

RESPONSE ID ANON-WVXD-1KHD-H

Submitted to Energy Efficiency of Swimming Pool Pumps

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Introduction

1 What is your name?

Name:

Gary Stutt & Philip Jones

2 What is your email address?

Email:

info@enviroswim.com

3 What is your organisation?

Organisation:

Watertech Services International

4 How are you involved in the pool pump industry?

Other

If other, please specify:

manufacturer of swimming pool sanitation systems

Labelling

5 Do you support the proposal to introduce mandatory energy labelling of pool pumps?

Labelling proposals:

No, if it only relates only to the energy efficiency of the pump without taking into account the potential overall loss of efficiency of the complete pool operation due to lower water flow rates and associated issues that have shown to arise from their installation and operation.

We have carried out extensive field testing using ultrasonic water flow meters and electrical power monitoring equipment at swimming pools using the same filtration equipment and pipework. We have tested many pumps both single speed and variable speed pumps and our data is available for peer review and uploaded to this submittal.

Minimum Energy Performance Standards

6 Do you support the introduction of a Minimum Energy Performance Standards (MEPS) for pool pumps? Please explain your answer, and which option you prefer.

minimum energy performance standards:

No, because in our opinion it is misleading to the consumer due to the other variables and side issues that are been reported through the use of lower water turn over rates and lack of perceived savings.

100% of pool pump energy can be saved if you switch the pump off but there is a cost to operate a pool, if you reduce the turn over and flow rates you likely increase the amount of chemicals and maintenance requirements.

Our point is that flow rate reduction may reduce energy consumption but will increase chemical cost and usage and maintenance requirements of the pool.

Several years ago we had a meeting in Brisbane with Energex Qld Govt and Qld Health representatives regarding the mandatory introduction of hard wiring of pool pumps with PLC's (power line carriers). These were being considered as a way of reducing peak demands on an already overloaded power grid. The idea was when high electrical demand was being experienced in certain areas the electrical generating authority could switch of pool pumps via these PLS's to reduce the demand on the grid. Sounds good in principal but when we highlighted that if people started to get green pools and sick children the authorities could face investigation and possible litigation as they may have caused this issue by switching off the pools. Imagine, a kids pool party,, one child with unknown infection, 40 degree day 20 + children in the pool that is not operating through no choice of the owner.

The parties highlighted that customers can do a similar practice if they install their equipment on Tariff 33, they can but the onus is then on the customer as they have chosen this, it was not mandated by Govt, so if the pool goes green or people get sick it is not a Govt caused problem and the owner still has the option to switch tariffs.

Scope of Proposals

7 Do you have views on the scope of new labelling and MEPS requirements? What types or size of pool pumps should be covered?

scope of proposed measures:

All variable speed pump labelling should cover warnings about potential problems including health and safety when operating lower flow rates. There is increasing evidence of issues from the use of these pumps running on lower turnover rates. By definition if the pool becomes harder to maintain the chances of bather exposure to infection also increases which could lead legal issues if these pumps are advertised as been more efficient for the purchaser.

Furthermore we feel that the electrical connection of these pumps should be investigated as inrush current and in certain instances switching the pump off current spikes across devices.

We have researched these pumps in other countries (jurisdictions) and in all areas so far these pumps require seperate electrical connections (hard wired) with a seperate contractor.

Adjustment to Measures

8 What opportunities or difficulties could mandatory labelling or MEPS for pool pumps create for your company? How much time would

your company need to adjust to a change?

opportunities or difficulties arising from measures:

We advise our customers to avoid the use of variable speed pumps or run them on a high flow setting due to the surge in pool operation issues associated with low flow rates. Variable speed pumps have increased our workload advising the consumer on issues that are not present with standard single speed pumps.

In that regard we see difficulties in mandatory labelling if it drives the consumer to purchase a variable speed pump without the full knowledge of the operation requirements and extra cost and potential health issues associated with the purchase and ongoing operational.

We also see a potential monopolising of the pool pump and sanitising equipment supply to the swimming pool industry. This would be caused by the fact there are only a few manufacturers of these pumps.

One of the many problems associated with pool maintenance using these pumps is the premature failure of salt water chlorinator cells due to the longer run time of these pumps wearing out the salt cells as the cells lifespan is largely determined by the amount of time they are energised. Salt/mineral cells systems are the most common types of sanitiser systems used in Australia. Most manufacturers that sell these pumps also sell these systems, some manufacturers have now included software and connectivity between the pump and the sanitiser to limit the operational time of the sanitiser whilst the pump is running thereby reducing wear of the salt water cell. This would mean only a few manufacturers would benefit from this initiative effectively locking the consumer into purchasing their complete package rather than having the choice to shop around. Another scenario could see the pool owner purchasing a variable speed pump off the shelf from pool outlets to replace an old pump to use with their existing cell system in the believe that they will save money only to find that they are spending hundreds of dollars extra on cell replacements during the life of the pump, thereby creating further costs for the consumer.

