

Shopping centre beats limescale

Extremely hard water caused havoc with the air conditioning at a shopping centre in Hungary. A UK company came to the rescue with an innovative water conditioning system

The West End Shopping Mall in Budapest, Hungary, is one of Europe's largest shopping malls. It houses over 400 luxury and brand-name stores, it is fully air-conditioned and its impressive futuristic design has won various architectural awards. However, maintaining the building and a comfortable shopping environment presents a major challenge for the facilities managers, as Hungarian summer temperatures often reach over 40°C.

The site has 3 Baltimore TXV-500 cooling towers with total capacity of 9MW, which work by the process of evaporation. So-called 'wet' cooling towers, they allow a portion of cooling water to evaporate into a moving stream of air. The cooling system experienced extreme limescale build up, which impaired the efficiency of the air conditioning system. This is due to the extreme water-hardness and high level of calcium in the region. This increased energy output, operating costs, and resulted in the system needing to be cleaned regularly using strong chemicals.

Hardness of ground water

Monthly cleaning costs exceeded €2,500, plus the extra utility costs for topping up the system and the removal of chemical waste. Municipal drinking water was being used for topping-up the cooling towers because the hardness of the ground water, which therefore also increased the metered water costs.

To eliminate the high costs and the limescale problem, management at the site decided to trial Hydropath's patented chemical free water conditioning technology in combination with a water filtration system.

Each cooling tower was installed with a Custom designed Aquaklear 'P' unit. A standard P



Cleaning costs for the air con at the West End Shopping Mall exceeded €2,500 a month

unit was also installed on the side filtration, to enhance flocculation of the extra debris brought by air suction and to aid filtration. A HydroFlow C60 unit was installed to protect customer bathroom water systems.

Hydropath patented technology is unique as it treats all of the water in the system by inducing random varying electric fields into the water, which propagate throughout the entire system. The result is the production of nuclei everywhere in the water system. Without treatment, when water is heated the hard

water salts deposit as encrusting limescale on the surface, blocking heat exchangers, pipes and components. With treatment, the limescale forms in suspension and is washed away with the flow. Hydropath technology prevents limescale forming and also reduces existing limescale.

The cooling system has seen significant improvements following the installation of the AquaKlear units. No new limescale had formed in the pipes of the cooling towers and the existing scale softened, which is easy to filter and wipe away

along with debris and algae. This has significantly reduced maintenance and energy costs at the shopping centre, removing the need for expensive chemicals and improved the efficiency of the cooling system. The HydroFlow C60 unit significantly reduced limescale build up on the self-pouring taps in the shopping centre's toilets. The taps rely on sensors, which recognise when hands are placed underneath, which transmits a message to pour the water. The sensors were susceptible to scale build up, reducing their effectiveness. However, following the installation of Hydropath technology, this problem has now been eliminated.

Municipal supply water

A further benefit that West End Shopping Centre did not anticipate is that now they do not need to use the treated municipal supply water to run the cooling system, which is charged per usage. The cooling system now runs efficiently using ground water supply only. Louk van den Bosch of Hydroflow Magyarorszag Kft, who managed the installation of the units in West End Shopping Centre commented, "Water in the cooling towers is now crystal clear. Almost as good as drinking water!"

The HydroFlow 'C' Range and the AquaKlear 'P' Range is maintenance free and is simple to install by fitting to the exterior of the pipe. Additionally, The AquaKlear system also provides the additional benefit of killing bacteria and algae, therefore preventing bio-fouling. Units can also be used for smaller commercial and domestic applications such as swimming pools and spas, available to fit pipe sizes 60-200mm.



'THE COOLING SYSTEM WAS SUBJECT TO LIMESCALE BUILD UP'

The air conditioning at the West End shopping centre in Budapest was being severely impaired by hard water

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