

# Energy Saving Systems for Pool Water Treatment

## Tonbridge Swimming Pool, Kent , UK

### Introduction

The Tonbridge Swimming Pool in Kent was opened by Tonbridge and Malling Borough Council in 1996. The centre, which receives an average of 630 bathers per day, boasts a 25m indoor pool, an outdoor pool, fitness pool and a learner pool.

### The Challenge

Tonbridge Swimming Pool wanted to minimise energy consumption, whilst maintaining optimal water quality conditions as bather loads fluctuate. They contracted a consultancy service to help them and decided to contact Siemens Water Technologies to provide a solution that was compatible with their current treatment system. Siemens already provided the site with their existing chlorine dosing system.

### The Solution

Siemens advised and implemented the installation of eight SED2 variable speed drives (VSD's), a ChemWeb-Server and three DEPOLOX® Pool systems. These were to operate with the existing Siemens chlorine gas disinfection system, to provide an integrated water treatment and energy conservation solution.

The VSD's are easy to use, cost effective and provide tangible benefits across their lifecycle. The VSD's were introduced to the system to enable between 25 and 50% savings on the circulation pump energy consumption.

The DEPOLOX® Pool controller forms a fundamental part of this system. The controller constantly measures the current free and combined chlorine, pH value, TDS and redox potential. If the pool water quality is within the pre-set limits the DEPOLOX® Pool controller signals the VSD's to reduce the speed of the circulation pumps. Should the pool water quality deviate, the DEPOLOX® Pool controller will automatically resume normal circulation.

### Swimming Pool Specifications

Client:	Tonbridge and Malling Borough Council
Site:	Tonbridge Swimming Pool
Opened:	1996
Annual bathing loads:	230,000
Daily bathing loads:	630
Peak bathing load:	1048



The ChemWeb-Server allows for local area network (LAN) data-logging and PC interface. Providing the user constant access to the controller data, and change the predefined settings without requiring direct access to the DEPOLOX® controllers.

## Case Study

## Results

As a complete system the integrated package of products allowed Tonbridge Pool to make some significant savings on energy consumption, whilst still ensuring the highest possible water quality.

The equipment forms a systems that allows Tonbridge Swimming Pool to make significant savings on the energy used. Of prime importance to Tonbridge Swimming Pool was maintaining required water quality. When free and combined chlorine, pH, redox, and conductivity are at user-defined values, the 'Eco' mode from the VSD's reduces the flow in the circulation pumps by 20%, dropping energy consumption to 50% of regular usage. The installation of the drives also gave an immediate saving of 25% as the pool flow is paced to the original design flow, eliminating 'throttling back' on the filters.



DEPOLOX® Pool controllers effectively analyse pool water quality



Siemens SED2 VSD's reduce energy consumption

## Pool Configurations

Main Pool	
Dimensions	25 x 13m
Area	325m <sup>2</sup>
Ave Depth	1.2-2.0m
Capacity	490m <sup>3</sup>
Duty	198m <sup>3</sup> /h
Primary Filtration	2 off 2.59m dia vertical pressure 2400 steel sand filters
Primary Chemical Treatment	
Chlorine donor	Chlorine Gas
pH Control	Soda Ash
Flocculation	PAC
Chemical Controller	
Manufacturer	Siemens Water Technologies
Model	Depolox® Pool Controller
Parameters	Cl <sub>2</sub> , pH, Cl-N, REDOX, Conductivity and Temperature

Outdoor Pool	
Dimensions	20x10m + Free Form
Capacity	312m <sup>3</sup>
Duty	243.8m <sup>3</sup> /h
Primary Filtration	2 off 2.59m 1500 series steel sand filters
Primary Chemical Treatment	
Chlorine donor	Chlorine Gas
pH Control	Soda Ash
Flocculation	PAC
Chemical Controller	
Manufacturer	Siemens Water Technologies
Model	Depolox® Pool Controller
Parameters	Cl <sub>2</sub> , pH, Cl-N, REDOX, Conductivity and Temperature

Teaching Pool	
Dimensions	13 x 7m
Capacity	68 + 6m <sup>3</sup> (Toddler pool)
Duty	105m <sup>3</sup> /h
Primary Filtration	1 off 2.44m dia vertical pressure 2500 series steel sand filter
Primary Chemical Treatment	
Chlorine donor	Chlorine Gas
pH Control	Soda Ash
Flocculation	PAC
Chemical Controller	
Manufacturer	Siemens Water Technologies
Model	Depolox® Pool Controller
Parameters	Cl <sub>2</sub> , pH, Cl-N, REDOX, Conductivity and Temperature

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Literature Number: DS.001.110.006.GE.CS.0710  
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