Philips

Air Humidifier–
The *NanoCloud* Story

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Contents:

NanoCloud Technology
For healthier humidified air.

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Natural, additive-free humidification with no white dust and wet patches, and 99%* less bacteria for a healthier life.

Philips NanoCloud is a unique humidification technology that maintains comfortable moisture levels in the home using a natural process that does not use artificial additives.
Nothing could be simpler – or more natural. Using natural evaporation – a proven hygienically safe humidification method – NanoCloud humidifies the air in your room by generating tiny water molecules of clarified water that are invisible to the eye. Due to its miniscule volume, this invisible water vapor evenly humidifies air, and is proven to minimize the risk of bacteria, white dust and wet floors – all common problems with ultrasonic humidification technologies. Furthermore, as a natural process NanoCloud does not involve the ions, chemicals and ozone released by other technologies.

NanoCloud is not only proven to be a healthier and more effective way to humidify the air in your home, it feels healthier too. Air humidified by NanoCloud is comfortable and refreshing to breathe, because it is designed to reduce the irritation and ailments caused by dry, contaminated or over-humidified air.

*Compared to standard ultrasonic technology (non warm mist), Philips NanoCloud technology emits up to 99% less natural bacteria into the air, as tested for 8 weeks in a 1m3 chamber, and certified in an independent laboratory benchmark study by Rabe HygieneConsult in June 2012 (Rabe Hygiene Consult 2101p_12.116).

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NanoCloud revitalizes dry indoor air and maintains healthy humidification levels.

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Dry air is often a problem during winter, when there is less moisture in the air and home heating systems cause indoor air to dry out.

This dry air causes your body to lose its moisture, and aggravates the respiratory system, causing a number of health problems.

Philips NanoCloud revitalizes the air in homes, offices and other indoor spaces by maintaining a constant and even relative humidity of between 40 and 60 percent.[1] Maintaining this optimal level of humidity minimizes health problems caused by dry air and makes air pleasant to breathe.

PREVENTING DRY LIPS, SKIN, HAIR AND EYES

Around sixty percent of the human body is water. Dry air draws water out of skin and hair cells, causing itchy skin, chapped lips, brittle hair and redeye.[2] NanoCloud's water vapor penetrates cells with a natural moisturizing action, helping to improve the vitality and appearance of skin, lips and hair.

PROMOTING A HEALTHY HUMIDIFICATION LEVEL FOR COMFORTABLE BREATHING AND SLEEPING

Breathing dry air feels harsh and uncomfortable, causing a bloody nose and dry eyes, and aggravates allergies, asthma and other respiratory conditions.[3]

Correctly humidified air soothes dry air passages and nasal membranes, making the air pleasant to breathe. A blocked nose or dry throat makes it hard to get a good night's sleep too.[4] The soothing action of NanoCloud is designed to improve breathing as a necessary condition for better sleep.