It is noted that when these pumps first came to market there was a high up take which has since reduced. Our research and feedback suggest its because the industry (pool maintenance people) and customers have found out that these pumps do not provide the overall efficiency and savings they claim and create problems that the pool owner didn't have before. Result, any potential energy savings are quickly neutralised by all the additional issues.

Data and Assumptions

9 Do you agree with the data and assumptions made in this RIS?

data and assumptions:

No. the energy savings claimed using lower flow and friction ignore the extra energy cost they create on the total pool operation.

We have over forty years of experience in the pool industry consulting to city council and state government on the operation of public pools and the installation of hundreds of residential pool

filtration systems Good flow and turnover rates are essential for reliable pool operation and was always a major topic within industry training bodies.

Some pump manufactures appear to ignoring the importance of flow rates in their advertising campaigns and suggesting that filtration and sanitation is improved by lower rates. Where is the science?

We have tested many of these pumps and our data is available for examination. We tested electrical power consumption and water flow and our conclusion is that even if the energy savings were justified the customer would rarely recover costs as the purchase cost is so much higher than that of a single speed pump the customer would unlikely even recover their first cost. This is not taking into account the additional increased chemical and maintenance costs associated with swimming pools using these pumps. When the two are combined it is not hard to see why sales have declined since their introduction.

10 Please attach data or evidence to support your submission here:

upload data:

Pump Comparisons blog Sheet1.pdf was uploaded

New Zealand

11 What are the implications of New Zealand opting out of the regulation of pool pumps?

new zealand market and issues :

In our opinion NZ are doing the correct thing. The regulation of pool pumps and removal of freedom of choice for the consumer has no consumer benefit and may expose pool owners to additional health & safety issues and higher operation costs.

Additional Comments

12 If you have any further comments on the consultation RIS document and the proposed measures, please provide them below.

additional comments:

Our feedback shows that there is growing resistance from the pool service industry regarding the use of variable speed pumps. Feedback from some of our US service contacts also backs this up. In California the variable speed pumps are mandatory in some counties on new pool installations. The pool owner gets a rebate (up to \$1000??) for the installation, once the rebate is paid they or the service technician simply ramp the pump up to operate on full speed. This clearly isn't achieving the energy savings the rebate scheme was designed for and seems a pointless costly exercise to try and reduce peak demand.

It appears likely that if the total efficiencies and inefficiencies were to be accurately costed across the board when using VSP the overall extra energy costs from manufacturing, extra chemical supplies, transportation, servicing needs, consumables, plant and equipment lifespan and bather protection would far outweigh the small energy savings they claim to provide.

The following articles are cut and pasted from our blog site which provide further information regarding the uploaded spreadsheet attached to this submission.

Blog Doc 1.

Swimming Pool Pumps... Standard v's Variable Speed Operating Cost & Savings Comparisons.

Owning a pool is the Great Australian Dream. It's a chance to bond with family and friends while soaking up the sun. However, the sheer expense of maintaining a pool can be enough for many to give up on that dream. And with misleading information on costs and benefits of different pool pumps running rampant, it's easy to see why. We're here to help clear up any confusion.

The current trend of pool pumps on the market is operating under the variable speed principle. An examination of Australia's leading pool pumps has shown that variable speed pumps are sold under the pretence that they are more beneficial overall.

As you'll soon discover, this is not entirely accurate. Manufacturers sell pool pumps on the assumption that consumers will not take the overall costs or potential inefficiencies into account. So, before you make any decisions, do as much research as possible into different pumps and their overall costs. We have carried out field trials on a cross section of pumps available in Australia and the results below may surprise you.

Refer to copy of spreadsheet uploaded to this submission.

spreadsheet was compiled as detailed below.

*Field testing was conducted on an actual pool using the same plumbing and filtration configuration for all comparison tests. The energy consumption was measured using a microvip energy analyser and data logger. The flow rates were measured using a TDS-100H-N2 ultrasonic flow metre (better than 1% accuracy, 0.2% for repeatability).

