

## UV Pool Water Sanitation Systems

### Clean, safe water at the touch of a button



There have been many studies done which come to the conclusion that to reduce the amount of chemicals in your water will be beneficial. You cannot do away with all chemical but to reduce them will help you to eliminate some of the more common ailments from a pool or spa such as “Red Eye” and skin irritations. By using a Thermalec Ultra Violet system not as an alternative to other water treatments in swimming pools and spas, but as supplementary water treatment, you will gain the advantages of Clean, Clear, Safer water to enjoy.

### Benefits of using UV technology in your pool:

- Excellent water quality
- A pleasant bathing environment
- Treatment of complete re-circulating water flow
- Can reduce the amount of chlorine when using UV
- Simple and easy to maintain
- Does not require daily maintenance
- Range of sizes to suit different demands

### Application

The Thermalec ultraviolet water treatment system is designed to deactivate harmful pathogens in the circulating water of a swimming pool or spa. It uses ultraviolet light to render harmless dangerous microorganisms that are completely unaffected by chlorine, bromine or other conventional disinfectants. The Thermalec ultraviolet water treatment system is modular and can be configured to treat pool water circulation rates from 25 m<sup>3</sup>/h to 800 m<sup>3</sup>/h, at an applied UV dose of 30 mJ/cm<sup>2</sup> at the end of lamp life.



The Thermalec ultraviolet system subjects the water from the filter to the light emitted by a low pressure UV lamp. Most of this UV light is at a wavelength of 254 nm. UV light of this wavelength and at a sufficient intensity interferes with the DNA of pathogenic cells, deactivating them and rendering them harmless. This treatment has been shown to be extremely effective against dangerous viruses, cysts, spores and bacteria such as *Cryptosporidium*, *Giardia lamblia* and *E. Coli*, that are completely resistant to chlorine. If active, these microorganisms may be responsible for serious stomach infections and other complaints in humans. A further beneficial effect of the biocide properties of UV light is the destruction of algae spores, helping to reduce algal formation in outdoor pools and spas.

In addition to the disinfection effect, UV light has been shown to break down chloramines in swimming pool water. Chloramines

### How it works

are compounds formed by the reaction of chlorine chemicals with organic matter such as perspiration, urine and grease from bathers in the swimming pool water. Chloramines, which manifest themselves as “combined chlorine” in a swimming pool or spa, are responsible for skin, eye and respiratory irritation in bathers, as well as for generating the unpleasant “chlorine smell” experienced in poorly managed pools.

The UV light generated by so-called “low pressure” UV lamps, such as those used in Thermalec UV systems, provides a satisfactory degree of chloramine destruction, whilst avoiding any risk of UV overdose. There are indications that UV overdose (can be produced by oversized “medium pressure” UV systems) may well be responsible for the formation of hazardous trihalomethanes (THM) in the air above the water surface of swimming pools.



### Features and benefits of the Thermalec UV system

- Eliminates pathogens unaffected by chlorine
- Helps elimination of eye and skin irritation
- Helps prevention of unpleasant chlorine smells
- Chlorine in pool can be reduced to minimum
- Low electrical power consumption
- Robust 316L stainless construction
- Modular design reduces stocking requirements
- Lamp replacement only once per year
- Simple installation
- Simple cleaning and maintenance
- Low pressure lamps reduce the risk of dangerous THM formation
- Individual flow tubes avoids UV lamp shadowing, increasing disinfection efficiency

Construction and operation

The Thermalec ultraviolet system is based on a single standard UV module. The module consists essentially of a high quality cylindrical flow tube of 316L stainless steel, with a water inlet and outlet set at right angles to the longitudinal axis of the flow tube, both orientated in the same direction. Within the flow tube and concentric with it, a transparent quartz sleeve runs from one extremity of the tube to the other, terminating at each end in a sealing gland.

A low pressure UV lamp is contained within the sleeve and is connected at each of its extremities to a power supply cable that passes through each sealing gland. The purpose of the transparent quartz sleeve is to separate the UV lamp on its inside from the pool water flowing through the flow tube outside, whilst allowing the UV light to pass through it to treat the water. Each standard module is designed to disinfect a flow rate of 25 m³/h of pool water. In the Thermalec system, multiple modules are grouped into a single assembly using four-, six- or eight-way inlet

distributors and outlet collectors, according to the required total pool filtration rate. The outlet collector is fitted with a 65 µm mesh filter to prevent the ingress of glass into the pool causing injury in the event of lamp breakage. The power supply cables from the lamps run back to a wall-mounted control panel that contains the single phase mains terminals, the electrical safety gear and the electronic ballasts required to operate the lamps.

The Thermalec UV system is usually installed downstream of the pool filter. Water flows into the assembly through the inlet distributor from where it is fed to each of the standard UV modules. As it flows through the annular space between the stainless flow tube and the quartz thimble, the water is irradiated with UV light and exits the assembly completely disinfected via the outlet collector and outlet mesh filter. UV treatment is usually followed by chemical dosing to maintain pH and a residual disinfectant in the pool water, which is in turn followed by heating.

Specification	
Single flow tube treatment capacity:	25 m³/h
Applied UV dose:	40 mJ/cm² @ UV transmittance of 95% (1 cm cell)
Number of flow tubes per assembly:	1, 4, 6 or 8
Power consumption per flow tube:	100 Watts
Power supply:	230V – 3ph – 50 Hz
Operating temperature range:	0 – 50 °C
UV lamp type:	low pressure
Average lamp life:	8800 operating hours
Flow tube material:	316L stainless steel
Protection level:	IP 54
Dimensions single tube control panel:	235 mm wide x 235 mm high x 150 mm deep
Dimensions multiple tube control panel:	345 mm wide x 345 mm high x 150 mm deep
Two control panels required for 6 and 8 tube assemblies.	



UV Treatment Systems  
ideal for any sized pool  
Dimensions

Dimensions single tube control unit	235mm wide x 235mm high x 150 deep IP54 316 stainless steel
Power requirement	
Power consumption	36 Watts
Treatment rate each tube	15m³ per hour
Operating temperature	0-50 degrees centigrade