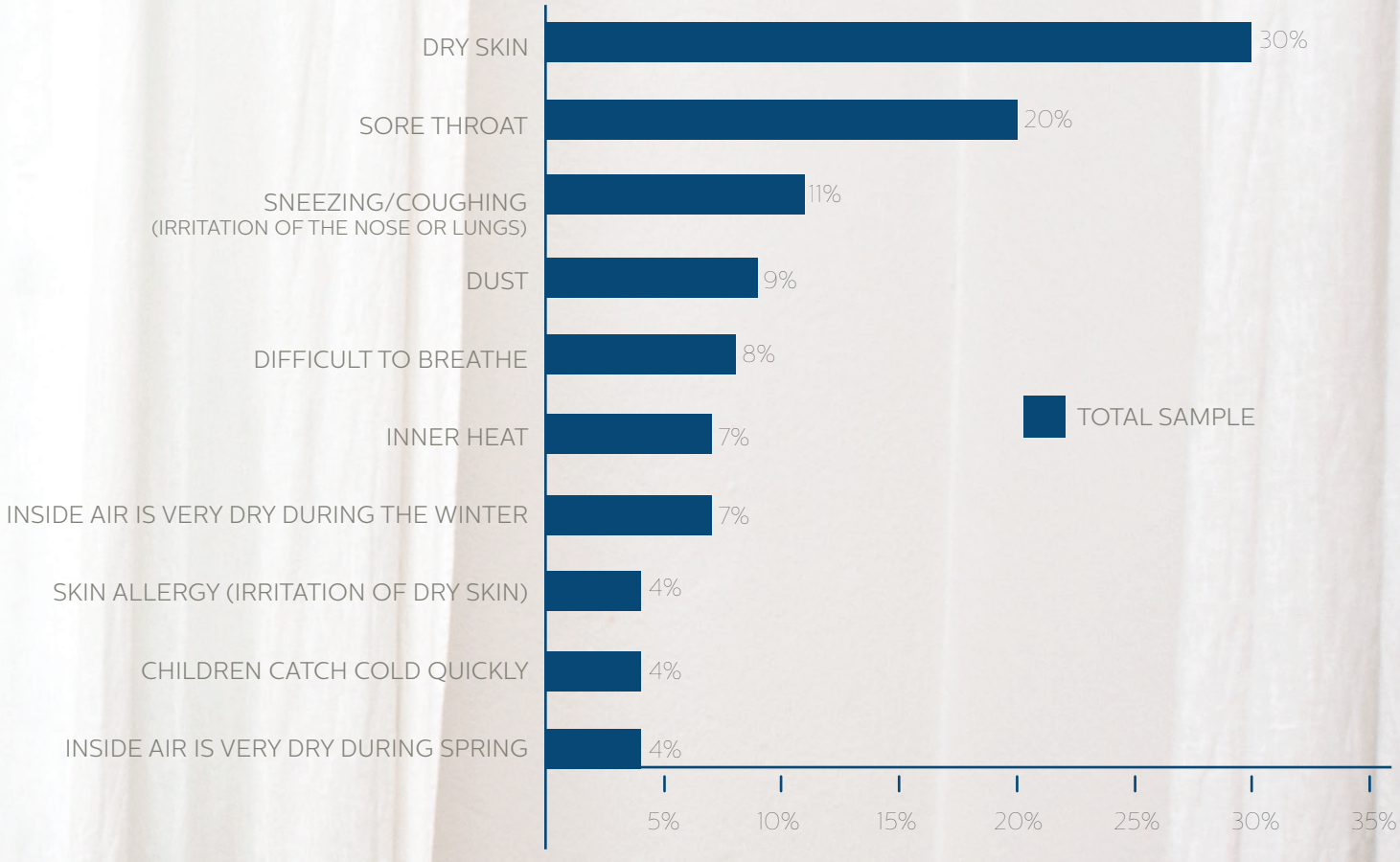
PREVENTING COLDS AND OTHER AILMENTS

You are more likely to catch a cold in a dry house because the cold virus thrives in a dry environment.[5] NanoCloud prevents the dry conditions under which some pathogens thrive indoors.

References: 1. According to Philips internal laboratory test, in a volume of 25 m2 under initial condition of 22 degrees Celsius, 27% relative humidity. 2. "Humidifiers: Air moisture eases skin, breathing symptoms", Mayo Foundation for Medical Education and Research (MFMER) 3. "Effects of Dry Air on the Body", HighBeam Research, LLC. 4. "How to Get a Good Night's Sleep", originally written in 1989 by David G. Danskin, Ph.D., University Counseling Services; adapted and modified in 1997 by Dorinda Lambert, Ph.D. (Kansas State University) 5. "What Are the Most Common Causes of a Dry Throat and Coughing?", WiseGeek.org

PROBLEMS CAUSED BY LOW AIR HUMIDITY (REPRESENTATIVE SAMPLE, N=500)

TNS TECHNOLOGY: AIR HUMIDIFIER STUDY, JUNE 2011



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REDUCING TIREDNESS

Humidity is important for comfortable breathing, and so dry air makes it harder for the body to transfer oxygen from the air to the bloodstream,[6] resulting in fatigue, headaches and reduced concentration. Correctly humidified air helps the respiratory system to distribute oxygen, helping you to feel more alert and full of energy.

REDUCING LEVELS OF DUST, AND WEAR AND TEAR ON YOUR HOME

Dry room air causes dust to rise, which triggers discomfort and respiratory irritations.

NanoCloud's invisible water vapor binds to dust and causes it to settle harmlessly. NanoCloud also reduces the cracking of wood, paint and plaster caused by dry air.[7]

REDUCING STATIC SHOCK

NanoCloud can also prevent electrostatic build up caused by dry air, eliminating electrostatic shocks from contact with exposed metal such as chair arms and light switches in the home.[8]

WHAT IS DRY AIR?

Dry air is defined as a relative humidity of less than 40%. It is usually noticeable below 30%, when it starts to trigger symptoms in people. Dry air is common in winter, when the cold prevents moisture from rising.

WHAT IS RELATIVE HUMIDITY?

Relative humidity is the amount of water vapor in the air expressed as a percentage of the amount needed for 100% saturation at the same temperature. Air with humidity of 100% is fully saturated and forms water droplets.

WHAT IS THE IDEAL HUMIDITY?

Ideally, relative humidity in your home should be between 40 and 60 percent. The amount of humidity varies depending on the season, climate and where you live.

6. "How Do Lungs Work?", European Lung Foundation 7. "Dry Air In Well-warmed Houses Can Damage Woodwork, Furniture", Chicago Tribute News, December 12, 1999 8. "Air Quality at the Office", Canada Safety Council

Hygienically Safe. Triple protection against bacteria and mold.

