Inground Swimming Pool Heaters

Extend the swimming season and enjoy more fun and recreation while getting the very most out of your pool. With the help of inground swimming pool heaters, you can start swimming earlier in the season and close your pool later in the fall. Swimming pool heaters raise and maintain the temperature of pool water, providing greater swimmer comfort. While there are many different inground pool heaters on the market, they all fall into three main categories -- gas pool heaters, electric pool heat pumps and solar pool heaters.

Although gas, electric and solar pool heaters all have the same purpose, they differ significantly in how they operate. Each type of inground swimming pool heater also has its own advantages to consider. Prior to purchasing a pool heater, it's a good idea for pool owners to have a basic understanding of the differences between the various available models. The information below outlines the way in which each type of heater works and the pros and cons that go along with gas, electric and solar pool heaters.

Gas Pool Heaters

Gas inground swimming pool heaters are powered either by propane or natural gas. As such, either a propane storage tank or a natural gas hook-up is required to operate one of these heaters. Make plumbing connections in and out of the heater and make a power connection from the timeclock or nearby outlet.

Operating similar to a gas-fired home furnace or hot water heater, a burner tray on the bottom heats the air inside the fire box and transfers that heat to water circulating through the heat exchanger. Gas pool heaters heat water quickly and effectively, but it's important to ensure that your heater suits the size of your pool in order to get the best heating performance and results.

Pros and Cons of Gas Pool Heaters

+ Low Initial Cost
+ Fastest Heat Gain
+ Not Weather Dependent
- Most Costly to Operate
- Most Temperamental

Gas pool heaters for inground swimming pools can sell for anywhere in the range of $1600 to $2900, for heaters with energy output of 200-500K BTU.

Gas pool heaters are the fastest way to heat a pool or spa. They can raise water temperature in the average inground pool by 2-5 degrees per hour, depending on the size of the heater, and whether or not the pool is covered. Gas heaters are ideal for pools or spas heated for short periods of time and for pools heated only for weekends, or occasional use.

Gas heaters are the only type unaffected by weather or outside temperature. They can operate even in freezing temperatures, unlike heat pumps. Gas heaters also work well during rainy or cloudy days, unlike solar pool heaters.

Gas pool heaters are the most expensive type of pool heater to operate, costing the average inground pool owner $200 to $500 per month, depending on how cold the air temperature is, and whether or not the pool is covered.

Sizing a gas heater for inground pools is done by first matching pool heater BTU output to pool size in gallons. Or approximately 100K BTU's for every 10,000 gallons of pool water. For inground pools less than 20,000 gallons, small gas heaters like the Raypak 206K BTU output are suitable. Pools up to 30,000 gallons should look at the Pentair 300K BTU or higher, and pools over 50,000 gallons should look at the Hayward 500K BTU. Pools in very windy or colder areas, or those that don't use a pool cover should consider installing one size larger.

Installation of a gas pool heater involves placing the unit on a sturdy fire-proof base, outdoors, with adequate ventilation surrounding. Connect the plumbing after the filter, in and out of the heater. Connect power to operate the safety circuits, and connect the heater to the bonding grid. A gas contractor is recommended to make the gas connection into the heater, from the natural gas meter, or from a propane gas tank.

Gas heaters may require more maintenance than other pool heater types. They can last 10-20 years with good care and timely repairs.

Gas pool heaters can be the best choice for heating inground pools in cold weather, areas of very high electricity cost, or when fast heating is desired, for example heating only on weekends, or heating an attached spa up to 104 degrees F. Properly sized gas heaters can be used year around, in any climate in North America.

Heat Pump Pool Heaters

Heat pump inground swimming pool heaters require a dedicated electrical circuit with a breaker size of 30 to 60 amps, depending on the heater size. As such, pool heat pumps often require an electrician for correct and safe hookup.

Electric or heat pump pool heaters for inground pools incorporate aspects of solar heating in that they absorb warmth from the surrounding air into a liquid refrigerant, compress the liquid to

create more heat, and transfer the heat to the pool water. Outside temperatures greater than 45-50 degrees F are required for operation, and the warmer the air is, the less operation time required.

Pros and Cons of Pool Heat Pumps

+ Low Cost to Operate
+ Ecofriendly, Zero Emission
+ Reliable, Safe Operation
- Slow to Heat
- High Initial Cost

Pool heat pumps have a very low cost to operate, as compared to gas pool heaters. The average inground pool owner may spend $60-$200 per month on electricity to power the heat pump fan and compressor, depending on how cold the air temperature is, and whether or not the pool is covered. Those in high energy cost areas will also spend more with an electric heat pump. Heat pumps are close to 100% efficient, as compared to 80% for most gas pool heaters.

A heat pump can be considered more eco-friendly than a gas pool heater. Although there is an environmental cost of consuming the power generated to run a heat pump, the heat pump does not directly burn fossil fuels, nor emit carbon monoxide, like a gas pool heater.

Pool heat pumps tend to be more reliable and require less repair and maintenance as they age, as compared to gas heaters. Heat pumps have a simpler design, partly due to required safety controls for gas-fired heaters. As such, heat pumps may also have the advantage of being a safer appliance to have in the backyard.

One drawback to heat pumps is that they are slow to heat, and typically add only 2-5 degrees F, per day, depending on the outside air temperature, size of the heater, and whether or not you use a pool cover. Compare this to a gas heater, which can heat 2-5 degrees per hour, and you see the advantage that gas heaters have for intermittent heating. Consistent heating however, is no problem for a pool heat pump; after a 3-5 day warm-up period, it maintains warm water efficiently and effectively.

Another drawback to a pool heat pump is the initial purchase cost, which is the highest among all pool heater types, and at least twice the cost of an equivalently sized gas pool heater. Inground pool heat pumps range in cost from $2700-$3250, for heaters with energy output of 55-115K BTU.

