

Innovative Air Drying Process

for Air Conditioning Systems

A New Green Technology

Nanocap
TECHNOLOGIES LLC

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The patented osmotic dehumidifier, based upon nanopore technology, revolutionizes dehumidification. Incorporated in air conditioning systems, it will be the first fundamental change since Willis Carrier invented air conditioning in 1902.



IMPORTANT CHARACTERISTICS OF NANOCAP'S TECHNOLOGY

- 1 Saves energy, lowering costs and greenhouse emissions
- 2 Separates dehumidification from cooling, increasing customer comfort and satisfaction
- 3 Lowers production costs

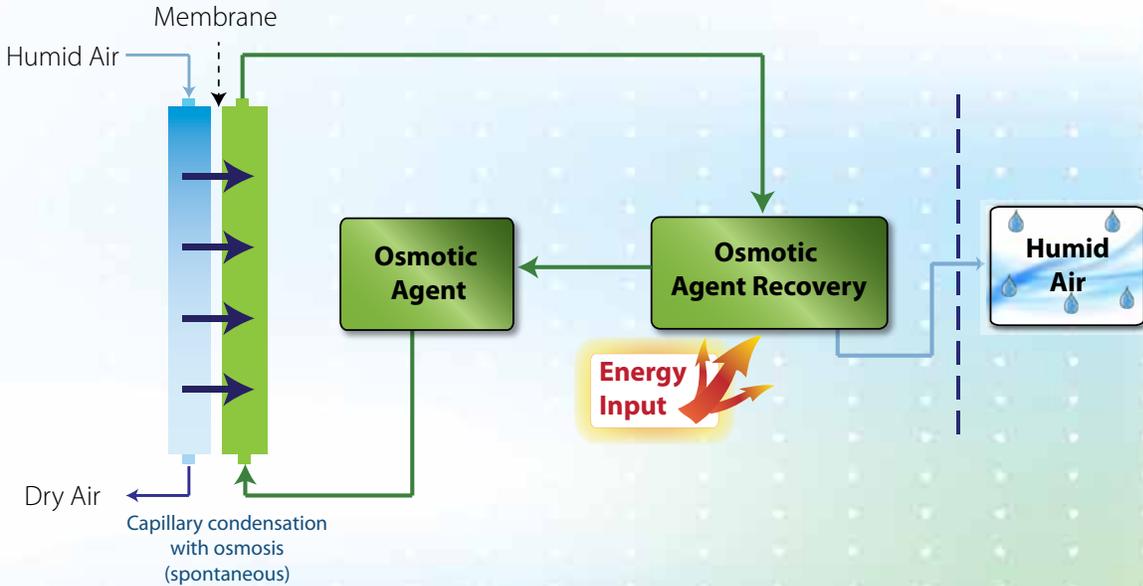
Our new process of using capillary condensation and then osmosis through a semi-permeable membrane to dry air [Figure 1] is considerably more efficient than the current method of dehumidification, which has been used since 1902. The old system squanders a large amount of energy by cooling air down to the dew point to get water vapor to condense and drip off refrigerated coils. It then heats the air back up to a comfortable temperature. Our transformative process avoids wasting energy to cool and reheat the air!

Revolutionizing Dehumidification



Figure 1 - Osmotic dehydration across an anisotropic membrane consisting of a selective layer that is supported by a porous layer. Capillary condensation allows for osmosis to occur across the selective layer of the membrane into a concentrated salt or osmotic solution.

The Nanocap Process



Energy used to regenerate the osmotic agent is intended to be a waste heat source. Regeneration of the osmotic agent can be continuous or intermittent; the optimum time to regenerate occurs when reject heat is available.

1 Energy Savings

- Energy savings of 20-35% will be experienced during typical air conditioning use.
- Air is pre-dried, separate from the cooling process.
- There is no need to cool air below the dew point and then reheat it to comfortable temperatures.
- Air conditioning would be used much less in cool, high humidity weather.

2 Increased Customer Comfort & Satisfaction

- Lower operating costs will satisfy customer needs.
- Humidity control is independent of cooling so air is neither too warm nor too cold.
- "Comfort-stat" will have humidistat and thermostat controls for individual comfort.
- Air won't be "muggy" in very humid spaces, including exercise rooms, schools and convention halls.
- Noise levels are significantly reduced.
- Environmental friendliness will please a large base of customers.

3 Lower Production Costs

- Condensers and compressors are smaller so air conditioners are cheaper to produce.
- Standard air conditioning cycle is used to cool dehumidified air.
- Dehumidifier may be incorporated in air conditioning systems either as embedded technology during the manufacturing process or as a simple retrofit to existing systems.
- Essential components are commercially available.
- Polymer membranes are flexible, compact, and relatively inexpensive.
- The membranes are long-lasting and do not degrade.
- Using membranes and salt solution to dehumidify results in large cost savings.
- Moving parts are minimized.

For more information and to learn how our patented process can be applied to your products, please e-mail us: info@nanocaptechnologies.com or call 860-559-0447.



Nanocap Technologies is an intellectual properties company focused on the invention of new, highly efficient dehumidification processes for practical applications.

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