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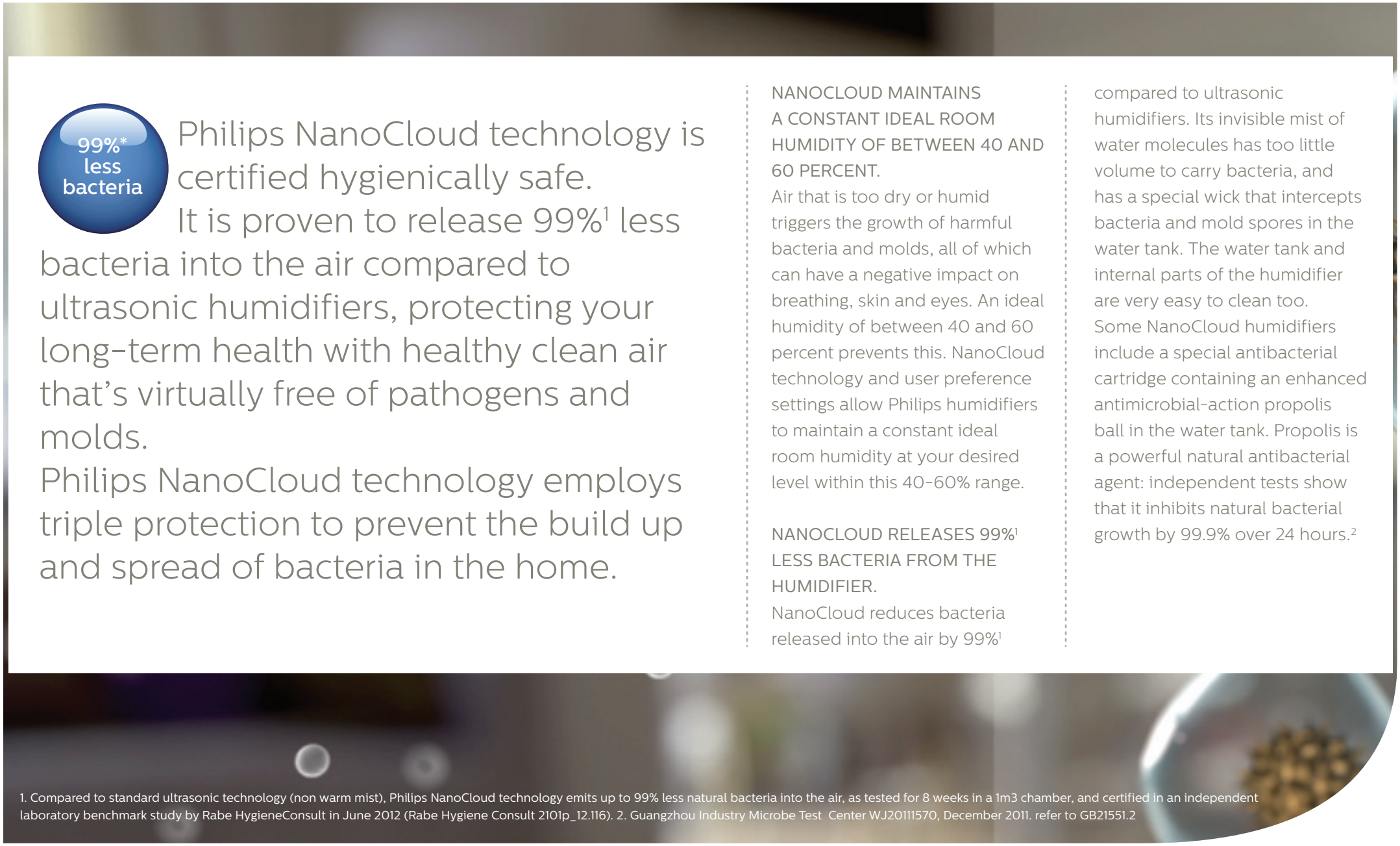

Philips NanoCloud technology is certified hygienically safe. It is proven to release 99%[1] less bacteria into the air compared to ultrasonic humidifiers, protecting your long-term health with healthy clean air that's virtually free of pathogens and molds.

Philips NanoCloud technology employs triple protection to prevent the build up and spread of bacteria in the home.

NANOCLOUD MAINTAINS A CONSTANT IDEAL ROOM HUMIDITY OF BETWEEN 40 AND 60 PERCENT.

Air that is too dry or humid triggers the growth of harmful bacteria and molds, all of which can have a negative impact on breathing, skin and eyes. An ideal humidity of between 40 and 60 percent prevents this. NanoCloud technology and user preference settings allow Philips humidifiers to maintain a constant ideal room humidity at your desired level within this 40-60% range.

NANOCLOUD RELEASES 99%[1] LESS BACTERIA FROM THE HUMIDIFIER.

NanoCloud reduces bacteria released into the air by 99%[1] compared to ultrasonic humidifiers. Its invisible mist of water molecules has too little volume to carry bacteria, and has a special wick that intercepts bacteria and mold spores in the water tank. The water tank and internal parts of the humidifier are very easy to clean too.

Some NanoCloud humidifiers include a special antibacterial cartridge containing an enhanced antimicrobial-action propolis ball in the water tank. Propolis is a powerful natural antibacterial agent: independent tests show that it inhibits natural bacterial growth by 99.9% over 24 hours.[2]

1. Compared to standard ultrasonic technology (non warm mist), Philips NanoCloud technology emits up to 99% less natural bacteria into the air, as tested for 8 weeks in a 1m3 chamber, and certified in an independent laboratory benchmark study by Rabe HygieneConsult in June 2012 (Rabe Hygiene Consult 2101p_12.116). 2. Guangzhou Industry Microbe Test Center WJ20111570, December 2011. refer to GB21551.2

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SIZES OF VIRUSES

PATHOGEN/ALLERGEN	RATIONALE	AVERAGE SIZE (NM)	1-PASS ANTI-VIRUS FILTER EFF. (%)
Measles virus	Measles	158[3]	98%
Varicella zoster	Chicken pox	150[2]	98%
Influenza	Influenza (the 'flu')	80 - 120[1]	97%
Rhinovirus	Common 'catching cold' symptoms	25 - 30[1]	Out of range
Respiratory syncytical virus	" "	220[2]	98%
Parainfluenza virus	" "	230[2]	98%
Norovirus	Stomach flu	28 - 35[5]	Out of range
SARS coronavirus	SARS	80 - 90[4]	97%

