

Ask AI

Alvaro G. Mendoza | Commercial Energy Specialists, Inc.



Welcome back to our “Ask the Expert” feature, designed to assist you with issues related to swimming pool water, mechanical equipment, space conditioning and code compliance. Ask us a question and we will try to answer to the best of our ability.

Q: We have an active indoor swim school pool that we keep at 90°F, and are trying to figure out if it is a good idea to use a pool cover. What types of covers are available, what are the potential savings and does it make financial sense to use covers?

A: There is a lot of confusion regarding the use of pool covers on indoor swim school pools. While some swim schools swear by the energy savings, others don't see where the savings are justified by the labor costs of putting the cover on and off.

Indoor Pool Heating Facts

While indoor pools are not subject to environmental conditions such as low outdoor temperatures, wind, and rain – all of which can reduce pool water temperatures, they still lose a lot of energy. Why? The heat in the pool water doesn't want to stay in the water, it will escape into the building air space through evaporation. Once there, it must be replaced by either additional energy from a heater, or from recovered heat from the dehumidification system.

The Power of Evaporation

It takes 1 BTU to raise 1 LB of water by 1°F. However, when the same 1 LB of water evaporates it takes about 1048 BTU's out of the surrounding water, thus severely reducing the temperature of the pool. Also, by the time you have lost 1 inch of pool water through evaporation, you have lost over 18°F of pool water temperature. Evaporation accounts for 70% of your annual heating cost. Wow!

Damage to the Building Space

The moist warm air in the pool space becomes a chore for the dehumidification system to handle. Equally as important as the heat loss itself, is the potential damage that the moist air, laden with chlorinated byproducts, can cause to your building structure including metallic fixtures, deck equipment, window systems, etc. Reducing the chloramines with a properly-sized UV system can help reduce this damage, but so can the use of a pool cover.

Pool Covers Can Save Money in 3 Ways

- By controlling evaporation to near ZERO during time of its use, you virtually stop the flow of warm moist air into the building space and severely reduce the load on the dehumidification system. This includes the cost of running the 5-15 HP fan moving the air, heating the incoming air (sometimes as much as 70°F or more) to conform to indoor air temperatures, and running the compressor to remove the humidity from the air. This could mean a potentially huge savings.

- Reducing evaporation will greatly reduce the amount of water used. How much? A good rule of thumb is 6.5 gallons per hour per 1,000 square feet of surface area is common for a heated pool. What about your pool? A Department of Energy RSPEC study on an 1,800 square foot pool at 90°F covered during periods of non-use estimated that a minimum of 50,000 gallons would be saved each year.

- The replacement water needs to be heated to the same temp as the rest of the pool, sometimes as much as 40°F. The pH of the water needs to be lowered and the chlorine, calcium and alkalinity will normally need to be adjusted in order to attain proper water quality and water balance.

Pool Covers are Available in 3 Types

- Bubble-type cover: These are similar to packing material, but made from a thicker grade of plastic. While they may cost less than other covers, they normally last months instead of years and their low price is normally offset by the well documented high labor cost of deploying and removing. Also, covers that are a pain to utilize don't get used as often thus reducing savings.

- Insulated pool cover: They are made with fabric-to-foam flame laminated polyethylene woven material and a special stitching for strength, flexibility and for making them easy to handle. Stainless-steel deck or wall-mounted winders are used to deploy and retract the new pool blankets, further

contributing to ease of handling. This is a medium cost alternative and seems to float the best, which is important, as water on the cover is like having a hole in the cover and evaporation will still take place and will steal the temperature from the surrounding water.

- Automatic cover: These are mostly used in high-end residential pools and could possibly be used in a rectangular pool. They will curb evaporation, but don't have the same insulation value as the 2nd alternative above. They also can be configured in an automatic version that recesses into the deck and deploys using tracks on the deck or in the recessed gutter. We are told that they can cost up to 4 to 6 times more than an insulated cover.

Calculate Savings

There are a few ways to estimate savings. The Department of Energy RSPEC program was discontinued years ago, but we still have access and can run accurate savings reports as needed. There are also several less comprehensive web based calculators that allow you to estimate savings, but none that we have found to be as accurate as RSPEC.

Water Quality Considerations

If there is a negative to the use of covers it is that it temporarily bottles up some chemical reactions in pool water chemistry. But, we have found that most swim schools get great results by letting the pool run uncovered a short while before and after the cover is used.

Conclusion

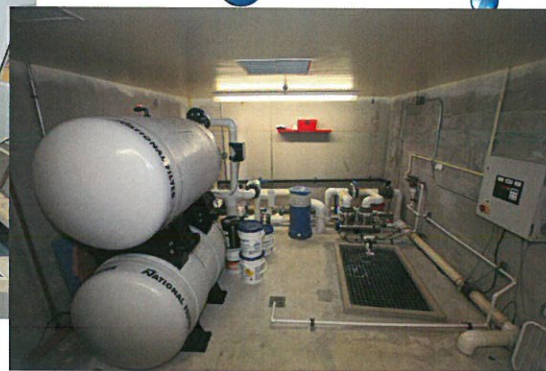
It is well documented that the use of a cover will save a significant amount of water, energy to reheat the water, chemicals to treat the water, energy to reheat the incoming air, electricity to remove the humidity from the air and damage to interior finishes. There is a quick payback to the implementation. Deployment is streamlined by using a wall or deck mounted winder system and the entire process can take as little as 5-10 minutes. Is it worth it? Many of your peers emphatically say YES!

Best Regards,

ALVARO G. MENDOZA

Please feel free to forward your questions & comments through the USSSA office, or directly to me via email at amendoza@ceswaterquality.com

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