

Evaporative Cooling – Affordability *and* Clean Comfort - Why OASys® Works for Arid Climates

By Dave Emmitt, Direct Drive Service, Inc.

It's that time of year again. Are you going to suffer through another summer with the fans blowing or bite the bullet and get Air Conditioning? Which would be better for you and for the planet? Well, environmentally the fans are a much better solution. But what is "Air Conditioning"? Conditioning means to change the condition of something. So generally "air" conditioning means that we change the state of the matter we are breathing. When we can make the air around us moister, it cools us. If we can make the airstream in which we find ourselves wetter, we'll be cooler regardless of the temperature. It's just like when you get out of a swimming pool; the air could be 100 degrees, but your body is cold, because of the effect of evaporation on your skin. That is called wet bulb temperature and its how evaporative coolers work. So we aren't "conditioning" the air, we're moistening it. When air remains dry but is continually cooled like with typical A/C, it becomes dense and stale. Removing heat from the air in a house is exactly what air conditioning does. That is why, with states boasting an 18% average relative humidity in the summer months, conditioning the air is a bad idea. Why continue to try to extract heat from an already depleted source? Your energy bill will surely show the impact of trying to do that.

Evaporative cooling, on the other hand, adds moisture to the air, which allows the process of evaporation (*nature's* way of removing heat) the opportunity to do its own heat removal. When an adequate stream of air is infused by an adequate supply of water, the heat becomes available for removal from the structure. As the H₂O-laden O₂ chases through the building, seeking an open window, door or other cracks through which to exit, it pushes all that dry (less dense) air out of the building. It's sort of like what a bulldozer does to dirt. And as this dry, hot air is replaced by cool, evaporated air - it pulls the heat out of everything in its way on its way to getting out that opening. That is why a house that is shut up tight will never cool with an evaporative cooler, and that's the *only* way it will cool with an air conditioner.

There are basically 3 types of evaporative coolers, direct, indirect, and 2-stage. Direct coolers use a media that evaporates the water directly into the air. Indirect coolers utilize 2 air streams to remove moisture out of a cooled air stream, leaving very cold, dry air (rivaling air conditioning, but using only water). 2-Stage systems (also known as direct-indirect units) utilize a direct media as well as an indirect heat exchanger, thereby creating very cool air with less humidity than a standard cooler.

The one I like best right now is the *OASys® Air Conditioner*, one of the few 2-stage coolers available today. It's affordable, efficient and very environmentally friendly. *And the OASys® NOW qualifies for the American Recovery and Reinvestment Act 30% tax credit. That combined with Utility Company Rebates makes this cooler more than half price! (This rebate is RETROACTIVE too! Any installation from Jan '08 forward qualifies for this CASH Deduction – not an exemption like some rebates- but Cash added to your refund or deducted from your tax payment due.) (<http://www.oasysairconditioner.com/pdf/OASys%20ARRA%20Certif.pdf>)*

"My family LOVES the OASys®. Our entire house stays cool and comfortable even on Boulder's scorching summer days. It's aptly named — the cool breeze, combined with a little extra moisture in the air, makes my home feel like an ocean oasis!"

**Kim Master, Green Building Consultant
Boulder, Colorado**



Residential Installations from Left: Simple Ground Mount, 2-Story Ground Mount, Roof Mount

Some things homeowners should look for in a cooler:

1. Think Green – typical DX Air Conditioning systems are a huge drain on the energy grid and also on your home energy bill... Evaporative Coolers are much less expensive to run and work best in dry climates where the humidity is generally less than 65% - which is a perfect match to the Colorado climate.
2. Look for Rebates – Some Energy Utility Companies offer rebates for evaporative cooling – some coolers get anywhere from \$200-\$500 in rebates.
3. Look at SEER – Seasonal Energy Efficiency Rating – typical DX (Direct Expansion) A/C range 12 to 18 SEER, Energy Star Homes using OASys® Indirect Direct Coolers may be modeled with an equivalent SEER value of 22!¹
¹ Follow the link below to Read the EPA letter for full details.
(<http://www.oasysairconditioner.com/pdf/EPA%20Letter.pdf>)
4. Protect the Planet – Evaporative Cooling needs no Refrigerant which means no CO2 emissions. OASys® uses the least water of all the coolers on the market.
5. Constant Comfort – because the climate is a perfect match, an evaporative cooler can comfortably cool a 2,000 square foot home for about 50cents a day.
6. Healthy Home – exceptional Indoor Air quality, Evaporative Coolers bring fresh outdoor air into the space, rather than typical A/C which re-circulates indoor air over and over.
7. Save Water – New models with Low Water Use and High Efficiency combine creating the best green option in cooling.

Like everything, evaporative cooling has changed dramatically. It's hard to drop the "swamp cooler" stigma and realize that, if it's good enough for Mother Nature, its good enough for us. The last time I was in a swamp there was something very pleasant about it. I guess that's why it's called *natural* cooling. And here the high desert, Mother Nature needs moisture to do her job.

One final statistic: Residential cooling costs continue to increase- up over 12% in the last two years!

Switching from a 10 SEER AC unit to OASys® will result in a reduction of over 100,000 pounds of Carbon Dioxide- the equivalent of taking 9 cars off the road for a year or planting 13 acres of forest.

Turning off a 13 SEER AC unit and relying on OASys® will save over 75,000 lbs. CO2 or the yearly equivalent of 7 cars or 9 acres of forest. (<http://www.eia.doe.gov/emeu/steo/pub/gifs/fig21.gif>)

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