1 D. Verreault et al. Microbiol. Mol. Biol. Rev. 2008, 72; 413 | 2 W.J. Kowalski et al. ASHRAE Transactions, 1999, 105; 4 | 3 W.J Kowalski Design and Optimization of UVGI Air Disinfection Systems, PhD Thesis, 2001 | 4 I.E. Agranovski, Atmospheric Environment 2004, 38; 3879 | 5 C.E. Wobus, Science, 2003, 299, 5612; 1575

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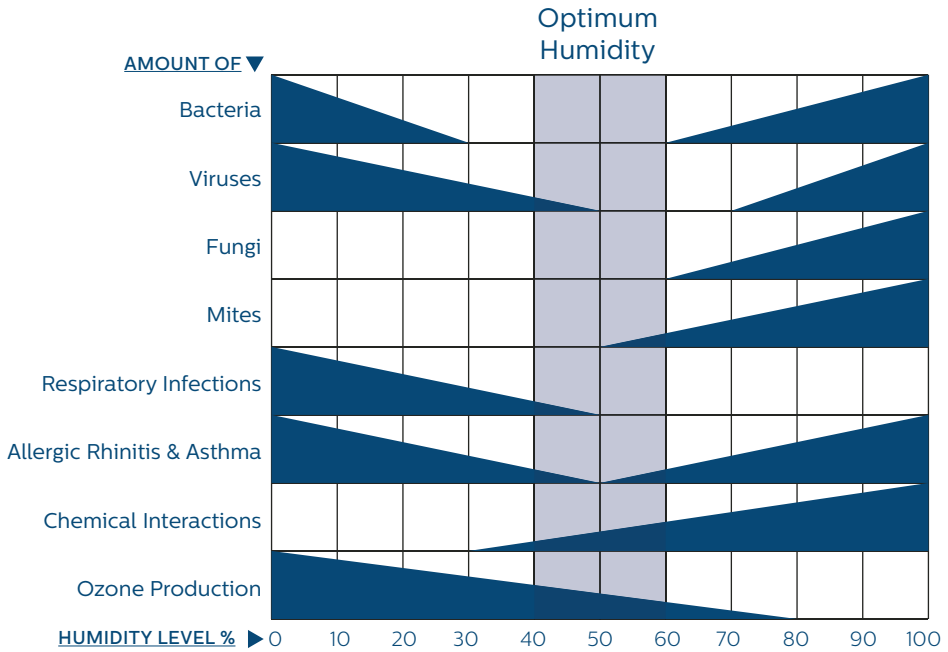
NANOCLOUD ABSORBS UNHEALTHY DRY AIR FROM YOUR ROOM AND WASHES IT OF IMPURITIES.

NanoCloud doesn't just prevent bacterial growth, it actively removes bacteria from the air in your room, as demonstrated by an independent third-party study.[3] The humidifier draws in unhealthy dry indoor air and the filter helps cleaning it from various impurities like: pet hair, household dust, pollen and natural bacteria in the air. Hygienically safe humidified air is then evaporated into your room.

Dry air from your room is drawn in by the humidifier.
According to 2008 Microbiological Risk Assessment Report of the World Health Organization, the avian influenza, human influenza, Legionella and hepatitis viruses and the SARS coronavirus are all larger than 20 nanometers (0.00002 mm) and will therefore be captured by the filter.



Optimum Relative Humidity Levels (%) for the Reduction of Harmful Contaminants

HUMIDIFIER LUNG

Humidifier lung or "hypersensitivity pneumonitis"4 is a lung condition caused by strains of bacteria in the air. Symptoms include cough, fever, chills, breathlessness, body aches and lung inflammation. Over time it may cause respiratory infections and lung disease. Bacteria and allergens thrive in over-humidified (humid) air. Humidifier lung can therefore be resisted by NanoCloud's correctly humidified air.

3. An independent study on antibacterial filter efficiency by DMT GmbH & Co. KG in December 2011 determined that Philips NanoCloud captures 62% of the incoming bacteria* (DMT test report – GS 3 No.00127 11). Tested in a 36m3 chamber. *natural bacteria in air. 4. Wikipedia, "Hypersensitivity pneumonitis" (http://en.Wikipedia.org/wiki/Hypersensitivity_pneumonitis).

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No white dust or wet floors

Philips NanoCloud's invisible mist of water does not create white dust or wet patches in your room - unlike ultrasonic humidification technology. Not only is this cleaner and hygienically safe for your environment, it's healthier for you and your family too.

NANOCLOUD DOES NOT EMIT WHITE DUST

Water contains minerals and trace elements like calcium and magnesium. These build up in the water tank as a white fur - similar to the scale that builds up on the inside of a kettle. The water droplets emitted by humidification technologies such as ultrasonic carry this deposit.

As these water droplets fall to the ground the deposit forms a sticky white dust on nearby objects and furniture. NanoCloud does not cause this white dust because its very fine water vapor has too little volume to carry it. Instead, white dust remains in the humidifier, where it can be cleaned away easily.[1]

NanoCloud doesn't create wet patches.

Ultrasonic creates wet patches.

