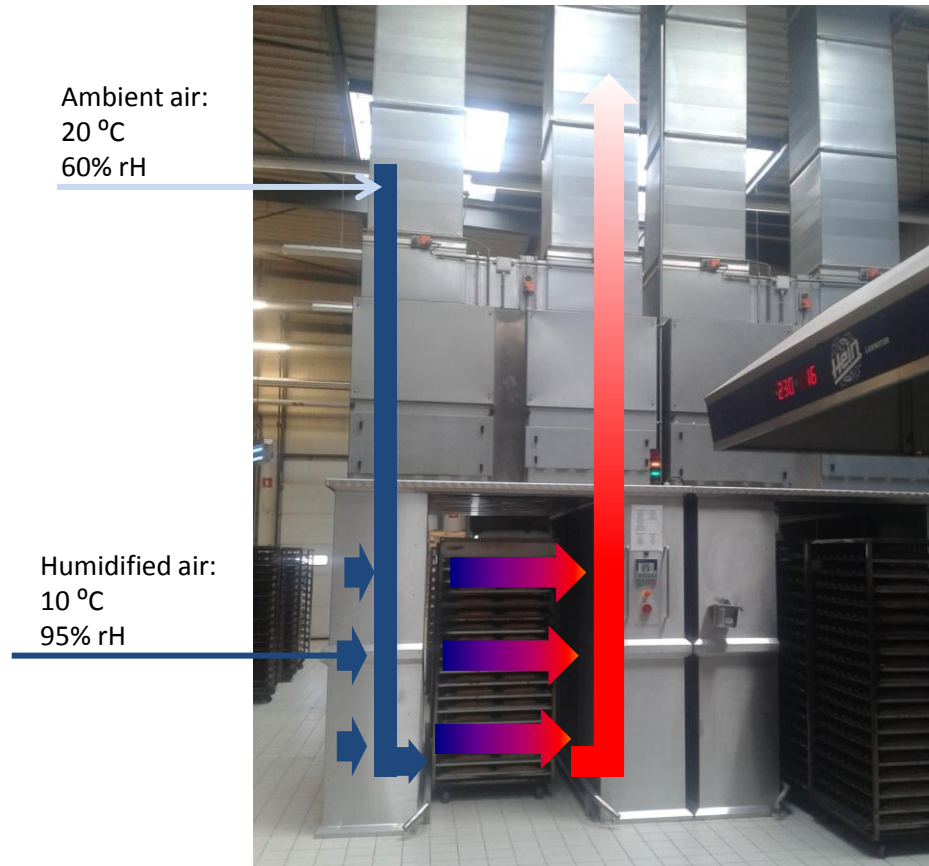
Our technology is available for new proofing chambers and can also be integrated with existing systems (retro-fit), both for large bakers and for smaller or artisan bakeries.

Please contact us to learn how to best install our technology in your process.



# Cooling: Explanation of the technology

A mist of the finest water aerosols (1 to 2  $\mu\text{m}$ ) is injected in the ventilated/cooled air. The aerosols evaporate immediately. This results in an increase of the relative humidity and also contributes to the cooling process, known as the “adiabatic cooling effect\*”.



\*Adiabatic cooling effect = Water droplets will evaporate in the ambient air, taking energy from this air and providing a natural cooling effect. 1Kg of Evaporated water gives 0,7Kw (2.400 BTU/hr) cooling energy.

## Cooling:

### Process benefits:

- Contribution in the cooling process; higher humidity, lower temperature and/or less energy consumption
- Cooling times can be reduced
- This technology may also be applied to thawing and freezing

### Product quality benefits:

- Increase of relative humidity; less drying out of the product
- Reduction in weight loss
- The sensory impression of the products is fresher
- Fewer dry spots
- Crispness, color, surface cracks, porous nature of the crust and dry edges underneath the crust are optimized and improved.



# How to apply in your cooling process:

Our technology is available for new cooling chambers and it can also be integrated with existing systems (retro-fit).

It can be applied to:

Tunnel coolers

Spiral coolers

Shock coolers

Vacuum coolers

Please contact us to learn how to best install our technology in your process.



