THERMONIX™ – DTx

Next-Gen Thermal Transfer Solutions

NANOMATRIX® MATERIALS

Sheeting formulation Nano-Coating for High-Performance Dehumidification in HVAC Evaporator Coils

The UAE's hot and humid climate places significant demands on air-conditioning systems. Outdoor relative humidity frequently reaches **60–80%,** creating high latent (moisture) loads that conventional evaporator coils may not be optimized to handle efficiently. This can lead to inadequate dehumidification, clammy indoor conditions, condensate carryover, and the need for oversized equipment or excessive cooling to maintain indoor comfort.

Thermonix™ DTx an advanced ultra-thin sheeting formulation nano coating applied to evaporator coils that changes the way condensate behaves on the surface. Instead of forming and clinging as discrete droplets, condensate spreads into a thin, fast-draining film. This promotes more effective condensate removal and enhances moisture removal from the air **without requiring any redesign of the coil.**

Independent comparative testing demonstrated:

+70% Improvement in Latent (dehumidification) capacity	**+3.3%** Improvement in Total cooling capacity	**-4.7%** Improvement in Air-side pressure drop

The Gulf Dehumidification Challenge

- **High Latent Loads**
  High outdoor humidity creates heavy moisture loads that conventional cooling coils may struggle to remove effectively. Outdoor RH regularly exceeds 60–80%, pushing latent load far above temperate-climate norms.
- **Poor Condensate Drainage**
  Condensed water can remain as droplets between fins, restricting airflow and increasing the risk of re-evaporation and carryover.
- **Cold but Clammy Spaces**
  Insufficient latent removal can achieve the target temperature while leaving indoor humidity uncomfortably high.
- **Dehumidification Energy Penalty**
  Over-cooling or oversizing equipment to achieve humidity targets increases overall energy consumption.

How Thermonix™ - DTx Works

- **Continuous Film Formation**
  Condensate spreads into a thin, continuous sheet across the fin instead of forming isolated beads.
- **Improved Condensate Drainage**
  Faster drainage reduces water accumulation and bridging between fins, keeping the air passages clearer for continuous heat and moisture transfer.
- **Higher Latent Capacity**
  More effective moisture transfer and condensate removal enables the coil to handle higher latent loads and deliver greater dehumidification capacity.

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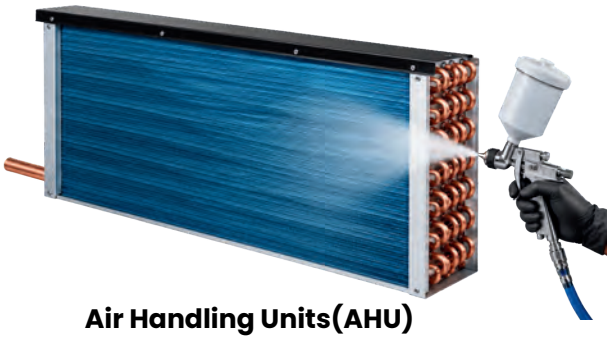
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- **Lower Air-side resistance**

  Reduced water accumulation between fins keeps airflow passages clear, helping reduce air pressure drop.



Air Handling Units(AHU)

Independent Lab Comparison

The same 3-row evaporator coil was tested under identical operating conditions — 27.0°C DBT / 19.0°C WBT and 2.40 m³/h water flow. The only variable between the two tests was the application of Thermonix™ DTx coating.

Parameter	Without Coating	With Thermonix™ - DTx	Percentage Change
Latent Capacity (W)	1,447.60	**2,461.50**	**70%**
Sensible Capacity (W)	12,367.40	**11,802.20**	**-4.60%**
Total Capacity (W)	13,815.00	**14,263.70**	**3.20%**
Air Pressure Drop (Pa)	29.88	**28.48**	**-4.70%**
Water Pressure Drop (kPa)	106.61	**104.12**	**-2.30%**

Source: Independent test report #25-1660-TP01A-T01 @NABL Laboratory (13-Jan-26 uncoated vs. 23-Feb-26 coated).

Why It Matters for UAE Projects

- **Right-sized dehumidification**

  Higher latent capacity helps meet humidity-control requirements without relying on oversized coils or excessive over-cooling.

- **Improved Indoor Comfort**

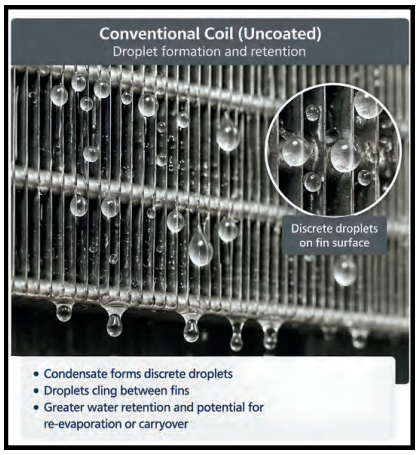
  Greater moisture removal helps maintain indoor humidity alongside the desired temperature, reducing cold and clammy conditions.

- **Reduced Air-side Resistance**

  Improved condensate drainage keeps fin passages clearer, with independent testing showing a **4.7% reduction in air-side pressure drop.**

- **No Coil Redesign Required**

  Thermonix™ DTx is applied directly to the existing fin geometry, enabling performance enhancement without changing the fundamental coil design.





Same coil. Same conditions. A different outcome.

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