1.Independent third-party test Determination of deposition of minerals from liquid droplets on furniture according to DIN 44973, IUTA e.V. (Institut für Energie- und Umwelttechnik) (139/08 – 55955.00), December 2008, to determine mineral deposits onto furniture from airborne liquid droplets over a period of 3 hours. NanoCloud demonstrated negligible deposition of minerals, whereas ultrasonic devices produced depositions of droplets of salt solution near the devices.

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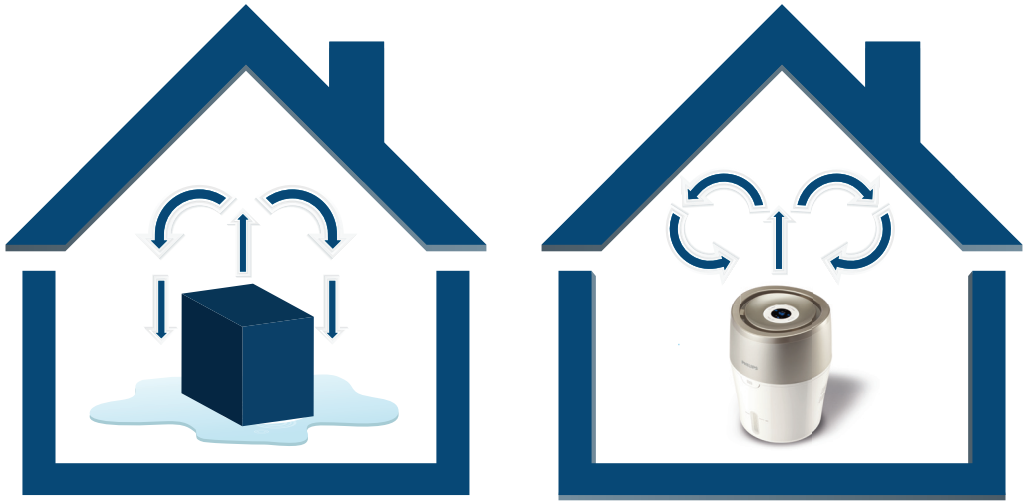
NanoCloud does not form wet patches.

NanoCloud's invisible humidifying mist is distributed evenly throughout the home, so there is not enough water to collect and form wet patches. The big water droplets produced by ultrasonic technology are heavy, so they are not projected far and fall to the ground quickly – like water from a fountain. Over a short period of time this creates wet patches around the humidifier.



WET PATCH FORMATION:

Ultrasonic throws water into the air.

NanoCloud turns water into air.

Other types of humidifier like ultrasonic contaminate the air with suspended materials and minerals that accumulate in the water tank. The water droplets they produce fall near the humidifier, where they collect and form wet patches.

1 Independent third-party test Determination of deposition of minerals from liquid droplets on furniture according to DIN 54973, IUTA e.V. (Institut für Energie- und Umwelttechnik) (139/08 – 55955/10), December 2008, to determine mineral deposits onto furniture from airborne liquid droplets over a period of 3 hours. NanoCloud demonstrated negligible deposition of minerals, whereas ultrasonic devices produced depositions of droplets of salt solution near the devices.

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Even distribution of humidified air

Distributing moisture evenly throughout a volume is proven to be a more effective and healthy way to humidify, because it avoids the build up of damp or dry areas.
Philips NanoCloud distributes its invisible water vapor evenly throughout a room, aided by a 360-degree distribution bay and an efficient fan that maintains a constant, effective airflow.
NanoCloud water vapor stays suspended in the air for longer due to its fine size. This ensures even and effective humidification, particularly for large rooms, and prevents over-saturation, for more pleasant and healthier air.

NanoCloud's powerful moisture distribution
A 360-degree distribution bay distributes humidified air evenly. In addition, the very fine water vapor generated by NanoCloud carries further and more evenly, preventing wet patches and reaching every corner of the room.
A powerful but quiet fan projects humidified air further. This fan is highly efficient with an ultra-long lifetime

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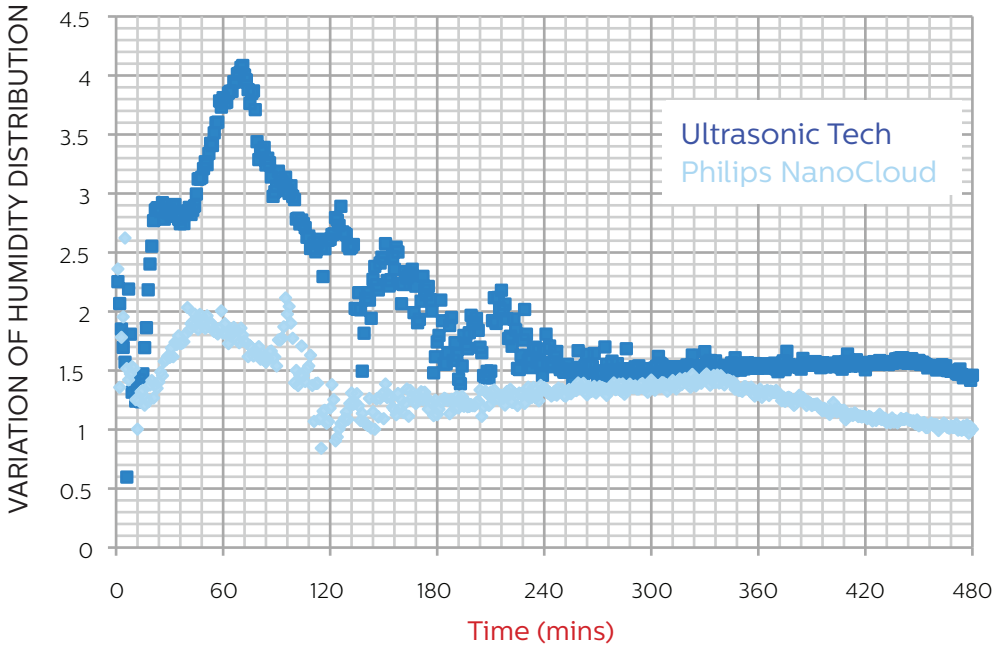
NanoCloud water vapor is distributed in all directions thanks to the humidifier's unique 360-degree distribution bay. This ensures that no part of the room is left unhumidified. NanoCloud water vapor travels further thanks to a quiet but powerful fan. This simple but effective feature – not present in ultrasonic humidifiers – humidifies even a large room thoroughly.
NanoCloud is also supported by smart features that optimize the humidity level.
A digital humidity sensor constantly monitors the air, maintaining even humidity and shutting off in humid conditions.