# Bread surface treatment: Explanation of the technology

A special natural extract is added to the water and transformed into aerosols. A treatment chamber is saturated with these aerosols. Baked bread passes through the chamber so that the aerosols settle on the surface with the effect that mould spores/bacteria growth on the surface of the bread is delayed.



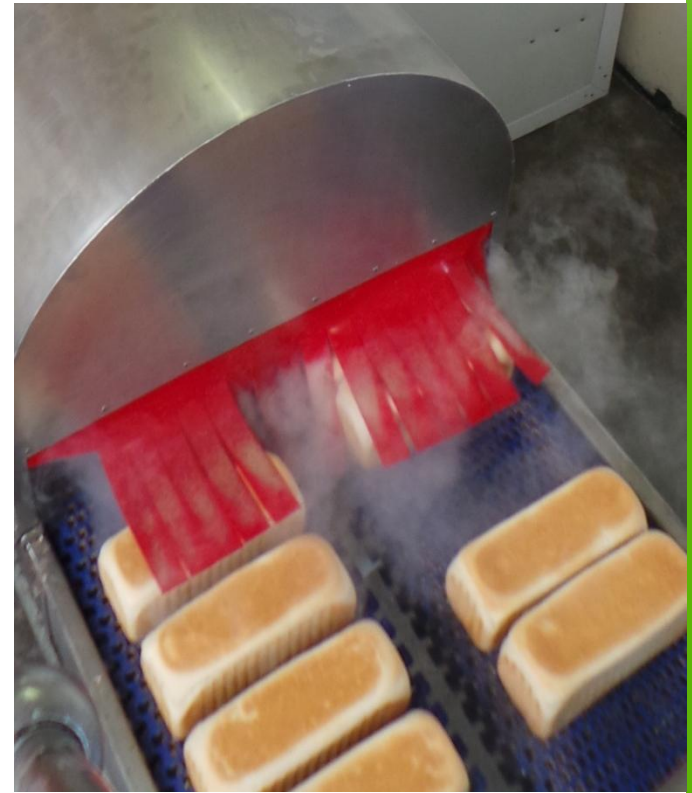
# Bread surface treatment: Benefits

- Shelf life extension
- No residue on the product
- Non-toxic

## Application:

Our technology can be installed in cooling chambers or on conveyor belts.

Please contact us to learn how to best install our technology in your process.







Semi-industrial baker  
(France)  
[www.bpa.fr](http://www.bpa.fr)

“All equipment refitted with NanoBAK humidification has been used daily for many months now for one main reason: evident progress in the regularity of the quality of the bread: no drying or sticking problems...”



Craft baker  
(Germany)  
[www.sikken.de](http://www.sikken.de)

“The technology has been applied to all existing processes and product processing. Even difficult processes (like 3/4 –proofed-frozen-dough) are possible.”  
“Good to very good and improved product properties have been achieved as well as improved dough processing overall”



International bakery  
group with expertise in  
frozen and fresh bakery  
products.  
[www.lantmanner-unibake.com/nl-BE/](http://www.lantmanner-unibake.com/nl-BE/)

“The technology allows us to proof at high relative humidity without condensation, thus avoiding sticky products. In addition, less energy is required to operate our proofing cabinet and the detrimental effect of steam on our equipment is eliminated. So we can conclude: small things do make a difference!”



Craft baker  
(Germany)  
[www.bestesbrot.de](http://www.bestesbrot.de)

“We have worked with this technology for approximately two months. This has led to positive results concerning products as well as processes:

- Dough pieces are more stable and do not stick to the fermentation trolley;
- The temperature in the fermentation chamber could be reduced whilst having the same process times;
- Products offer longer crispness.

The system is recommended as it can easily be retrofitted to existing systems. Cleaning and decalcifying of the heating system and the cylinder is no longer necessary. The technology works with cold aerosols instead of hot steam so that cooling is no longer necessary.”

 **CONTRONICS**

Contronics Engineering B.V.

Rogier Klein Sprokkelhorst

Mobile: +31 653 386 794

Office: +31 413 487 000

[rogier@contronics.nl](mailto:rogier@contronics.nl)

[www.contronics.nl](http://www.contronics.nl)