

# COMMERCIAL POOL HEATING GUIDE

**MAGEN**  
ECO ENERGY AUSTRALIA PTY LTD.

**HELIOCOL**  
SOLAR POOL HEATING. ENGINEERED FOR LIFE

**1300-146-553**  
[www.mageneco.com.au](http://www.mageneco.com.au)

# EVERY COMMERCIAL POOL IS UNIQUE



We'll work with you to supply and install the right combination of product - whether it's solar and gas, or a heat pump and covers, or solar and covers - or whatever the combination that's right for your pool.

We have the products and experience to do the right job.

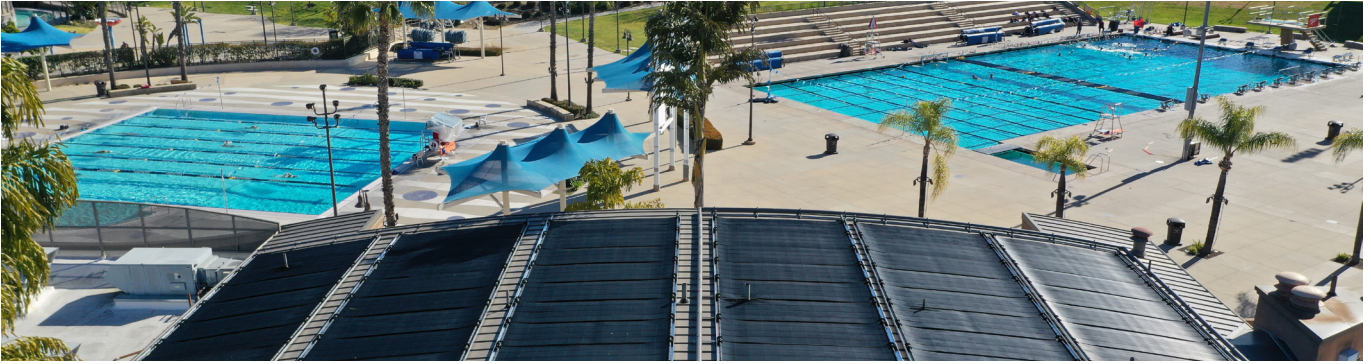
**1** World's largest manufacturer of solar pool heating equipment

**2** Comprehensive range of heating options

**3** Solar - chosen by hundreds of large and small commercial pool operators around Australia and all over the world

**4** Heat Pumps & Gas Heaters - we use Accent and Raypak products manufactured by Rheem Thermal - made right here in Australia.

**5** Commercial Pool Covers - made here in Australia by Daisy Pool Covers



## SOLAR IS A PERFECT COMMERCIAL CHOICE

For many years, Solar heating has been an extremely well accepted and proven method of heating swimming pools. This is because:

- » A quality solar heating system will cost nothing to run (other than the circulating pump)
- » A quality solar system should be maintenance free.
- » Energy savings will ensure the system pays for itself many times over during its life.
- » Environmental factors of solar verses other energy sources.
- » A quality solar system should have a much longer lifespan than a gas or a heat pump heater.

### More Reasons to Solar Heat Your Commercial Pool

Enhance the experience of your guests and patrons. We all love our cool refreshing pools in the Summer time, but what about the remainder of the year. Spring, Autumn and even Winter. Heating is a must for these times. Solar can often provide most if not all of your heating requirements during the shoulder periods. In winter, a quality solar heating system will provide much needed warmth and energy to your pool and

dramatically reduce the running costs of your gas or electric heaters. Save energy and money. While gas or heat pump heaters obviously have certain advantages, if an extended season is your goal, why pay for heating when solar can do it for you for many months of the year AND reduce costs during the coldest of months – giving you the best of both worlds.

### The Heliocol Solar Experience Extend the Swim Season, Enhance your Customer's Experience AND Increase your Profits!

A Heliocol Solar Pool Heating System helps Commercial Pool Operators increase the use of their pool, which enhances the experience of their customers. If the pool is already equipped with a gas or heat pump heater, a Heliocol Solar System will substantially lower the pool's energy and operating costs, with those savings going straight to bottom line profit of the owner or operator. Heliocol Solar is the World's largest supplier and installer of Solar Pool Heating Systems and has been manufacturing from their own factory since 1977. Their product can now

be found in over 40 countries including some of the harshest climates like the USA, Mexico, Spain, South Africa and Brazil. In Australia, Heliocol has helped lower the running costs of many Commercial Pool Operators such as Resort Owners, Gymnasiums, Health Clubs, Retirement Villages, Councils and Learn to Swim Centres. Commercial pool architects, designers and pool builders recommend Heliocol because of its modular format making installation easy and because of its polypropylene construction ensuring long life and ability to handle high temperature and pressures. Heliocol has completed successful commercial installations for users such as:

- » Monash University
- » Oakey Army Base
- » Rostrevor College
- » Blue Mountains Council
- » Adelaide Zoo
- » Crowne Plaza Hotel Chain

Representatives from Heliocol Solar can provide a free, no obligation analysis of the heating requirements of any Commercial project. This analysis will provide the pool operator with answers such as projected running costs, projected savings in dollars and estimated reductions in CO2 emissions.

