



UNIVERSITY OF THE SUNSHINE COAST

Showcasing the University of the Sunshine Coast, Sippy Downs as part of a series of case studies that have been developed to illustrate best practice Clean Technology solutions.

Clean Technology 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.

Opened in 1996, the University of the Sunshine Coast (USC) is one of Australia's fastest growing universities. It has a strong research focus on sustainability and regional engagement.

Clean Technology Solutions at the University of the Sunshine Coast:

- Sustainable architectural design
- Total waste management system
- Integrated energy management
- Stormwater capture and recycling
- Support for clean technology and innovation in the broader community

In 2011, USC became the first university in Australia to gain full Enviro Development accreditation from the Urban Development Institute of Australia for achieving elements of sustainability across six categories – ecosystems, waste, energy, materials, water and community.

BENEFITS:

- ✓ Total integrated waste management system that has reduced waste sent to landfill by 70%
- ✓ Reduction in electricity consumption over three years of 10.6% despite 20% growth saving \$1.3 M
- ✓ Integrated water management systems that protects the adjoining Mooloolah River National Park whilst harvesting stormwater for irrigation, pool makeup and cooling towers
- ✓ Sustainable building design, central monitoring and control to reduce energy operating costs and carbon emissions



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 Planning and Building Design

USC is committed to best-practice urban design with a creative and artistic flair.

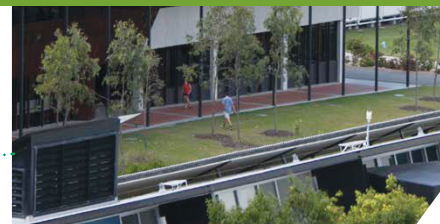
Buildings are oriented to take advantage of prevailing breezes and are designed to produce a comfortable environment with minimal interference from artificial climate controls. Design features include the extensive use of shades and tree planting to reduce direct sunlight on buildings in conjunction with passive lighting and cooling.

USC also strives to construct buildings using lightweight and sustainably

sourced building materials that have low maintenance requirements and thermal capacity.

FEATURES:

- Operable windows, thermal chimneys, louvers, vaulted ceilings, breezeways, window treatments and external walkways
- Solar-activated aluminium screen systems, large steel shade screens, blades and fins
- Skylights and clerestory windows and high level openings in Sports Stadium to allow additional daylight and exhausts hot air



- The 5-Star Green Star rated Engineering Learning Hub built by Sunshine Coast Hutchinson Builders using recycled or sustainably sourced timber portals

BENEFITS:

- ✓ Natural ventilation and lighting lower operational costs whilst providing a healthy and vibrant working environment
- ✓ Low building maintenance costs
- ✓ Showcases USC's commitment to innovation



Material and Waste Reduction and Waste Recovery

The University's OSCA (On-Site Composting Apparatus) transforms organic waste into nutrient-rich compost for the campus gardens.

OSCA can process food scraps, compostable plates, cups and cutlery, paper hand towels, garden clippings and cardboard. OSCA uses minimal energy and is a continuous feed system producing high quality compost in 10 - 14 days. USC works closely with campus retailers to use catering supplies that conform to OSCA requirements. The unit is easy to use and maintain. The Green Place on campus showcases veggie gardens using compost from OSCA.

Communal colour coded waste recovery stations and matching "mini-bins" on staff desks capture organic waste and other co-mingled recyclables.

USC is a recognised 'Water Refill Campus' providing a variety of alternative options to purchasing commercially bottled water.

As of February 2015 bottled water is no longer sold on campus diverting 36,668 x 600ml plastic water from landfill.