COMPARISON OF HUMIDITY DISTRIBUTION VARIATION[1]



NANOCLOUD'S PROVEN EVEN HUMIDITY DISTRIBUTION

In tests, Philips NanoCloud maintained an almost constant level of humidification, even in its start-up phase, while ultrasonic varied considerably. This is because ultrasonic relies on an atomizer that generates a jet of big water droplets that form a narrow concentrated stream of water. This water forms a visible layer of mist close to the ground, as well as puddles. NanoCloud's humidity distribution was shown to be more even than that of ultrasonic over 8 hours in a 25m^2 room.

1. Data obtained from test in Philips internal climate lab, Suzhou, Sep 2012. Chamber size of 25m^2, initial temperature of 22C, and relative humidity of 30%.

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Outstanding energy and water efficiency.

NanoCloud technology uses significantly less water and energy than ultrasonic humidifiers.

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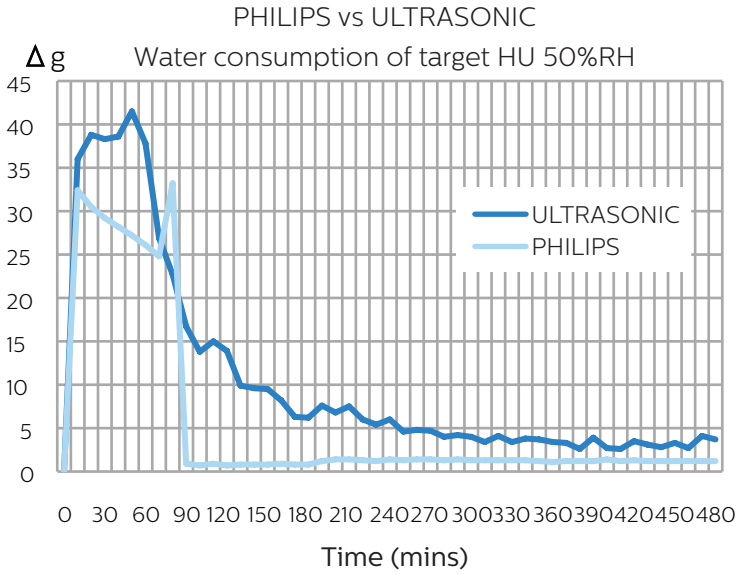
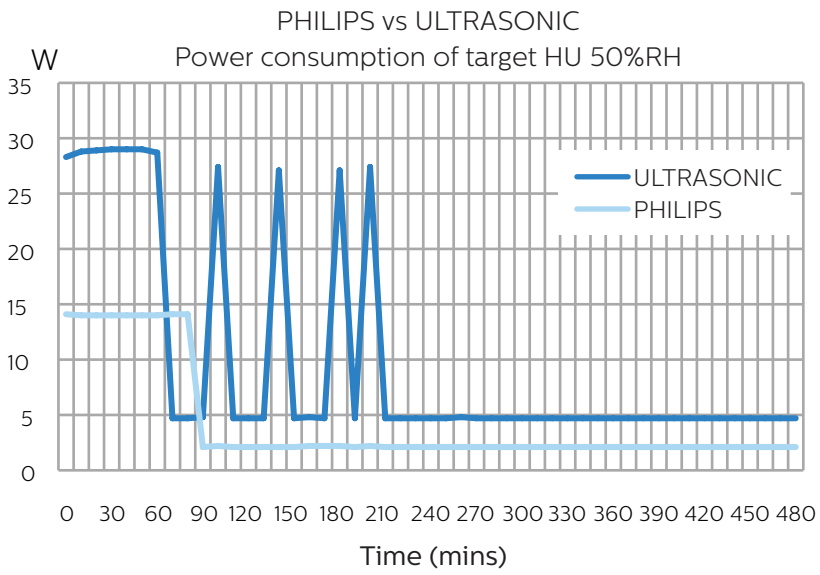
Water/Power Consumptions Comparison to reach and maintain a relative humidity of 50%[1]





Energy and water efficient

Philips NanoCloud uses significantly less water and energy than ultrasonic humidification technology. That's great news for the planet – and for your pocket too. The invisible mist generated by NanoCloud consumes considerably less water and produces less water wastage than ultrasonic technology, as proven in a test to achieve and maintain a relative humidity of 50% over a period of five hours.[1] NanoCloud's simple and efficient operation also consumes less energy than ultrasonic humidification technology. In a test to measure energy consumption relative to ultrasonic, NanoCloud was shown to use very little energy to reach and maintain a relative humidity of 50%.[1]

1. Data obtained from test in Philips internal climate lab, Suzhou, Sep 2012. Chamber size of 25m², initial temperature of 22C, and relative humidity of 30%.