# SIZING THE SOLAR SYSTEM

When calculating what is needed for a solar pool heating system, many factors need to be considered.

- » The surface area of the pool
- » The volume of the pool
- » Whether the pool is in full sun or partial shade
- » The direction of the roof where the solar system will be installed
- » The amount of wind blowing across the pool and the solar system
- » Whether the pool has a light or dark coloured interior
- » The region in Australia in which your pool is located
- » The required temperature of the pool

Most suppliers will start with the surface area of the pool and apply a percentage of that figure as an area they believe they need as solar matting or panels on the roof. This "starting figure" will be between 60% and 120% depending on your location. They will then add to that area depending on other factors listed above.

For example, if you live in Sydney, suppliers might start with 80% of your pool's surface area and then add to that if your pool is in partial shade.

## So All Systems with 80% Cover are the Same?

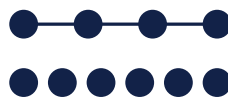
Not necessarily. Some solar system manufacturers space their tubes a long way apart. This reduces the quantity of

water exposed to the sun. The closer together the tubes, the greater the total length of tubing.

In reality, it is possible for some solar arrays to contain up to twice the total waterways for the same quoted area.

Heliocol's panels are manufactured with the tubes placed closely together. This increases the lineal metres of tubing per square metre and the volume of water exposed to the sun. This all means more heat back to your pool.

## Some systems have large unused space between tubes.



## Heliocol tubes are placed much closer together for greater efficiency.

Another important aspect is the method of connection between the tubes and the header. Are the tubes moulded to the header, fitted through grommets or pushed onto "barbs"? Be aware of the difference and make sure you are happy with the method being used.

## Other Things to Consider

How will the material be fastened to the roof? Will it be held down by brackets that have been fastened securely to the roof or will it be glued to the roof? This could prove to be important during the next storm.

What is the warranty period on the system being quoted? Is it backed by the manufacturer, or is it the warranty supplied by the retailer or installer?

Are you receiving an additional (or auxiliary) pump or will you be using your existing filter pump with a manual divert valve?

How long has the manufacturer been in business? Is the firm likely to be around in 5, 10, 15 or 20 years time to back up their warranty? It's no good having the longest warranty if the company is no longer around to service that warranty. Heliocol has been manufacturing from the same factory for over 40 years.

## Finally

Remember, not all solar systems are the same and not all solar suppliers and installers are the same.

Ask all potential suppliers plenty of questions about what they are quoting on, particularly the amount of lineal metres of tubing they plan to install. Are you receiving an additional (or auxiliary) pump or will you be using your existing filter pump with a manual divert valve?

Ask the supplier what external testing or accreditation their product has received. Then buy it from someone who can back up the product with experience, reputation and a worthwhile warranty.

# HOW DOES A HELIACOL SOLAR SYSTEM WORK?

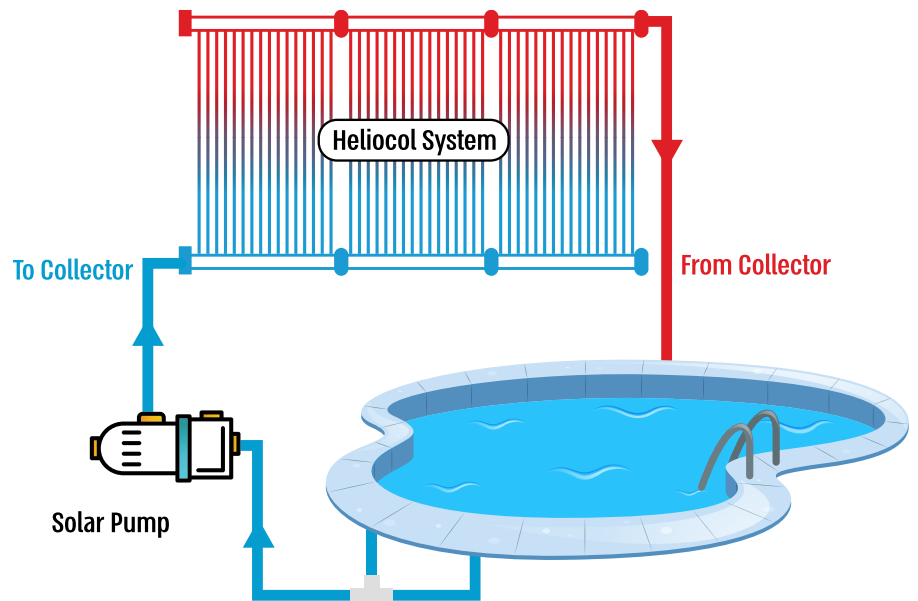
Heliocol Solar Pool Heating is a simple, efficient and natural commercial solution. By amplifying the warming effects of the sun, Heliocol captures this energy, returning it to the pool. This energy either reduces the need for auxiliary heating or extends the swimming season for pools without other heating sources.

