

SSDD or a better way

The players

Operator : passion finger guris

Maintenance planer : planed reactervis

Process Engineer : time poor ess

Electrician : operator ass saver vis

Capital works ; money tight asses

Procurement ; rule non-flexibis

COO Optimus Primus

Fitters

Leading Hand

MRC largest plant, Mackay South averages 19 ML/day uses sequence batch reactors to feed one of the largest water recycling schemes in the country.

Mackay Water Recycling Project recycle about 90% of Mackay wastewater every year. This project saves 250 tonnes of nutrients from discharge to the Great barrier Reef. This reuse project removes 8500 ML of demand on ground water resources. Bakers Creek STP is a 97000 EP treatment plant facility producing class A recycle water.

This is the story of planned controlled equipment issues verses reactive work issue, and the time, effort and capital required to solve neglected alarms.

The sun is rising in poo land.

6.31 am. The maintenance planer (planed reactervis) looks over the PM's schedule with a smile. A month of schedule work, life is good.

Meanwhile Operator (passion finger guris) opens the Scada system. An alarm is flashing, what that alarm again this would be the tenth time I accepted that alarm, click. The alarm clears for a few minutes then returns. Click Click Click Click, this is rubbish passion finger guris mutters.

The alarm has now escalated to critical; the blower is in faulted 2 SBR trains are interlocked out.

Operator (passion finger guris) instantly reaches for his phone and selects the leading hands number, passion finger guris thinks this will remove that monkey from my back, not my problem soon.

6.35am The leading hand answers the phone. How are you going passion finger guris; it buggered, it's all buggered

What's buggered, The plant buggered; I do not know why I work here.

What's broken. You know the blower. What blower, which blower. The conversation goes around in circles for a few more minutes as more information is sort.

Passion finger guris, give me a minute and I log in and checking the alarm. After logging in, the alarm is found to be a SBR blower, interlock on the SBR's is due to an overload/ drive fault. (the S/B has been removed for replacement) The leading hand ring passion finger guris and tell him I coming to the plant to check the fault. The leading hand on checking the fault, it is found that there has been a major fault. The leading hand rings the electrician: operator ass saver vis.

Mate we have an issue at poo land, can you please come and investigate.

Electrician: operator ass saver vis I was just start this other job.

I know but we need it looked at, there is 2 SBR's offline and there is no S/B blower.

OK, I am on my way.

On arriving the fault is found not to be a drive fault but mechanical.

The leading hand calls the Maintenance planner : planed reactervis

Mate, I have a major issue.

The leading hand explains the problem to the maintenance planner and contacts the process engineer.

Maintenance planner is on the phone organizing the maintenance personal to check the fault. The blower tech's company services the mining industry, thus staff are required to be redirected to work on the blower. The blower is found to be completely failed. (4 hours work plus additional cost)

The process engineer (time poor ess)and electrician and are working to source a blower or other means to supply air to the process. This involves several hours of work and many phone calls. A new blower is located, in Melbourne.

The fright to deliver the blower express is \$43,000, normal delivery cost \$3000 and 5 days to delivery.

The process engineer now spends a few hours dealing with capital through email and phone calls to meet budget requirements. Funds are made available to purchase to blower, (expansive).

Once funds are available there are many more email and phone calls to ensure all procurement details are fulfilled (a few mores hours of time)

Council internal environmental officers are contacted, as well as external environmental agency to inform of a possible licence breach.

The Scada tech and lead operator meet in the control room and create an automated 2 SBR control mode and work to identify faults and manage process faults. This 2 SBR mode is created, and testing is carried to guarantee the integrity of 2 SBR's configuration utilising interlocks and PLC programming configuration analysis on all entered setpoints, once it was established there was no opportunities to supply air to the offline SBR's. (4 hours of time)

Stuart Boyd (Optimus Primus) arrived on site and where process was discussed and additional chlorine dosing was worked through, 30,000 L of hypo is order as the gas chlorine dosing system cannot meet the additional chlorine requirements, the reduced blower capacity would only be able to reduce the effluent ammonia to around 12.0 mg/L and chlorine/hypo would be used to reduce to acceptable limits. (\$ 20,000). The treatment plant is operated in the 2 SBR mode for 5 days, all licence limits are met.

Reseeding the SBR's and returning the process to normal operation also created its own challenge as there were no pumps available to transfer biomass from the two operational SBR's. The contents in the offline SBR's were less than desirable.

A better way

The use of Scada data to identify potential issues can really assist in efficient running of preventive maintenance programme verse reactive maintenance work as above. By having Scada engineers producing alarm reports which are shared with process engineers, the maintenance planer and operators during team meetings all recurring and or alarms that can impact plant operations are remediated in a planned approach where capital work and maintenance work scheme are more effective. Both capital and maintenance can plan and work with operations to deliver the best possible result, additional outcomes is alarm rationalization and plant performance optimisation.