

WHY WE NEED AUTOMATED WELL WASHERS INSTALLED IN PUMP STATIONS



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ABSTRACT

There are a number of problems associated with pump stations such as the accumulation of fats and grease on wall's and components leading to disruptions to pumps and level sensors because of the build up of fats and solids. The other issue is that of confined space entry for the cleaning crews and the dangers they face from noxious gases and slippery working conditions. During a trial at a Pine Rivers pump station which was fitted with the new SR2 Automated Well Washer it was found that most of the problems and issue's with that pump station were rectified within one month without the need for confined space entry or cleaning crews.

BRIEF HISTORY

I invented the Auto Well Washer in 1992 this product proved extremely successful for automated pump station cleaning. Australian councils installed thousands of units over a 15 year period however they are no longer practical as they use potable water to clean.

1.0 INTRODUCTION

The SR2 automated well washer trial was conducted over a period of three months at Pine Rivers pump station 166 with the Morton Bay Regional Council the problems for this station were:

- Large accumulation of fat and grease
- Disruption to pumps and sensors due to the build up of solids
- Increased Odour's
- Increased call outs for cleaning crews

During the trial it was noted that there was a significant reduction in the amount of fat and grease build-up within fourteen days of the installation of the SR2 Washer. After one month it was also found that there was a reduction in the amount of odour due to the forced ventilation of the washer running.

At the end of the three month's the benefits were:

- No accumulation of fat's and grease
- Fewer Disruptions to pumps and sensors
- Decreased Odours
- Decreased Call out's for cleaning crews
- No use of potable water
- No electricity used

Some examples of the benefits of using washer after fourteen days are shown in Figures 1 and 2 below.