A pump is used to push your pool water through the Heliocol solar panels. The water is substantially heated as it travels through thousands of tiny tubes. This heated water then flows back into your pool and the process continues.

The two most common methods of connecting Heliocol to your pool are:

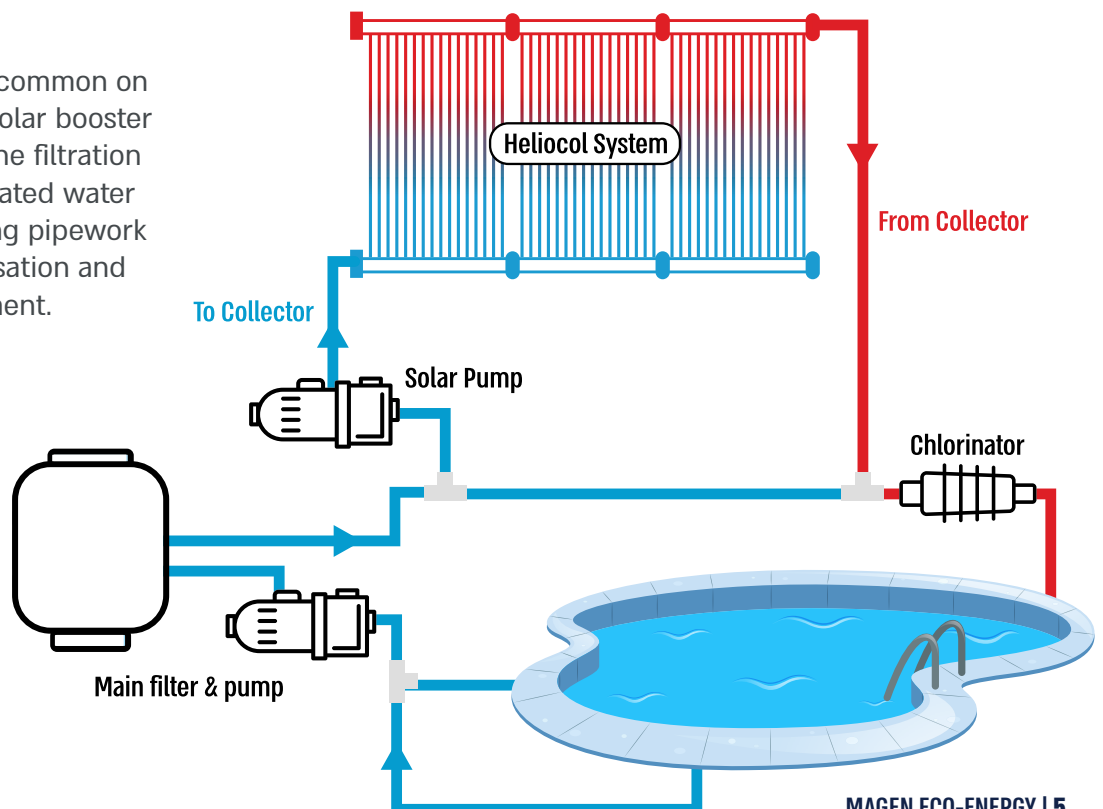
## AN INDEPENDENT SYSTEM

This system is used when dedicated solar pipes have been installed at the time of pool construction. The solar system and the filtration system are both on their own dedicated circuits.



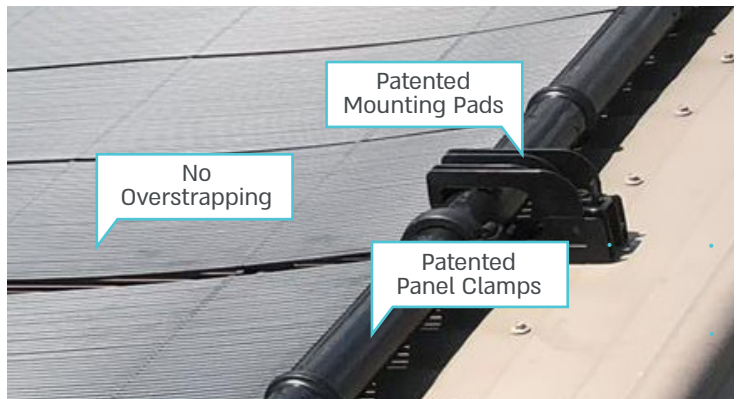
## AN INTEGRATED SYSTEM

This system is the most common on commercial pools. The solar booster pump is installed after the filtration equipment. The solar heated water is returned to the existing pipework prior to any water sanitisation and chemical dosing equipment.



