

Energy Saving



DATA SHEET

System Overview

Swimming Pool circulation pumps use a considerable amount of energy, this energy can be reduced by installing an inverter which will control the speed of the circulation pumps.

Most swimming pool and spa circulation pumps are oversized due to the limited range of pump sizes available. This is so that designed turnover periods can be maintained. The result of this is a build up of pressure not an increase in flow rate within the system, which in turn causes poor filtration. By reducing the pump speed, pressure is reduced and the system will work to the ideal flow rate and pressure, therefore improving filtration efficiency. By reducing the pump speed / pressure during filtration, the pump speed can be automatically increased for backwashing which will then also improve backwashing efficiency.

The inverter, controlled by the TEC2000ECS, can also reduce the pump speed when the pool chemical levels have been maintained within a window for a preset time.



Mitsubishi Inverter

Energy saving results

The graphs below are taken from a site that ran three 3 kilowatt pumps running 24 hours a day. Two pumps were installed on the 25 metre swimming pool and one on the commercial spa.

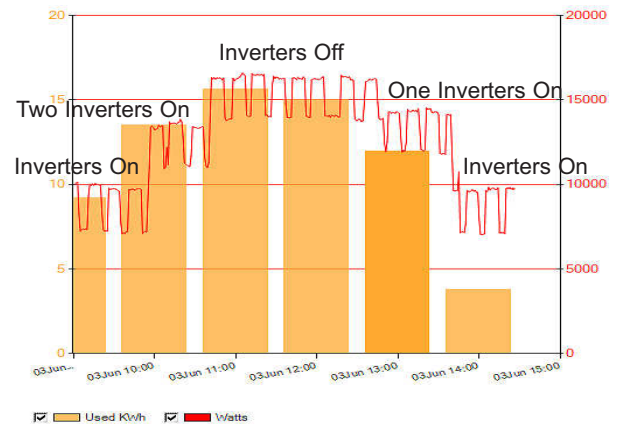
The data on the graphs was recorded independently of Topline via a remotely interrogated datalogging system installed by the client.

In addition clamp meter readings were taken by Topline which directly support the results recorded.

Pool Pump 1 running with no inverter used 3.45kW

Pool Pump 2 running with no inverter used 3.40kW

Spa Pump running with no inverter used 3.45kW



Test Description

During the test we used the inverters control function to operate the pumps at 50Hz, this is seen on the above graph at 11-00. We then ran the inverters at full speed, to check that the increased use of power was not associated with any other equipment in the plant room. After the full speed power check we began to lower the pump speed by decreasing the inverter frequency to 40 Hz. This is shown on the graph between 13-00 -15-00. The energy saved by all three inverters at this lower speed was 6.76kW.

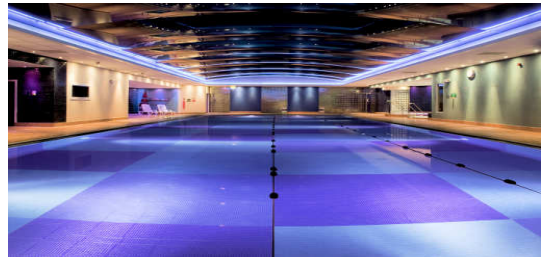
After the tests using the remote monitoring system we confirmed the energy usage with a clamp meter which actually showed slightly better savings, but for the purpose of this document the remote monitoring figures have been used in our calculations.

TEC 2000 ECS



Energy efficient LED lights

When the TEC2000ECS is combined with energy efficient LED lighting further significant savings can be made. Please refer to separate LED light data sheet for a detailed specification.



Sample quotation with energy and CO2 savings

The quotation is for a leisure club with a 20 metre swimming pool and 3 metre diameter spa. The swimming pool uses two 3 kw circulation pumps and the spa one 3KW circulation pump. Energy costs are 7p per unit. The swimming pool had installed six 300w under water lights which were lasting 4 months before requiring a bulb change. The savings made are based on bulb costs and energy costs.

	Qty	Cost	Total	Savings per year
Inverter 3 kW	4	£1150-00	£4600-00	£4415-02
LED lights blue	6	£320-00	£1920-00	£1382-26
		Total Cost	£6520-00 ex VAT	

Pay back period on capital cost 1.1 years

To obtain a saving for your own centre please email sales@topline.uk.net.

Technical data for standard inverters

(Single phase and larger 3 phase inverters are available to special order)

Model	Capacity
TEC2000CT5715	1.5KW 415VAC, 3 phase - IP65
TEC2000CT5716	2.2KW 415VAC, 3 phase - IP65
TEC2000CT5717	3.0KW 415VAC, 3 phase - IP65
TEC2000CT5718	4.0KW 415VAC, 3 phase - IP65
TEC2000CT5719	7.5KW 415VAC, 3 phase - IP65
TEC2000CT5720	11.0KW 415VAC, 3 phase - IP65
TEC2000CT5721	15.0KW 415VAC, 3 phase - IP65



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