** Pump purchase price obtained over the counter from Qld supplier.

*** The tests were conducted as accurately as possible using the equipment available. Whilst we are confident in the results if anyone has reason to doubt or challenge the results we are happy to review and re-run the tests in their presence.

**** The variable speed pumps on "low" setting did not have enough flow on the test pool to maintain a full cell housing with water so it is fair to say they could not run on this setting if a salt/mineral chlorinator or EnviroSwim system was installed.

The results of our testing showed that all five conventional standard speed pumps were cheaper to operate over a five-year period than the variable speed pumps once the purchase price and energy costs were combined. Extra cost associated with poor water quality, filtration and increased chemical demand are not included in the spreadsheet but is fair to say that feedback from the service industry suggest that there will be additional cost when running lower flow rates.

There is a huge gap between our test results and some manufacturers advertising claims that a residential pool owner could save over a \$1000 a year installing a variable speed pump.

Conclusion

The reasons and motivation for EnviroSwim conducting this research, and collating results, has been driven from the misleading promotion of these products and reported issues surrounding their use. There is an unfortunate lack of understanding from the general public,

under no fault of their own. As far as most people are aware they are under impression that they have energy efficient pool pump and that the sanitiser system is working more efficiently than it would using a conventional single speed pump..

Of course, there will always be cost to operate a swimming pool and we often joke that we can save more energy costs by simply turning a pool pump off completely. The reality is there is a perceived saving on power cost by using the lower speed pumps. However this cost is quickly overridden by the extra upfront cost of the pump and the extra chemicals often required in the attempt to keep the water healthy and safe when operating at a lower flow rate.

So with the above in mind, you may still be asking yourself, as we are, why these pumps are being endorsed by the government and heavily promoted within the pool industry.

There are a number of theories around the severe lack of investment in power generation infrastructure in Australia. The lower speed pool pumps do take some of that pressure off the electricity grids peak demand that could explain the government support.

Getting pool owners to operate their pumps at reduced power over longer periods reduces the peak demand load. From the Australian Pool Industry perspective, the pool industry loves these pumps. They are selling for up to ten times the cost of a single speed pump. As a result, the pool industry is able to make bigger margins and sell more chemicals to correct the problem, caused by the inefficiencies of low flow rates, sanitation and filtration.

Everybody in the supply and maintenance chain benefits and makes more money. The pool owner is often left paying the cost for a perceived better product.

In the interests of the industry we think that this is a very sort sighted view and the focus should instead be on making pool ownership more affordable and user friendly. Ultimately this approach should result in more pools been built and a healthier industry.

Blog 2

Enviroswim asks...Variable speed Pumps.. Will they save you money?

The Pros and Cons of the variable speed pool pump.

Variable speed pool pumps have been around for a few years now and a host of unforeseen issues has arisen for the residential pool owner and/or pool service person. We came across a blog on a US website that sums it up pretty well in our opinion.

Extract start:

The set up:

The standard rule for pool water circulation in the warm months is to have the complete body of water turned over a minimum of 1 ½ times (ideally 2 times) in 24 hours through the pool filter, thus a 20,000 litre capacity pool requires a minimum of 30,000 litres to be pumped in a 24 hour period. Again, it would be preferable to pump 40,000 litres to assure that any miscalculation of total litres and pump flow of litres per minute is taken into account. To assure one has the correct litre pump rate a flow meter/check valve should be used to take into account the 'head pressure' (e.g. resistance) which can vary from pool to pool. Additionally, a dirty filter or suction cleaner can reduce the flow rate appreciably Once the proper flow rate is ascertained, the pool owner and/or service person must calculate the litres of water in the swimming pool. Armed now with the accurate flow rate and the calculated total litres of water in

a swimming pool, it is now a simple matter of the hours to run the pool pump in a 24 hour period to achieve the standard rule of turnover rate for the body of water.

But that is not necessarily the end of the action required and is most definitely not the end of the story.

The issue:

What the pool industry is finding out the hard way is with the slower the rate of water flow (even though the required turnover rate is achieved) certain pools are now having water maintenance 'problems', whereas with the prior single speed pumps there was not an issue.

What is happening to swimming pools that once were not a problem when the pools had a 1 or 2 horsepower single speed pump but are now having water issues with a variable speed pump? This scenario has been voiced by many professional service persons of 20 and 30 years' experience recently. What many in the industry are realising is the circulation speed is as important as turnover rate in certain pools. Swimming pools have various styles with a multitude of water return line placements, making each pool unique in its own way, thus having its own potential water condition problems. This uniqueness maybe a contributing factor to water pool issues if the water is not circulated properly into all areas with sufficient force.