# HELIOCOL SOLAR IS THE RIGHT SOLUTION

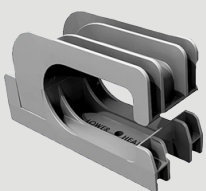
Heliocol Solar Pool Heating panels are unique and offer state of the art technology using quality fittings and materials engineer-designed to provide you with peace of mind for many years.



All individual risers on Heliocol panels are fully moulded into the headers during manufacture. This eliminates the need for onsite connections, thus reducing the chance of future leakages from these points. In addition, every panel undergoes extensive pressure testing in the factory before shipment. Perhaps the greatest feature of Heliocol is the quantity of tubing able to be installed in a given area. Because of the over-moulding process used in the manufacture of the product, the individual tubes are extremely close together. This allows Heliocol to provide 137 metres of tubing per square metre of surface area. To our knowledge no other solar pool heating product in the world achieves anything even close to this figure. This means a smaller area of panel can provide more tubing.

## MORE HELIOCOL FEATURES

- » The headers and individual tubes are made from the same materials, maintaining the same rate of expansion and contraction for both - Important when the equipment is heating up and cooling down several times a day.
- » Heliocol panels are manufactured from UV stabilised Polypropylene. Nothing adheres to polypropylene, eliminating scale buildup on the insides of the tubes.
- » The panels are fully self supporting over a distance of up to 500mm, meaning there is no sagging of tubes
- » between the ribs on the roof. Also, because the panels sit on top of the ribs or spacers, there is no moisture build-up on the roof.
- » Heliocol panels are fastened securely to the roof using patented mounting pads. This unique mounting system eliminates the need for overstrapping and requires fewer roof penetrations. Patented panel clamps replace old-style rubber hoses and metal clamps that require rooftop maintenance and replacement.
- » The clamps also allow panels to be installed closer together for a more efficient system.
- » Heliocol panels have a working pressure to 600kpa, a burst pressure to 1800kpa and are temperature rated to 270 degrees centigrade.
- » The panels have been engineered to ensure minimum pressure drops across the array. The cross sectional area of the tubes in a panel is greater than the cross sectional area of the header pipe that feeds them. This allows for smaller pumping size.
- » Heliocol panels weigh 5.5kg per square metre when filled with water.
- » Heliocol is the world's largest manufacturer of solar pool



Heliocol panels are secured to the roof using patented mounting pads.



Heliocol panels are joined together with our own patented panel clamps. Other manufacturers use old-style rubber hoses and metal clamps that require regular rooftop maintenance and replacement.

# PUMP AND CONTROLLER

## Solar Booster Pump

The electric pump for the solar system will be selected to produce the flow rate required throughout the system. This selection process takes into account factors like the total square metre area of the solar array, distance from the

pump to the solar array, pipe diameters being used and the height of the building holding the solar array. Pump size may vary from a simple 1hp pump on small commercial jobs, up to larger 3-phase pumps on large commercial projects.

3-phase Grundfos pump installed on the solar heating system at Ballarat Aquatic Centre, VIC



## Solar Controller and Other Controls

solar controller is normally installed as part of the installation. This is a differential controller that, through appropriately-placed sensors, reads the applicable roof

temperature and the current pool temperature. Based on the temperature difference between those two readings, the controller will either turn the circulating pump on or off. The pump will turn off when there is insufficient energy (e.g., night-time) or when

the pool has reached your pre-set required temperature. The controller may also be equipped to turn auxiliary heaters on or off depending on available solar energy and the requirement to utilise the energy that can be provided by the auxiliary gas or heat pump. In addition, the controller may also be equipped to control the operation of divert valves and shut-off valves to control other operations that may be required. Flow switches are also common on some commercial projects to isolate equipment in certain situations. This control equipment is designed and made for us here in Australia.



Commercial solar controller system at Fleurieu Aquatic Centre, SA

# WARRANTY

Heliocol panels carry a 25-year warranty (12 years plus 13 years pro rata), ask to see a copy. Because of its tough polypropylene construction providing resilience to cockatoo attack, Heliocol provides a 12 year written warranty. The booster pump and solar controller will carry their warranties as supplied by their respective manufacturers.

