



## Case Study: Corio Village, Geelong VIC



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## Introducing PlantPRO

PlantPRO is the first complete chiller and plant efficiency solution offering a suite of engineering tools that includes diagnostics, charting, reporting, and active controls.

Information is gathered through a dedicated data acquisition module that collects data from industrial grade calibrated sensors fitted to the equipment being monitored. This data is analyzed and processed then presented in an easy to read format either through a dedicated 17" touch screen or directly to any internet connected PC with a web browser. No special software is required.

### Chiller monitoring tool includes:

- Comprehensive charting and data analysis tools for all inputs for analysis of the complete system performance.
- Efficiency indicators to compare and benchmark chiller efficiency to that of design.
- Diagnostics of system issues.
- Manually generated chiller logs
- Automatic and manually generated monthly reports detailing standard statistics including power and water consumption, hours run, monthly diagnostics summary etc, plus a range of specific performance measures for benchmarking purposes with other sites and chillers.

### Plant monitoring tool includes:

- Plant trending and data analysis for analyzing overall system performance.
- Summary pages covering the status of all associate pumps and fans.
- Automatic and manually generated monthly reports.
- Tool to analyze and rank the relative performance of all operational chillers.
- Active Chiller Performance control module that will automatically select the most efficient combination of available chillers at their respective most efficient load points.
- Active CHW supply temp relief control module that will manage CHW supply

### Cooling Tower monitoring tool includes:

- Tools to analyze water consumption including cycles of concentration.
- Tools to benchmark and diagnose major leaks and other water consumption issues.
- Automatic and manually generated monthly report covering volume of cost of water supplied and disposed.
- Active Cooling Tower Optimization control module to optimize the overall system performance taking in account the type and number of chillers running as well as ambient conditions.
- The tower will nominally be setup to run independently from the chillers and will control themselves to deliver water at the temperature that will deliver the best COP irrespective of how many chillers are running. We can also set them up to control on wet bulb temperature as well if you choose. (If you have specific control ideas that you would like to incorporate, we can certainly include them during the programming phase. We will also be able to make changes remotely as well if required.)



## CASE STUDY: Corio Village Shopping Centre, Victoria



<b>Date:</b>	13th February 2012
<b>Title:</b>	PlantPRO Chiller Performance Monitoring
<b>Key Words:</b>	Chiller Efficiency
<b>Site:</b>	Corio Shopping Centre Victoria
<b>People:</b>	Colonial First State Global Asset Management
<b>Project Cost:</b>	Original installation cost approx. \$37,000.00
<b>Payback Period:</b>	7.4 months (Based on original cost of PlantPRO installation)
<b>Environmental Savings:</b>	
<b>\$ Savings:</b>	\$60,000 per annum (Pro-Active Cost Avoidance)
<b>CO2-e Pollution Offset:</b>	650 T per annum (Pro-Active Pollution Avoidance)
<b>Summary:</b>	PlantPRO Chiller Performance monitoring system continually monitors the performance of chiller plant and provides automatic reports and ongoing analysis of the plants overall efficiency.
<b>Details:</b>	Through the continuous monitoring process of the chiller plant carried out by incumbent contractor using the PlantPRO Monitoring tool, it was noted that the overall efficiency of chiller No 2 had dropped off significantly. A technician was dispatched to site to investigate the issue and found a fault with the chiller's refrigerant control system. The fault was of an unusual nature with the chiller still left fully operational but unable to use its variable speed drive to optimize its operating power consumption. However, chilled water production was unaffected with the chiller showing no actual fault condition.



**Outcomes:**

Following the repairs, chiller COP jumped from an average COP of 2.5 to an average COP 5.5. The adjacent graphs clearly show the high power consumption and low cooling performance before the repairs followed by the marked improvement after the repairs.

In relation to running costs, as the fault was quickly identified by PlantPRO, no major cost penalties to the Centre have occurred. However, without early detection this problem had the potential to have been extremely costly with the chiller basically consuming two to three times the energy it should have been consuming.

Placing this in monetary terms, this chiller operates as the lead chiller and averages 10 hours per day, 7 days per week at an average 50% load. When operating efficiently, 300 hours per month @ an average of 130 kW equates to a running cost of approximately \$2,700 per month. If this problem had gone unchecked, this cost could have conservatively added another \$5,000.00 per month to the chiller plant's operational costs.

**Data:**