Sizing a heat pump for inground pools is done by first matching pool heater BTU output to pool size in gallons. For pools of up to 20,000 gallons, small heat pumps like the Hayward 95K BTU output are suitable. Pools up to 30,000 gallons should look at the AquaCal 120K BTU or higher, and 40,000 gallon inground pools should look at models

like the Pentair 140K BTU. Pools in very windy or colder areas, or those that don't use a pool cover should consider installing one size larger.

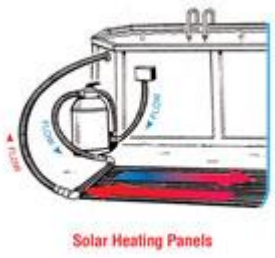
Installation of a heat pump pool heater involves placing the unit on a sturdy base, with good air flow. A sunny area is best but not required. The plumbing is connected to send pool water in and out of the heater. An electrician is recommended, to properly wire the heater and connect it to the bonding grid.

Installation cost can differ depending on the location of the pool heater. A natural gas heater requires a gas line from the gas meter, and a pool heat pump needs a buried electrical line from the main breaker box. Depending on the distance to the pool heater, the gas line or the electric line may be more expensive to install. If you already have electrical conduit and 100 amp service to your inground pool pump, you may have the available ampacity to add another large breaker (40-60 Amps), to power a heat pump.

Heat pump pool heaters may require periodic maintenance in order to keep the moving parts in good shape. However, when properly maintained, electric pool heaters have an excellent lifespan of 10-20 years.

Heat pump pool heaters provide an excellent option for pool owners who want to use solar energy to heat their pool yet cannot accommodate a solar heater on their property or live in a region of frequent cloudy weather. Properly sized heat pumps can be used for year around pool heating in southern states, or can be used to provide warm pool water from April-November for most of North America.

Solar Pool Heaters


Solar Heating Panels

Solar inground swimming pool heaters rely entirely on the sun's energy to heat pool water. As water circulates through the solar panels, heat from the sun's rays is transferred into the water. While some solar swimming pool heaters are designed to be set up on rooftops or mounted on wooden racks, other models can be installed on the ground.

Pros and Cons of Solar Pool Heaters

+ Low Initial Cost
+ Zero Cost to Operate
+ Ecofriendly, Zero Emissions
- Entirely Weather Dependent
- Lower Heat Gain

Solar pool heaters for inground pools are less expensive to buy than gas-fired heaters or pool heat pumps, but if you want to add 15-20 degrees F to the water, you need to use enough solar panels to equal at least 50% of the pool surface area. For most inground pools, a good solar system will cost $1500-$2000, still one of the cheapest methods of heating a pool.

With no cost to operate the solar panels, other than the cost of running the filter pump, which you are may be doing anyway, solar pool heating is the least costly way to heat an inground pool.

In terms of environmental friendliness, solar pool heating is the clear leader. No fossil fuels, no emissions, no fuels or refrigerants needed, only the sun; a renewable resource. Solar panels, made entirely of thermoplastics, are also more easily recycled than other pool heater types.

The largest drawback to solar pool heaters is that they are entirely dependent on sunny weather. They can still heat the pool on warm and partly cloudy days, but with cool and rainy weather solar heaters lose heat, and they don't work at all during the night.

Another disadvantage attributed to solar pool heaters is lower overall heat gain. However, solar systems are modular, and the more panels you have, the greater heat you can add to the water. If you have a sunny southern facing location to place enough panels to equal 50-80% of your pool surface water, and you get at 6-8 hours of daily unobstructed sun - you can match the heat output of a gas heater or heat pump, adding 20-30 degrees F to the pool. A small solar system however, or one with only 4-6 hours of daily unobstructed sun may only gain 5-10 degrees, which is easily lost with a few cloudy days.

Solar panels for inground pools are typically manually operated by turning a valve to direct water into the solar panels. When sunny conditions wane, you must remember to turn the solar panels off again, or the water will radiantly cool as it passes through the cold panels. To avoid this, and to enjoy the convenience of setting a desired temperature, solar pool heaters can be controlled with the installation of a Solar Controller. These automatically turn a valve to send water to the solar panels when sensors signal that solar heating conditions are good, and bypass the solar panels when conditions are poor, or when the pre-set temperature is reached.

Sizing a solar heater for inground pools is done by measuring your pool's total surface area, by multiplying the length x width. Buy enough solar panels to equal 50-80% of your pool surface area. For example, a 20'x40' pool would have 800 sq. ft. of surface area, and would require 400-650 sq. ft. of solar panel surface area, for best results. The more solar panels you add; the more heat you get. It's a good idea to oversize solar pool heaters, for windy areas, uncovered pools, or to compensate for bad weather. Our roll-out solar panels are available in 40 SF and 80 SF sections, in 10 ft. and 20 ft. lengths.

Installation of an inground pool solar heater involves placing the solar panels in an area of unobstructed sun, cutting the return line after the filter, and redirecting the water through the solar panels. Valves are used to direct the water to the panels, and also to bypass the panels. For best results, a solar controller can be mounted, with sensor and valve actuator connected, to maintain a consistent temperature more easily. Solar pool heater installation is much less complicated than other methods, and the only one that is truly DIY friendly and fully achievable by most pool owners.

Solar pool heaters require no maintenance and will typically last for 10 to 20 years, before ironically, the plastic degrades from the sun's solar rays.

Solar heaters are powerfully fast heaters in direct summer sun, but lose effectiveness in cooler, off-season months, when the sun moves lower through the sky. As such, they are not appropriate for year round pool heating, with exception to far southern regions of North America. For most northern regions, properly sized solar heaters can maintain warm water from May-October.