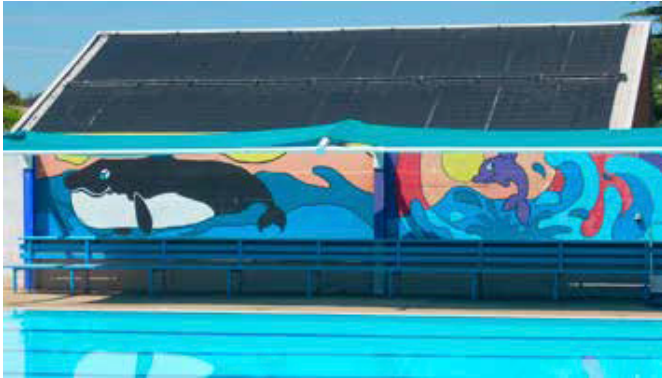


# CERTIFICATIONS & ASSOCIATIONS



# COMMERCIAL AROUND AUSTRALIA

To view Heliocol commercial case studies, please visit us online at:  
[www.mageneco.com.au/case-studies](http://www.mageneco.com.au/case-studies)



OBERON POOL COMPLEX, NSW



MONASH UNIVERSITY, VIC



GINGIN AQUATIC CENTRE, WA



ALICE SPRINGS AQUATIC CENTRE, NT



PENINSULA LEISURE CENTRE, NSW



SALISBURY COUNCIL POOL, SA



MATTHEW FLINDERS ANGLICAN SCHOOL, QLD



GREENMEADOWS COMMUNITY POOL, NSW





FLEURIEU AQUATIC CENTRE, SA



EUMUNDI AQUATIC CENTRE, QLD



LEETON COUNCIL POOL, NSW



HAWKSBURO AQUATIC CENTRE, NSW



WYNDHAM RESORT, QLD



CROWN PLAZA ALICE SPRINGS, NT



KYNETON BUSHLAND RESORT, VIC



INNISFAIL COUNCIL POOL, QLD

# HEAT PUMPS

Heliocol Commercial Pool Heating can supply and install heat pumps from 9kw to 540kw. Our chosen brand is Accent, manufactured by Rheem right here in Australia, with service backed up by the Rheem network

Heat pumps are an efficient alternative to solar when an extended season or year-round swimming is desired in commercial swimming pools.

A heat pump is similar to an air conditioner in reverse. When it turns on, energy held in the surrounding air is absorbed into the refrigerant gas circulating through the unit. This heat is then transferred by a heat exchange process to your pool

water which is also circulating through the unit.

The result is pool water at exactly the temperature you require - up to 12 months of the year. Your trained Heliocol consultant can advise on the correct size and model heat pump to best suit your needs, budget and pool size. An assessment of the approximate running

costs of your heat pump can be provided before you make your decision.

Our professional series of pool heat pumps are an energy efficient alternative for commercial pool properties including pools for multi-family housing units, resorts, councils, hotels and gymnasiums.

**COMMERCIAL HEAT PUMPS PROVIDE IDEAL SWIMMING TEMPERATURES USING UP TO 80% LESS ENERGY THAN NATURAL GAS HEATERS.**



**A SERIES OF SIX RTHP065-3 RHEEM HEAT PUMPS INSTALLED TO HEAT THE MID COAST COUNCIL POOL. COMMERCIAL INFO BOOK.INDD 9 7/25/18 2:00 PM COMMERCIAL POOL, NSW.**



# GAS HEATERS



There are a few core benefits that come from relying on a gas pool heating system, particularly high-energy efficiency. Raypak gas pool heaters from Rheem Thermal are some of the most efficient ways to heat a body of water, making them ideal for applications where fast heating and consistent pre-set temperatures are important.

Heating that doesn't rely on ambient temperature. Other forms of water heating rely on the ambient temperature of the air, which can affect their performance in certain conditions. A gas pool heating system doesn't suffer from these issues, meaning it can operate in any setting where a constant high water temperature is required.

» Rapid heating. Finally, a gas pool heater has the

ability to rapidly increase the temperature of a body of water, making it ideal in situations where heat needs to be applied quickly.

- » Durable design. All of Rheem's gas pool heaters are designed to meet the highest standards for durability and safety, giving you peace of mind that the product you have chosen will be fit for purpose for years to come.
- » Backup. Rheem's quality and reputation are well known, and with their Australia wide network of service specialists, you are never far from reliable service should the need arise.

At Heliocol Commercial, our team of pool heating professionals are passionate about finding the right gas pool heating unit for your needs. Our experts can provide specialised advice on your commercial water heating

## COMMERCIAL GAS POOL HEATER



requirements. This advice may include a combination of gas and solar heating equipment offering you the best of two worlds – Gas Heating for fast heating and consistent temperatures combined with Solar for massive savings in running costs. make your decision.

# POOL COVERS

Pool covers are an important element of any commercial pool heating system

A pool cover will help retain the heat generated by a solar, heat pump or gas pool heater, making your system far more efficient. Additionally, pool covers save on water loss through evaporation and cuts salt and chemical use by up to 50%.

