SOUTHERN REGIONAL TAFE

Final Report

Measuring Power Around the Workplace

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In reference to the project proposal, the aim of this experiment was to reduce the power usage around the D Block of the college, to make a much more sustainable impact for future students at the college. To do this, as a class we selected various appliances around the D Block and measured the power usage using power meters at the start and end of the day. The appliances we agreed on were the two computer banks in class D23, and the upper floor water fountain. We measured the following variables of the appliances:

- Voltage
- Amp
- Wattage
- Kilowatts per hour
- Power Factor

Focusing on the change in the Kilowatts per hour, we aimed to reduce power consumption by applying our own methods in reducing it.

By measuring these power readings and implementing our methods on reducing power consumption, we had expected the average usage of power to decrease, therefore saving the college money and conserving power for alternative uses.

What we actually got from the readings had shown us that we had not been saving power, but rather we had been using *more*. This could have happened due to more computers being used, or more being left on when not being used.

This shows that we faced this project carelessly, scarcely applying our methods intending to reduce power. Though we could only directly control the power usage of the two computer banks, we managed to fail to control that.

The average kilowatt per hour of Computer Bank B was 7.14, and reached an average of 9.34 KW/h by the end of the project. At 20.54c per kilowatt, this equates to a loss of 45.2c per hour.

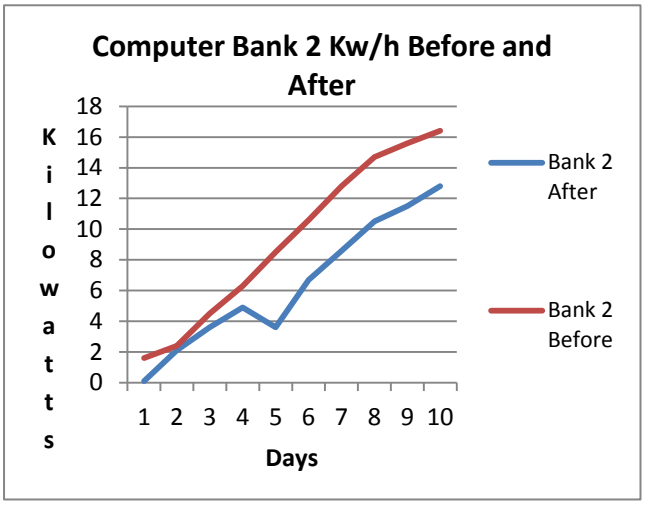
The average kilowatt per hour of Computer Bank C was 9.85, and reached an average of 9.94 KW/h by the end of the project. At 20.54c per kilowatt, this equates to a loss of 1.8c per hour.

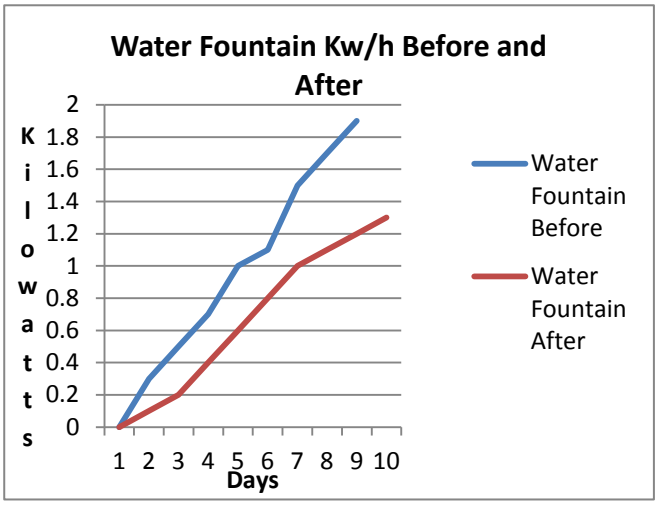
The average kilowatt per hour of the Upper Floor Water Fountain was 1.02, and reached an average of 0.67 KW/h by the end of the project. At 20.54c per kilowatt, this equates to saving 7.2c per hour.

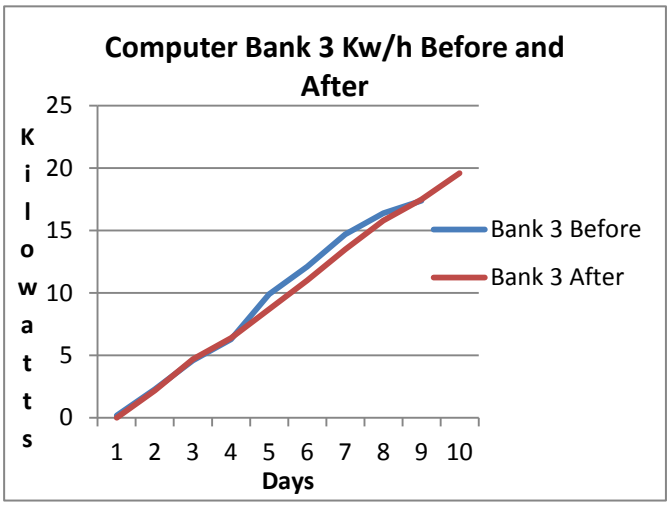
The results show that the average kilowatt per hour usage of the two computer banks had *increased*, and the average kilowatt per hour usage of the water fountain had *decreased*.

If we had decided to implement our proposal on power reduction around the college, it would prove to show that it will reduce the costing of the TAFE and reduce impact on the environment. In concept, our methods seemed flawless, but obviously, that depends on whether these methods are executed or not. In our experiment, we showed that we were not capable of being responsible for our own project, and barely implemented our methods. Otherwise, the results may have proven to be very successful.

The line graphs below show the findings of kilowatt per hour usage before handling methods were chosen, and *after* handling methods were chosen.







Around the college, many sustainability factors are implemented around the campus to reduce excessive use of power where unnecessary. Though it is sustainable thinking, there are improvements that could be made to maximize the sustainability of the college.

Having more rainwater tanks dispersed around the campus will reduce reliability on supply mains. Rainwater is also more nutritious as it is not filled with chemicals, so more seems better.

The solar panels around the campus supply power to the TAFE. With more solar panels, more power will be distributed from those, saving money since relying on mains is more expensive. Though not too many solar panels, as the sun is not always out.

More bike racks will provide more leverage to bike riders. Having more racks in different blocks of the campus will create ease of access to those who do cycle, while also promoting cycling.

Having grass trees dispersed around most vegetation of the campus will help floral development in more areas than the few present. Grass trees are resilient, and will sustain lots of damage.

To compensate for no sun, wind turbines are scattered in the agricultural development block of the campus. Having more scattered throughout the campus will provide energy while there is or is no sun.

Overall, the changes we applied to reduce power had failed, as we had not initially put them to practice in the first place. In order to improve the results we got based on our methods, we need to have the mindset to think sustainably. From there, we need to commit to putting the practices we discussed to action, rather than concept alone. The practices were very simple, but they definitely would have worked, given that they *are* executed.

The following websites can be viewed for a brief outline of sustainability in the Great Southern:

http://www.rdagreatsouthern.com.au/our_region_industry.html / - A summary of the Great Southern sustainability infrastructure.

http://festival.greenskills.org.au/ - An annual festival for sustainable living in the Great Southern.