



COOLUM BEACH CHRISTIAN COLLEGE AND CCF CHURCH

Showcasing the Coolum Beach Christian College, cnr Yandina-Coolum Road and Arcoona Road, Coolum Beach as part of a series of case studies that have been developed to illustrate best practice Clean Technology solutions.

The Clean Technologies industry has been identified as one of seven high value industry sectors for the Sunshine Coast region as defined in the Sunshine Coast Council's Regional Economic Development Strategy 2013-2033.

Clean Technology Solutions at Coolum Beach Christian College:

- Sustainable architectural design and structural materials
- Renewable energy supplying 25% of entire load
- Energy management system reducing use & peak demand
- 100% rainwater supply
- On-site waste water treatment system
- Irrigation management minimises water use
- Solutions provided by local companies

BENEFITS:

- ✓ Savings of \$12,000 p.a. in energy costs
- ✓ Energy use 13% below average for Qld schools*
- ✓ Reduction of 30 tonnes CO₂ emissions per year
- ✓ Zero water supply costs
- ✓ Zero structural maintenance costs

COOLUM BEACH CHRISTIAN COLLEGE



The Clean Technology industry on the Sunshine Coast generates \$214 million in economic activity, employs 1,770 people and has become a model for sustainability in Australia**.

Please contact us to provide you with a list of regional solution providers.



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What is Clean Technology?

Economically viable products, services and processes that harness renewable materials and energy sources, dramatically reduce the use of natural resources and cut or eliminate emissions and wastes.



Sustainable Design and Structural Materials

The college has implemented a sustainable design philosophy that minimises operating costs and maintenance.

Design features incorporate prevailing breezes and considers year round sun angles, which minimise heat ingress and reduces the load on the school's limited number of air conditioning systems.

The selection of structural materials provide an attractive aesthetic, which minimise maintenance requirements and costs.

FEATURES:

- North facing buildings minimise heat ingress
- Skillion roofs maximise shading and rainwater collection and allow natural ventilation of roof cavity
- Fully insulated buildings
- North south louvres allow for cross flow ventilation
- Galvanised steel, two tone cladding and split face concrete blocks minimise maintenance requirements
- Artistic and functional landscape design with well-managed water run-off



BENEFITS:

- ✓ Reduced air conditioning loads and reduced power consumption
- ✓ Reduce maintenance requirements and eliminate the need for paint
- ✓ Energy use 13% below the average for Queensland schools



Energy Supply and Management

The college enjoys the benefit of clean, green energy which is supplied via a 24kW solar system that produces 25% of the school's requirements.

Sunshine Coast company, ENOPE were selected to install the solar PV system, which is further enhanced by the AuziMAX Energy Management System. This gives the college unprecedented visibility and control over energy assets with visual displays showing 24/7 power usage and solar generation. The cloud based system sends alerts when consumption exceeds predetermined limits and also manages loads on autopilot through program logic which reduces peak demand and energy costs.

“ What it showed us was where power was being wasted. For example we were

able to identify that computers were being left on over the weekend.

As a result of this clarity we were able to reduce wastage and that alone has cut our power bill significantly. ”

Energy costs	\$43,000 p.a.
Average energy use	370 kWh per day
Cleantech Solution	24 kW solar PV 2 x 10 kW inverters Power factor correction Energy Management System (3 buildings)
Capital	\$38,500
ROI	3 years

“ One of the smartest things we did was have an AuziMAX Energy Management System installed. ”

Pastor Rod Holt



BENEFITS:

- ✓ Solar PV provides 25% of electricity requirements
- ✓ Total network demand reduction of 25 kVA (38%)
- ✓ Monthly electricity costs reduced by \$1,000
- ✓ Reduced carbon emissions of 30 tonne CO₂
- ✓ Electricity use 13% below average for Qld schools

The Clean Technology Advantage

“ The use of clean technologies has helped build a school that is beautiful, practical, provides a learning environment that engages with nature, has reduced energy and water use and has greatly reduced our operating costs. ” Pastor Rod Holt



Water Supply

With no town water supply, the college engaged water treatment professionals, PurePro who installed a rainwater collection and treatment system that fully caters for their needs.

Each building has its own water tank with roofs designed to maximise collection. A multi-stage filtering process produces pristine quality drinking water.

Each of the tanks are connected so that the school does not need to import any water at all and the tanks can be filled after a single day's rainfall.

FEATURES:

- Rainwater as sole water supply
- Tanks on each building and fully connected
- Multi-stage filtering process for drinking water
- Total drinking water capacity of 270,000 litres



BENEFITS:

- ✓ Sustainable water supply and zero supply costs



Wastewater Treatment

Water treatment specialists, Advanced Enviro-Septic, installed an onsite sewerage treatment plant that treats wastewater via a process of aerobic and anaerobic treatment, similar in function to a domestic septic system.

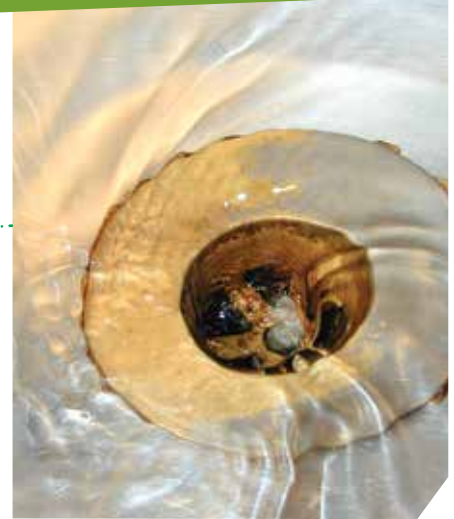
The treated wastewater is finally UV filtered and dispersed under the school oval via 7 km of long lasting soaker pipes which have a 25 year guarantee from root blockage. A programmable irrigation

control system ensures the optimal water requirements for the oval.

Rain gauges ensure there is no excess watering and there is storage capacity for several weeks of treated water which caters for extended rainy periods.

FEATURES:

- Anaerobic and aerobic treatment
- 4 weeks of treated water storage capacity
- Auto-controlled irrigation system with 7 km of irrigation piping
- Auto-alerts and shutdown to prevent excessive watering



BENEFITS:

- ✓ Beneficial reuse of treated wastewater
- ✓ Sustainable water supply for irrigation



“ We wanted to create a natural environment that was conducive and supportive to our purpose which is simply to build good people! These Clean Technology Solutions have without doubt contributed to that vision. ”

Pastor Rod Holt

* Data is 10 year average data for 4760 Queensland schools (159 MJ/m2.a). Reference: Department of Climate Change & Energy Efficiency, 2012. Baseline Energy Consumption and Greenhouse Gas Emissions In Commercial Buildings in Australia. ** Data referenced in the Regional Economic Development Strategy (2013 - 2033).

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FOR MORE INFORMATION

Go to www.invest.sunshinecoast.qld.gov.au or email invest@sunshinecoast.qld.gov.au or call the Coordinator - Industry Enablement on +617 54759932.