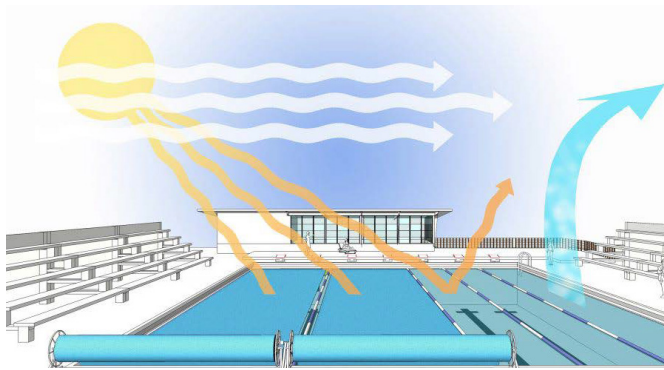
We sell top quality Daisy pool covers that are specifically designed to withstand years



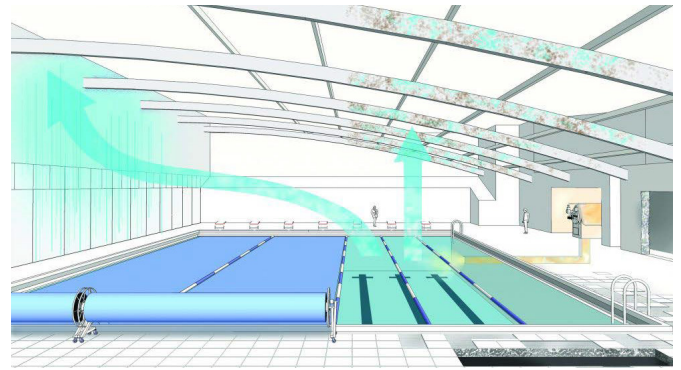
Pool Covers & Rollers

of use in the harsh Australian environment.

Daisy's exclusive UltraDome™ bubble covers for commercial pools feature a highly-researched and tested design that completely eliminates weak points in a pool cover producing a tougher pool cover - top and bottom - that lasts longer.



OUTDOOR POOL



INDOOR POOL



# COMMERCIAL TESTIMONIALS

“The Fraser Coast Regional Council engaged Heliocol to install solar heating across three separate pools. The electricity costs have been reduced as per the aim and the consistency in the heating over summer has been well received.

Any minor issues with the system have been addressed quickly with Scott attending the site in a short turnaround time with anything that couldn't be fixed by a conversation over the phone. The service during the warranty period has exceeded the expectations on installation. I would recommend the company for anyone wishing to move towards solar heating of swimming pools.”

**Rob Searle, Senior Recreation Services Officer  
Fraser Coast Development and Community**

“Adelaide Zoo had an unusual problem, our Tigers would not swim in their pool, as the water was too cold. We worked with Heliocol Solar who adapted one of their Solar heating systems to fit into our existing filtration system of the tiger pool in a very tight area with minimal access.

Heliocol staff were very efficient and demonstrated an excellent level of knowledge and service and have continued to do so with their professional follow up. We have not had any problems with the installation, and would be happy to recommend their service.”

**Jason Hakof, Adelaide Zoo**

“Coorong District Council has a public pool in Coonalpyn SA, in 2005 we embarked on a project to solar heat the Pool to provide a more pleasant water temperature for patrons and allow us to extend our season. A grant from the Department of Sport and Recreation was matched dollar for dollar by Council.

We choose Heliocol to install our system, Wayne and his team were able to advise us on the required roof space and other Technical details. Council attached a veranda to the Kiosk/amenity block and a shade structure over the Toddlers pool to accommodate the solar tubing. Heliocol proved to be a completely professional company, the installation went very smoothly and the system operated without problems from the very beginning.

We have found that Heliocol, through Wayne, provides a prompt and comprehensive back up service as well.”

**Ian Millard Technical Officer  
Coorong District Council**



“I would like to extend a warm thanks to you and the contractor team headed by Brett Johnson for the excellent job Heliocol did on the pool heating installation at our site in Pulpit Point.

Your advice was invaluable in providing the most practical, cost effective and aesthetically satisfactory installation for our requirements. This information was delivered in terms that were easy for the Home Owner's Association to understand in making their decision.

In particular, Brett sought input from me as to how we would prefer to route the pipe work and position the components. This involved extra detailing to follow complex lines on a pergola structure and the final result is a very professional looking installation with the lowest visibility possible. To date three residents have already provided me with positive feedback, all within one week of completion. I was more than comfortable leaving your team to coordinate directly with the estate landscapers to manage the required landscaping and safety requirements in my absence.

Heliocol is now on our preferred contractors list and should any further work arise at our other sites or in my personal contact I will have no hesitation in passing your details on with my highest recommendations.”