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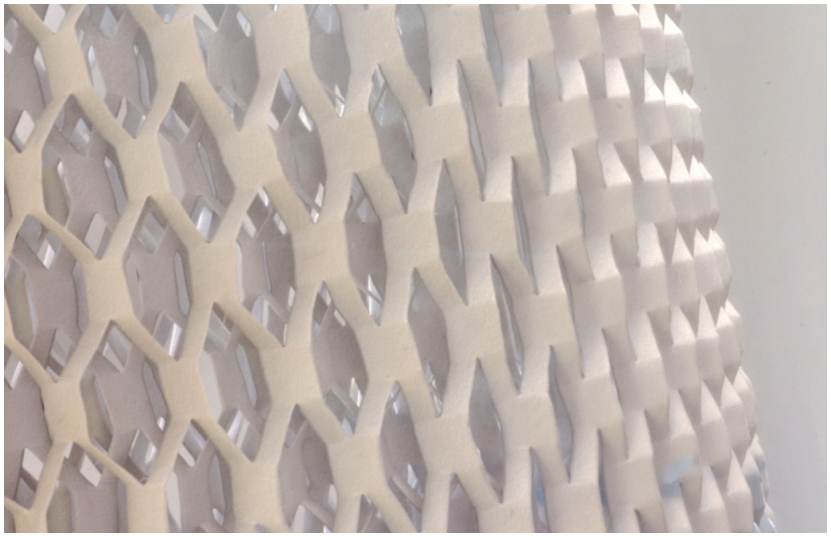

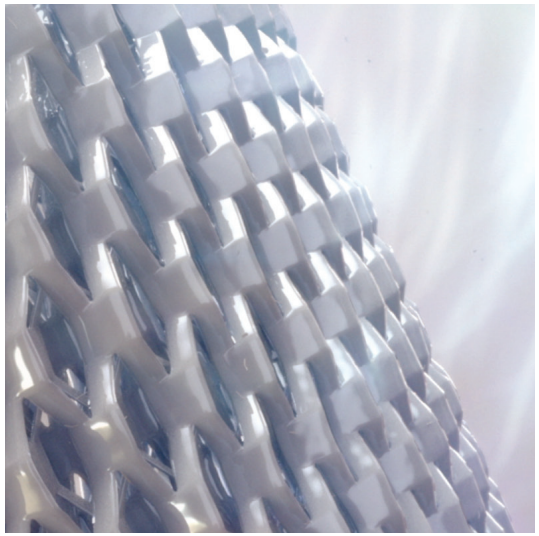

THE NANOCLOUD WICK
Precision-built disk stacks remove impurities from water. NanoCloud has a wick made from several layers of a super-absorbent honeycomb structure to create a big effective surface area which significantly enhances the wick's ability to take in and release water.
This honeycomb structure accelerates humidification performance.

No ions, chemicals or ozone

THE COMPLETELY NATURAL WAY TO HUMIDIFY
Philips NanoCloud technology works by natural evaporation, widely recognized as a hygienically safe and effective method of humidification. The humidifier draws in dry indoor air, and passes it through a water chamber that washes the air of impurities like pet hair, household dust, pollen and bacteria. This air is released as natural evaporate mingled with clean, fresh H_2O (water) molecules added by a special humidification filter.

A powerful but quiet fan pushes this humidified air out of the humidifier's 360-degree distribution bay into all corners of your room. This completely natural process releases hygienically-safe humidified air. It does not use ions, chemicals or ozone.
NanoCloud is a healthy and effective way to humidify the air in your home naturally, giving you more confidence that the indoor air around you is healthier. NanoCloud's humidified air feels really comfortable to inhale too, so the whole family can breathe more easily.

