

Over the last 10 years there have been many installations of Hanovia medium pressure UV systems in New Zealand public swimming pools by Wavelength with consistently successful results including dramatic reduction in both chloramine levels and water wastage due to dilution. These two objectives are usually incompatible but the use of correctly sized and installed UV systems make achieving both at once very simple.

## The benefits of UV technology

- Destroys chloramines (>80% reduction typical)
- Meets statutory combined chlorine levels easily
- Reduces or eliminates dilution water wastage
- Improves water clarity
- Provides a pleasant bathing environment
- Treats full recirculating flow
- No chemicals required by the UV system
- Reduced chlorine residual when using UV
- UV has no hazardous byproducts
- Reduces plant corrosion
- UV is effective against all micro-organisms

## The benefits of Hanovia systems from Wavelength

- Easy retrofit
- Simple to operate
- Proven performance worldwide (over 800 pool sites)
- Minimal maintenance
- Annual lamp and wiper change
- Monitored to ensure the correct dose of UV
- Alarmed for the unlikely event of UV tube failure
- Hanovia systems interface with BMS
- Range of sizes to suit different flows
- Minimal space requirement

## The technology

UV works in two ways in swimming pools. Its primary role is that it initiates photochemical and photo-oxidation reactions which destroy chloramines, the compounds responsible for unpleasant smells in pools and some organic matter. Its secondary but better known action is to kill bacteria, viruses, moulds and their spores, drastically reducing the risk of infection to bathers.

Hanovia UV systems use medium pressure lamps to generate the correct UV wavelengths to successfully break down chloramines. This makes control of combined chlorine very easy even if dilution flows are reduced or eliminated altogether. In addition breaking down organic matter by the UV reduces and stabilises chlorine demand, which in turn means that increased bather loads (such as a school visit) do not adversely affect water quality.

Most pool systems will have a single lamp with power inputs of 2.5 to 7.0kW. Larger systems may have four or even six lamps with energy inputs of up to 21kW. Most of this energy ends up as heat in the water and is therefore not a "real" energy loss to the pool, rather it reduces the energy used in pool heating.



All Hanovia systems in NZ pools feature an automatic wiper on the quartz sleeve of the UV lamp ensuring optimum UV output at all times.

This means that maintenance requirements are minimal, lamp and wiper servicing is usually an annual event with no routine maintenance being required by pool staff.

## Typical Hanovia UV installations in New Zealand

### New Plymouth Aquatic Centre (2004). UV systems installed on Main, Spa and Tots pools

Within a few days of turning the UV system on combined chlorine levels dropped in all three pools from over 2mg/L and they continued to fall for a week with a noticeable improvement in the pool environment to the satisfaction of users and staff. The water in the leisure pool became much clearer and less turbid. The busy main pool now operates at 0.2-0.4 mg/L combined chlorine and in the smaller pools combined chlorine is frequently almost non-existent. Deliberate dilution has been stopped as a result.



### Palmerston North Lido (2006). UV systems installed on all four pools.

This complex suffered from high chloramine levels in the main Leisure pool in particular and a pungent smell which was associated with gassing off of the chloramines in the indoor hydroslides with significant irritation problems for some users. Installation of the UV systems has dramatically improved the atmosphere in the complex and cut combined chlorine levels by more than 80% even in the busy Spa pool. Corrosion of metal surfaces, even stainless steel, was very noticeable and has been greatly reduced by the improvement in the air quality.

### Manukau City Lloyd Elsmore Park Recreation Centre, Pakuranga (2007)

The Leisure pool in this complex is very busy and it is reported to have the heaviest bather load in the Southern hemisphere. Even with constant dilution combined chlorine levels were as high as 5mg/L and the pool was selected by Manukau City as an excellent test case for the installation of a UV system. Results have been outstanding with chloramine levels being reduced by 90% even during the busiest periods. Dilution has been stopped with water savings of 100-500m<sup>3</sup>/week, resulting in a payback from the UV system of well under a year.