Figure 1: *Pump Station prior to installation of well washer*



Figure 2: *Pump Station 14 days after installation of well washer*

1.1 Odour Log Table's

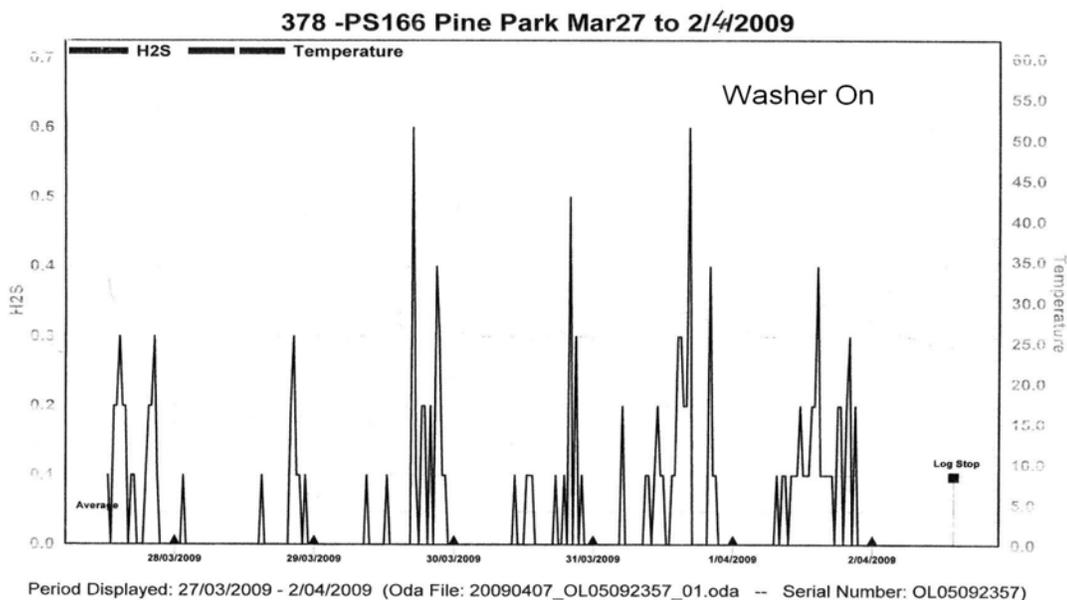


Figure 3: *Pump Station H2S Production with well washer on*

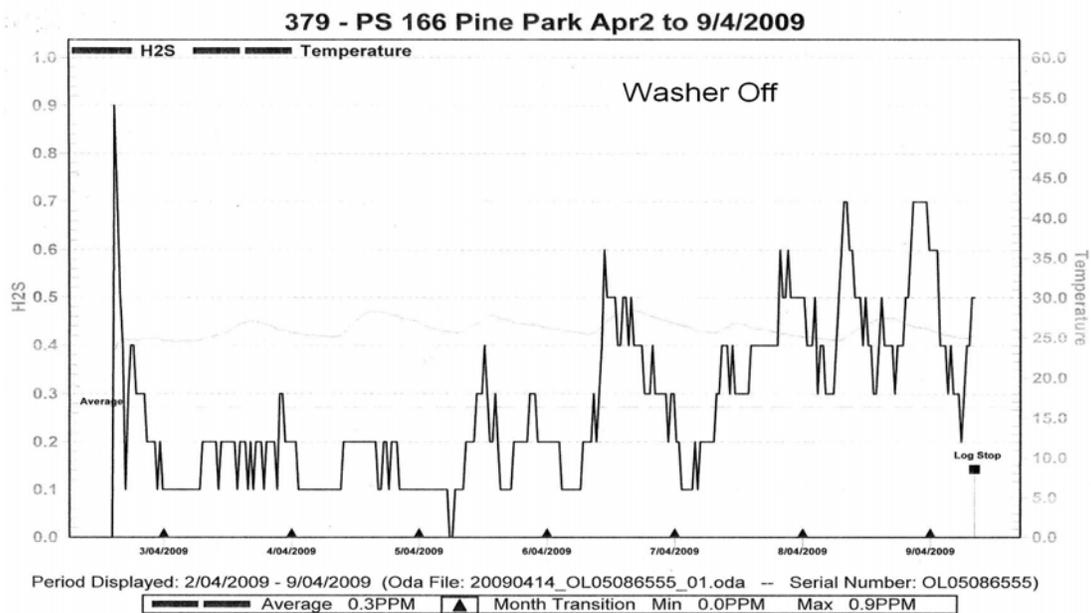


Figure 4: *Pump Station H2S Production with well washer off*

2.0 ABOUT THE SR2 AUTOMATED WELL WASHER

It is a simple economical approach to cleaning fats and grease in the pump station without having to enter the well. The SR2 well washer is easy to install and washes the well with raw sewerage water drawn from the rising main it has no moving parts and the washer will clean most standard pump stations, the mounting bracket on the SR2 well washer will not obstruct or interfere with the removal of pumps for maintenance some other benefits are as follows:

- No potable water used and no cross connection issues.
- No more accumulation of fats, oils and grease within the well.
- Reduces call out associated with Pump “run on” and inaccurate readings.
- Extends the life of well and components within the Well.
- Significantly reduces H2S gas levels due to removal of grease, oil and fats
- Significantly reduces maintenance costs due to the automated process.
- No electrical current required to power the unit
- No moving parts
- H2S by well washer running was found to be nil
- Installation time proved to be about two hours

2.1 Maintenance of the SR2 Well Washer

The washer requires little maintenance it is recommended that the washer be visually checked for any blockages every Four to eight weeks. If the nozzle becomes blocked there is no need for confined space entry into the well, simply close the ball valve unlock the strainer, clear out obstruction this should take about five minutes.

2.2 Operation of the Washer

The washer uses the sewage water from the well itself when the pump starts the water passes up from pump through the rising main into a 50mm tapping band it then travels through the 50mm hose to the washer the washer then showers the well to remove any build up of grease or solids see Figures 5 to 7.



Figure 5: *Pump Station prior to washing commencing*



Figure 6: *Pump Station during washing phase*



Figure 7: *Pump Station after washing completed*

3.0 CAPITAL COSTS OF EQUIPMENT

The cost of a basic unit is \$3500.00.

The cost of hose & fittings to install can vary from each pump station depending on depth and size the basic pump station is usually around \$500 to \$1000.

Total of cost, equipment, fittings would therefore be estimated at \$4,000 to \$4,500 for a system installed by the customer.

3.1 Operating Costs, Prior to SR2 well washer Cleaning System Installation

The cost of routine maintenance for most pump stations can be calculated as follows:

- Two men once a week One hour per visit Labour & equipment cost at say \$150 per hour this equates to a total cost of \$7,800 per year, to maintain the pump station.

The well washer will easily pay for itself in the first year in labour alone

4.0 CONCLUSION

We must remember 59% of all cases of accidents in confined spaces result in more than one death and Confined spaces entry is in the top 10% of all death in Australian industry. Australian & New Zealand standards state (Sewage pumping stations flows shall be isolated including all electrical equipment that can cause hazard before entry is permitted)

The new SR2 Well Washer is a simple safe cost-effective way to clean pump station's it requires little maintenance no confined space entry after installation and will show results in two week's after installation and due to the cost saving it will pay for it self within twelve month's we can clean pumping stations without men having to risk accident or death by wet well entry.

It is a small cost to install the SR2 Well washer as opposed to compensation claims and injury to council cleaning crew's so let's not go backwards in our approach to maintenance.

5.0 ACKNOWLEDGEMENTS

Valuable contributions were made by the management and staff of all organisations involved.

In particular we would like to thank Mr Paul Hooper of the Moreton Bay Regional Council who conducted the trial and odour logging, and Mr Paul Miniham of Quantum training who provided statistics on the dangers of confined space entry.

6.0 REFERENCES

Moreton Bay Regional Council odour for logging tables

The Australian & New Zealand standard 2865-2001 workplace health & safety regulations 2008