ThermoSmart[™]

Clinically proven for a better night's sleep¹







Natural Humidification

The nose has an amazing capacity to heat and humidify the air we breathe.

Under normal circumstances the air we breathe is heated to a temperature of 86 °F (30 °C) and humidified (95% saturated) to hold 29 mg/L of water by the time it reaches the nasopharynx.²

However, the ability of the nose to condition inspired air is compromised by continuous positive airway pressure (CPAP) therapy and the vicious cycle of mouth leak.

KEY

- 1 Nasal Cavity
- 2 Nasopharynx
- 3 Uvula
- 4 Soft Palate
- 5 Tongue

- 6 Oropharynx
- x **7** Trachea
 - 8 Mandible
 - 9 Hard Palate
- 10 Epiglottis

- Up to 75% of CPAP users (without a heater humidifier) complain of upper airway dryness and congestion.³⁻⁴
- Nasal congestion and mouth leak with CPAP have been found to negatively correlate to CPAP compliance.⁵





The Problem with Conventional Tubing

The effectiveness of conventional humidification is limited by ambient temperature. As air travels from a conventional humidifier it cools, causing condensation to form in the tube. As a result it fails to deliver optimal humidity levels to the patient, resulting in dryness and discomfort.



- Condensation in the tube causes disruptive gurgling and pressure fluctuations¹⁰
- Disruptive gurgling noises may adversely affect sleep quality.

Mask Pressure Fluctuations Caused by Condensation¹⁰



The Solution: ThermoSmart[™] Technology

ThermoSmart[™] Technology, with its unique heated breathing tube, delivers higher, customized humidity levels that are maintained through the night, regardless of ambient temperature changes. These higher humidity levels help maintain normal airway conditions to provide a more natural CPAP experience. All of this with virtually no condensation.*



- ThermoSmart[™] improves sleep quality and total sleep time¹
- ThermoSmart[™] lowers nasal airway resistance for 10% lower pressure⁹
- ThermoSmart[™] virtually eliminates condensation¹ and provides high levels of absolute humidity¹¹
- ThermoSmart[™] provides a more comfortable CPAP experience¹²
- ThermoSmart[™] is as effective as a nasal steroid in improving nasal symptoms.¹³

* Subject to the operating conditions specified in the applicable Operating Manual.



The results speak for themselves **Nilius:** Impact of a Controlled Heated Breathing Tube Humidifier on Sleep Quality during CPAP Therapy in a Cool Sleeping Environment

		CONVENTIONAL	THERMOSMART™	SIGNIFICANCE
	WATER IN SYSTEM:	35.3 ml (± 16.0)	1.9 ml (± 16.0)	p<0.01
•••	SUBJECTIVE SYMPTOM SCORE:	20.7 (± 6.9)	13.5 (± 9.5)	p<0.01



Key Findings:

When compared with conventional humidification in this study ThermoSmart[™]:

- Improved patient sleep quality
- Reduced patient side effects
- Virtually eliminated condensation, even in a cool sleeping environment.

Massengill: Effect of Humidification on Titration Pressures in Obstructive Sleep Apnea



Key Findings:

- The use of ThermoSmart[™] in this study led to a titrated pressure 10% lower than conventional humidification
- The lower titration pressures seen in this study could be explained by the higher levels of absolute humidity, leading to a reduction in nasal airway resistance.







Key Findings:

Compared to conventional humidification, in this study:

- ThermoSmart[™] significantly decreased nasal symptoms
- ThermoSmart[™] significantly decreased condensation and therefore increased humidity delivery
- ThermoSmart[™] provided a more comfortable CPAP experience.

ThermoSmart[™]: Leading the way in humidification







Key Findings:

- ThermoSmart[™] is able to deliver consistently high levels of humidification due to a combination of smart algorithms, the original heated breathing tube, a powerful humidifier and a large-capacity water chamber
- ThermoSmart[™] delivers consistently high levels of humidity which have been shown to prevent an increase in nasal airway resistance (NAR).

All humidification level claims are based on results of testing performed by independent test house Valley Inspired Products, June 2010. *Richards GN et al. Am J Respir Crit Care Med. 1996; 154(1): 182-6.

Powell: Heated Breathing Tube vs Nasal Steroids for Compliance and Quality of Life



Key Findings:

- ThermoSmart[™] is as effective as a nasal steroid in improving nasal symptoms and is at least as effective at improving quality of life and daytime functioning in patients with obstructive sleep apnea (OSA)
- Of the patients who requested a treatment change, 74% chose to swap to ThermoSmart[™].

Start with ThermoSmart[™]

Stop treating CPAP side-effects one by one, as ThermoSmart[™] aims to proactively prevent both pressure and symptom issues. With upfront use of this technology, you may be able to prevent common barriers to CPAP adaptation by treating the overall problem before individual symptoms occur.



SIDE EFFECT	TRADITIONAL RESCUE THERAPY	THERMOSMART™ CAN HELP
Pressure intolerance = • Discomfort • Reduced adherence	Change of maskPressure relief	Less pressure Massengill: 10% lower titrated pressure, lowers nasal airway resistance ⁹ More comfortable Almasri: more comfortable CPAP experience ¹² Better sleep Nilius: sleep quality, total sleep time ¹
Dryness = • Congestion • Leak	 Nasal steroids Chin straps Conventional humidity Change of mask 	Use instead of nasal steroids? Powell: at least as effective as nasal steroids ¹³
Condensation = • Annoyance/disruption • Pressure fluctuation	 Repeated adjustment of humidity Tube covers Abandoning humidity altogether	Virtually eliminate condensation Independent testing: virtually eliminates condensation even in a cool sleep environment ¹ while still providing high levels of absolute humidity ¹¹
Reduced Patient Adherence	Overworked/Frustrated Healthcare Provider	Compliant Patient = Contented Healthcare Provider

Best Results with ThermoSmart[™]

For many people, heated humidification makes CPAP a more natural experience, for others it's about more than just added comfort.

- **DID YOU KNOW?** Patients over 60 years of age are **5 times** more likely to require heated humidification¹⁴
 - CPAP users taking 2 or more medications are 6 times more likely to require heated humidification¹⁴
 - CPAP users with chronic mucosal disease or have had uvulopalatopharyngoplasty surgery are 4 times more likely to require heated humidification¹⁴
 - Patients who prefer to sleep in a cold room are most likely to experience condensation.

ThermoSmart[™], clinically proven for a better night's sleep¹

References

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For more information please contact your local Fisher & Paykel Healthcare representative

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