FEATURES:

- OSCA is an automated, aerobic composting machine developed by Queensland WDU Sustainability. They are designed and built locally, and all components sourced within Australia
- It can process up to 1 tonnes of waste per week. The specially designed bio-filter makes it odourless
- 100% corn starch cutlery and compostable cups and biodegradable cling-wrap are used in the Brasserie and other food outlets
- 18 free bottle refilling stations and over 50 water fountains across the campus
- Cleaning and sanitising solution generated by on-site electrolysis system

USC has been awarded the Sunshine Coast Council Good Recycling Award 2013 and the 2014 Australasian Campuses towards Sustainability Green Gown Award for Carbon Reduction and in 2015 were Highly Commended for Facilities and Services. USC was also Highly Commended for two Premiers Sustainability Awards for leadership in sustainability and Innovation in sustainable technologies in 2015.

BENEFITS:

- ✓ Between 2014 and 2015 USC reduced general waste sent to landfill by 7% while increasing co-mingling recycling by 39%, paper and cardboard by 27%, organic waste by 15% and garden waste by 20%
- ✓ Plastic bottle diverted from landfill equates to 1.3 tonnes of PET and 1.4 tonnes of CO₂ emissions saved
- ✓ Reduces transport costs of waste going to landfill

Environmental Sustainability

The University of the Sunshine Coast is committed to environmental sustainability for the benefit of students, staff and the wider community.



Stormwater Capture and Recycling

Stormwater runoff from hard surfaces is directed via a system of vegetated swales to collection ponds. The swales and settling ponds protect surrounding waterways from high nutrient levels and sediment run-off.

A water treatment plant removes solids and modifies the pond water to produce potable standard water for pool make-up water and in cooling towers.

FEATURES:

- Stormwater management harvesting for washing car parks and irrigating ovals and the open campus green
- Treated stormwater for pool makeup water and cooling towers
- Rainwater roof top harvesting and storage in tanks for higher quality end uses



BENEFITS:

- ✓ Potable water usage per student was 5.1 kL in 2015. (National average use 13.5 kL/ full-time student)**
- ✓ Treating lake water reduces potable water usage in excess of 20,000 L daily



Energy Conservation and Management

USC has adopted a proactive and innovative approach to managing its utilities by introducing a range of smart financial and engineering initiatives that have significantly reduced energy and water use at USC.

The power of all buildings on campus is centrally monitored by SMART meters allowing real-time analysis of power and water usage and the identification of future conservation opportunities.

Much of the air-conditioning on campus is centrally monitored which allows for better control, energy saving and quicker breakdown response times. The air-conditioning is managed in larger lecture theatres using movement detection systems that remove the requirement for scheduling for after-hours events.

Some buildings also use reed switches on windows that can disable air conditioning and open high level dampers.

Conventional refrigeration air conditioning systems have been replaced with energy-efficient chilled water systems. Spiral filters are utilised to increase efficiency by around 10%.

FEATURES:

- Central monitoring of all power on campus
- Centrally controlled air conditioning or Building Management Systems to control local cooling
- Efficient T5 fluoro tubes and LED street lights
- Energy-efficient chilled water systems for air conditioning



- Solar hot water on several buildings
- Solar-powered ticketless parking meters and buggies
- Installation of vehicle management system (VMS) to reduce vehicle movements on campus

BENEFITS:

- ✓ Despite experiencing a 20% growth in the building footprint since 2012, USC's electricity costs have reduced by 10.6% over the same period, saving \$1.3 million over three years.
- In 2015 Energy usage per student was 4.79 GJ. (National Average is 9.7 GJ/ full-time student).



Community Engagement

USC's Innovation Centre (IC) is a business incubator for start-up technology businesses and a business accelerator for established technology including clean technology. It provides a collaborative and entrepreneurial environment and access to business mentors, partners and investors.

FEATURES:

- The IC has supported the start-up & growth of over 150 start-up businesses in areas such as clean, digital, creative industries and health technology



BENEFITS:

- ✓ The Innovation Centre has a \$200 million turnover and has created 580 jobs.

*Data referenced in the Regional Economic Development Strategy (2013 - 2033). **Tertiary Education Facilities Management Association (TEFMA) 2006 benchmarking report

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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 - High Value Industries on +617 5475 9932.