**Jason Wood, Chief of Operations  
Southland Pacific Group**

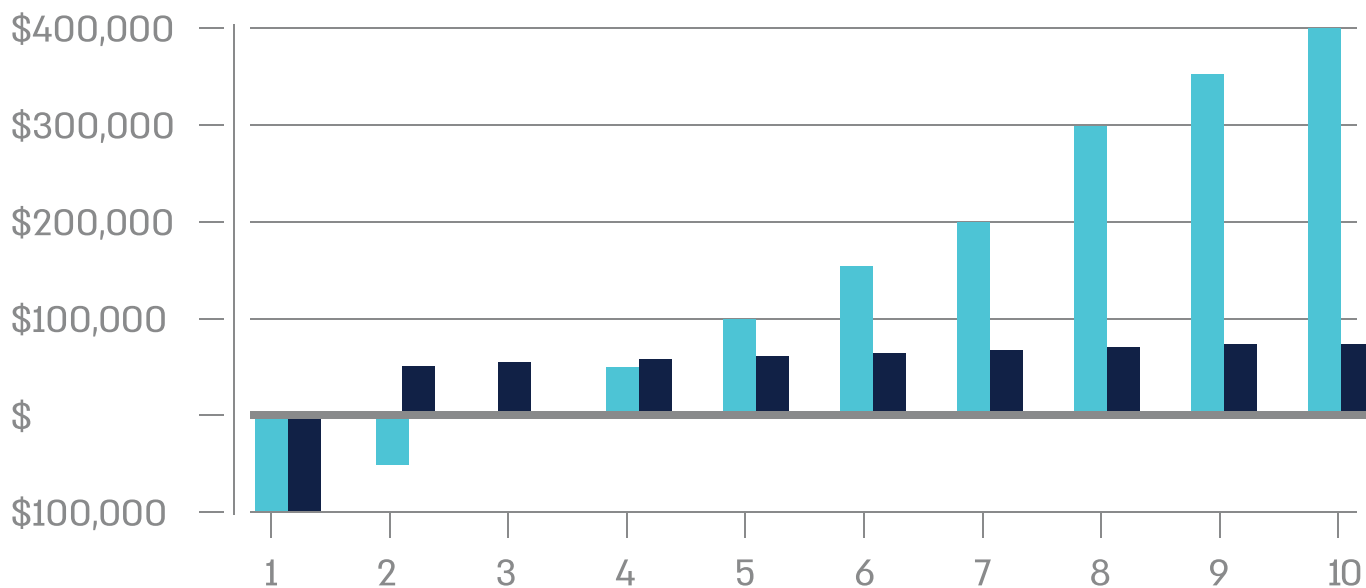
“Heliocol was very responsive to our needs and provided excellent support during the development, design and installation of a Solar System for the Salisbury Swi mCentre. The site had significant long-term maintenance and serviceability issues and their assistance both during construction and post installation has been of the highest level.”

**Dameon Roy, Acting Director,  
City Projects**

# SYSTEM ANALYSIS

Heliocol's sophisticated analysis program can produce reports showing you things like:

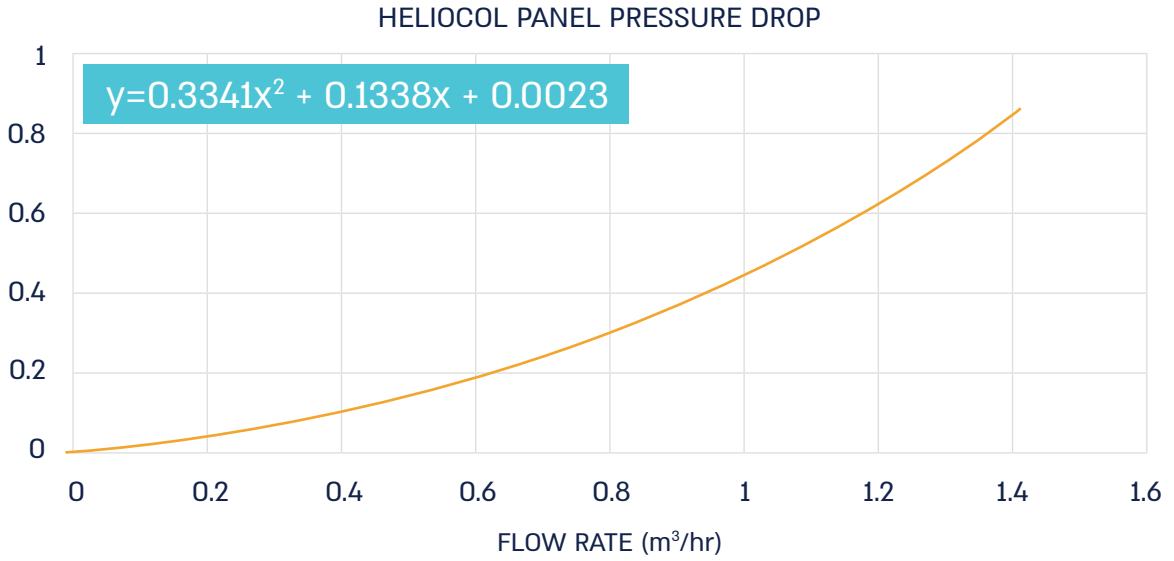
- » Season extension and anticipated pool temperatures using solar if your pool is currently unheated.
- » Potential cost savings using solar if you currently use gas or electric heat pumps.
- » Payback periods for various solar contribution factors.
- » Energy costs to take an unheated pool to year-round heated swimming using various combinations of solar, covers, gas heating or heat pumps.