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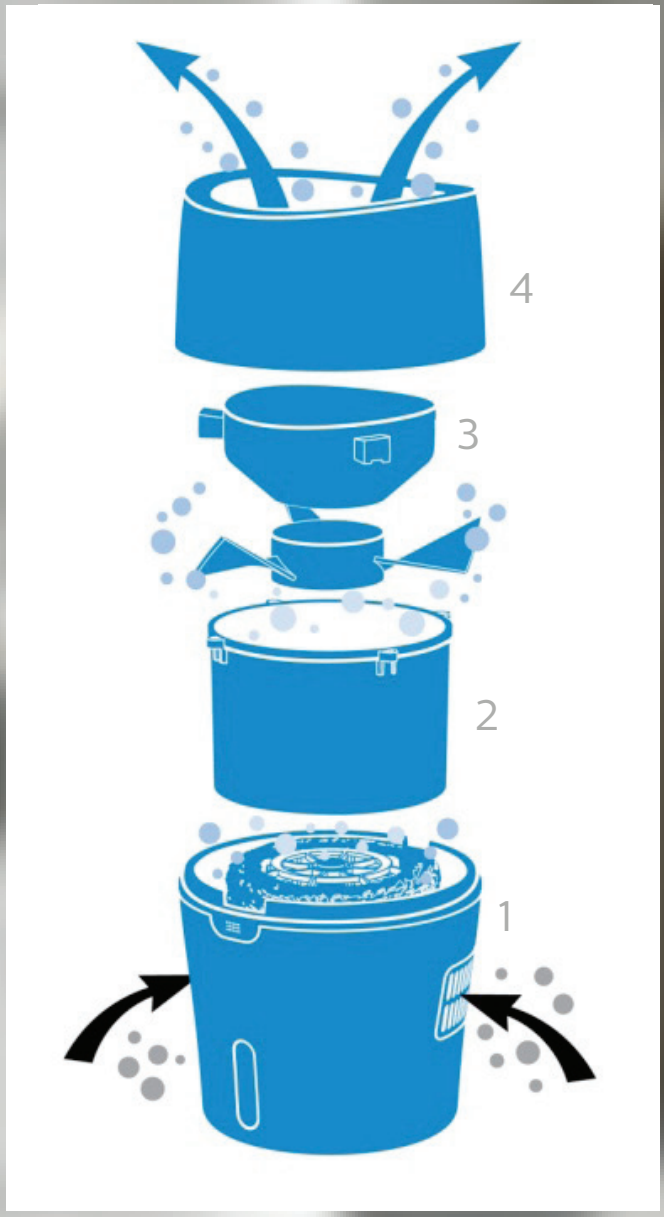

4 A 360-degree distribution bay distributes humidified air evenly. In addition, the very fine water vapor generated by NanoCloud carries further and more evenly, preventing wet patches and reaching every corner of the room.

3 A powerful but quiet fan projects humidified air further. This fan is highly efficient with an ultra-long lifetime.

2 As clean water evaporates, advanced NanoCloud technology adds H_2O molecules using a special humidification filter. This natural evaporate is an invisible water vapor that gives its name to NanoCloud technology. This humidified air carries 99%* less bacteria and no white dust due to its molecular size.

1 The humidifier draws in unhealthy dry indoor air and the filter helps cleaning it from various impurities like: pet hair, household dust, pollen and natural bacteria in the air.

*Compared to standard ultrasonic technology (non warm mist), Philips NanoCloud technology emits up to 99% less natural bacteria into the air, as tested for 8 weeks in a $1m^3$ chamber, and certified in an independent laboratory benchmark study by Rabe HygieneConsult in June 2012 (Rabe Hygiene Consult 2101p_12.116).

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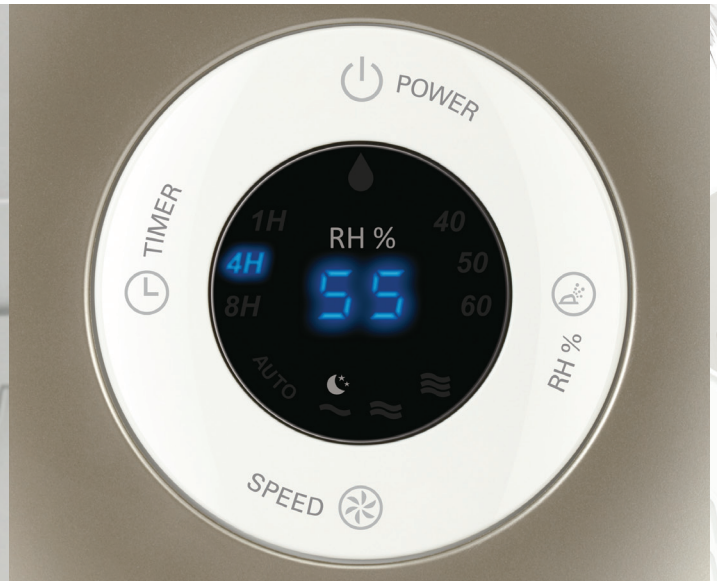
Philips NanoCloud technology is complemented by smart features to help keep the air around you humidified correctly, and ensure your humidifier performs at its optimal level for longer.



HEALTHY AIR, AUTOMATICALLY

NanoCloud takes care of the essential functions of humidification automatically. A smart digital humidity sensor monitors the air and maintains a constant healthy humidity of between 40 and 60 percent. A water level alert lets you know when to refill the tank, while a safety lock shuts down the device when it runs out of water – features that protect the humidifier from damage, and help you out too.

ACCURATE HUMIDITY CONTROL

NanoCloud's clear control panel displays the exact humidity value and makes it easy to adjust the humidity level and humidification speed, putting you in complete control of the humidity in your home. Pre-sets allow you to instruct the humidifier to switch off after 1, 4 or 8 hours of operation.

EASY-TO-USE FEATURES

NanoCloud humidifiers are designed to be easy to use. A large water tank provides hours and hours of humidified air, and can be easily refilled simply by lifting off the top. In addition, an easy-to-clean design helps keep the device clean – as well as the air in your home.

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PERSONAL SPACE/ DESKTOP

SMALL ROOM/ BEDROOM

LARGE ROOM/ LIVINGROOM

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