One can envision a fast narrow raging river and the agitation it applies to the side banks and obstacles in its path. Now envision a wider meandering river through the back 'forty' acres, peacefully making its way to the main river. Let's assume for the sake of this argument the volume of water moved by both rivers is somewhat equal. Which of the two do you think has the more 'cleaning' (debris movement) power?

The same (with some alteration to the aforementioned scenario) can be said for the slow speed and high speed setting of the variable speed pump. One knows that the higher speed setting is required to activate pools with in-floor cleaning pop ups, whereas, a lesser setting may only push up the 'pop ups' a portion of the way, thus limiting the power of the in-floor cleaning system.

The same holds true for the 'power' to move water along the side walls, into the 'standing' water ' areas, the sharp rough corners, and the movement of the surface water into the skimmer collection area. We have all seen an object floating on the water's surface that never seems to make it to the skimmer basket. This condition is due to the problem of a resistance on the surface of the water that is not overcome by the circulation power of the pool pump on a too low of speed setting.

By turning up the speed to its highest setting, the skimmer basket collects a greater amount of the surface material, whereas a speed setting that is too low will never force the floating object to enjoy the company of the skimmer basket and subsequent trash bin.

The bottom line:

The circulating power of water (along with the correct turnover rate) is a major determining factor in the proper care of a swimming pool. Selecting a low setting to save on the monthly electrical bill can cause a much greater cost down the road in the corrective action required to restore the pool water that has not been circulated and/or turned over sufficiently.

The closing note:

Brushing the pool's entire surface is analogous to a low pressure power wash cleaning of one's concrete sidewalk or patio deck. Therefore one must brush, brush, and brush some more for good measure.

End extract.

So who really benefits from the purchase of a variable speed pool pump? Our opinion is that it is rarely the pool owner.

If that is the case why are they so vigorously marketed and even attract a rebate in some states? The latter provides a clue. Rebates schemes are only put in place if there is a cost benefit for the paymaster. In the case of "energy saving" pumps it is the electricity suppliers that are the main beneficiaries, followed by pump retailers who increase their sales margin selling you a more expensive "energy saving" pump.

Residential and commercial development is increasing demand from electricity suppliers. The problem is, the generating capacity & supply network infrastructure is not keeping up with growth. This is causing a growing concern that during times of peak demand the current infrastructure will eventually not be able to cope.

The two biggest consumers of power in a residential property are usually air conditioners & pool pumps. On a hot summers day, hundreds of thousands of households are creating peak demand from the supply network. Brainwave.... Why not encourage the pool owner to reduce the power/turnover of the pump and run the pump for longer hours thereby spreading the load over a longer period, reducing the peak demand and taking the pressure off the supply network. Great in theory bad news if you think it will save the consumer money.

Lets look at a few figures. You can buy a reasonable quality standard pool pump for around \$400. A variable speed pump will cost anywhere between \$800 & \$2500 depending on quality and specification. On pump purchase alone you need to save \$400 - \$2100 on electricity costs over the life of the pump just to break even on investment. It is to early to confirm, but it would be fair to assume that the lifespan of the pump is likely to be greatly reduced compared to a standard pump due to the extended daily runtime required to achieve the required filtration. But that's not the end of it. If you are one of the majorities that use a salt or mineral chlorinator the news just gets worst. The life of the cell plates is largely determined by the amount of hours they are energised. If you are running the pump three times longer to achieve the required water turnover the cell plates will only last a third of the time. Replacement cell plates cost \$200 - \$800 depending on model. Add to this the additional costs manifesting from poor water flow rates and the extra ware & tare on filter and other equipment and it is easy to see that the installation of a multi speed pump could result in a very poor investment and is unlikely to save the consumer a cent once all the hidden costs are factored in.

If there was any advantage running a pool at reduced power and lower flow/turnover rates the use of lower powered standard pumps would have replaced the more common 1 - 1.5hp pump years ago? All of the above reinforces our opinion that the installation of the more expensive variable speed pump option will most likely increase pool operating costs. As always we encourage you to do your own research, hopefully this will give you a more informed base from which to start.

Update: We recently tested a range of standard and variable speed pumps to determine which models would be the most economic for the pool owner over a five year period when both purchase and power costs are taken into consideration. It may come as a surprise to learn that in our tests all the standard pool pumps provided a better return on investment than the variable speed versions.

13 Can we contact you about your submission?

Yes

14 All submissions will be published online, unless they contain confidential information. Are you happy for the department to publish your submission?

Yes