# TECHNICAL INFORMATION

| Specifications          | HC15                        | HC26              | HC30               | HC38               | HC40               | HC50               |
|-------------------------|-----------------------------|-------------------|--------------------|--------------------|--------------------|--------------------|
| Length                  | 1.4m                        | 2.0m              | 2.31m              | 2.92m              | 3.23m              | 3.85m              |
| Width                   | 1.2m                        | 1.2m              | 1.2m               | 1.2m               | 1.2m               | 1.2m               |
| Collector Area          | 1.7m <sup>2</sup>           | 2.4m <sup>2</sup> | 2.77m <sup>2</sup> | 3.52m <sup>2</sup> | 3.85m <sup>2</sup> | 4.62m <sup>2</sup> |
| Volume Capacity         | 7L                          | 8.7L              | 9L                 | 11.4L              | 11.7L              | 14.4L              |
| Weight (when empty)     | 3.8kg                       | 6.0kg             | 6.8kg              | 8.2kg              | 8.5kg              | 10kg               |
| Material - Tubing       | UV stabilised polypropylene |                   |                    |                    |                    |                    |
| Material - Headers      | UV stabilised polypropylene |                   |                    |                    |                    |                    |
| Max. Operating Pressure | 600kpa                      |                   |                    |                    |                    |                    |
| Tube Diameter - Outside | 6.5mm                       |                   |                    |                    |                    |                    |
| Tube Diameter - Inside  | 4.5mm                       |                   |                    |                    |                    |                    |
| Metres of Tube          | 202m                        | 296m              | 343m               | 436m               | 490m               | 585m               |

## Head Loss Flow Rate



## Head Loss Flow Rate

KJ Per Day

| Certifying Organisation | HC-50                       | HC-40                       | HC-38                       | Performance Equations       |
|-------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Int'l Standard ORTECH   | 49,669                      | 41,286                      | 29,801                      | $0.872 - 21.18 (Ti-TA) / I$ |
| National Standard SRCC  | 49,669                      | 41,286                      | 29,801                      | $0.872 - 21.18 (Ti-TA) / I$ |
| Florida Standard        | 10,800<br>KJ/M <sup>2</sup> | 10,800<br>KJ/M <sup>2</sup> | 10,800<br>KJ/M <sup>2</sup> | $0.828 - 18.52 (Ti-TA) / I$ |

Performance Note: Units of (Ti-Ta)/I are m<sup>2</sup> oC/W. Solar scientists agree that there are many variables to consider when properly sizing a system. Wind conditions, micro climates, flow rates, orientation and shading of the pool and/or panels all affect the performance of your system. A KJ rating is just one of the many factors to consider.

# HELIOCOL SOLAR POOL HEATING IN SUMMARY



## 25 Year Warranty

Heliocol panels and components are covered by a 25 year factory backed warranty, 12 years warranty on all Heliocol manufactured parts PLUS another 13 years pro rata (50/50)



## Company Stability

Manufactured by the same company in the same factory for over 40 years. Heliocol is the world's largest manufacturer of solar pool heating panels.



## Over Moulding Process

The headers and tubes are heat moulded together into one piece. This eliminates hundreds of joins between the tubes and headers, greatly reducing the likelihood of leaks developing.



## Individual Tube Design

Virtually eliminates wind load. Important in storm season or high wind locations. The tubes are over moulded into the header extremely close together meaning more metres of tube per square metre of product. This design creates greater efficiency in less area.



## Cockatoo and Vermin Resistant

Heliocol, with tough polypropylene construction, is the preferred choice in areas where cockatoos, possums and other vermin can cause damage to other solar systems. Heliocol offers a 12 year protection plan against this damage - 5 years PLUS 7 years pro rata (50/50).



## Unique Spacer Bars

The bars hold the tubes away from the roof, preventing moisture and debris from being trapped under the panel.



## UV Stabilised Polypropylene

UV stabilised polypropylene is used in many applications where long exposure to the sun is experienced. The product is not affected by any type of water that may pass through it. Heliocol has no warranty exclusions due to water condition.



## Low Head Loss

Each tube is moulded into the header creating a smooth full bore design. Eliminates high head pressure and protects the panel against clogging. Lower head pressure keeps pump requirements to a minimum.



## Self-Supporting

Heliocol systems can be installed on ground-level racks or framed pergola roofs with no roof sheeting required. Heliocol is often the only product able to be installed easily on slate or steep roofs.



## Easy to Install

The panel format means the system can be installed quickly and easily. It can be removed for relocation, or to enable roof repairs to be carried out just as easily.



## ISO Certified

Heliocol was the first solar manufacturer in the world to be awarded the latest ISO certification for ISO 9001 and ISO 14001.