

NEW SOFT DRINK FACTORY FOR WIMMERS.



CASE STUDY

Wimmers Soft Drink Factory

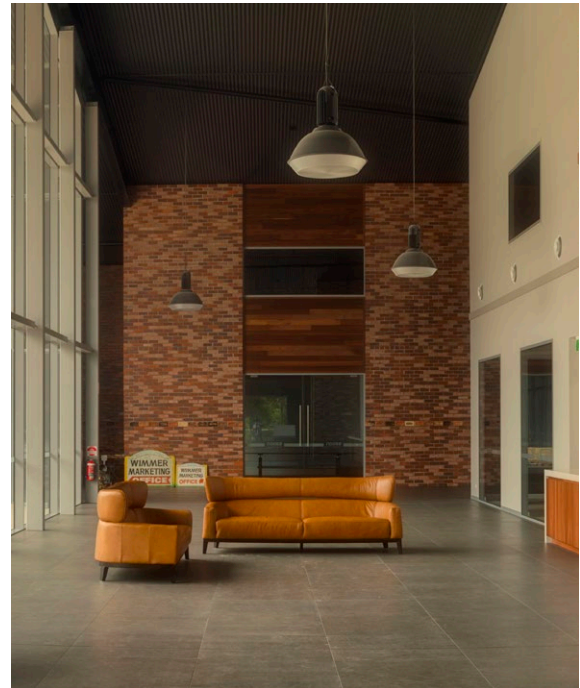
Corooy Queensland

Mechanical Engineers

Ashburner Francis

Building Overview

New soft drink bottling facility with administration and storage.



Wimmers Soft Drinks are a Queensland institution. Established in 1910, Wimmers is famous for its range of high quality and premium beverages.

With new owners came a renewal of the business and facilities, the cornerstone of which is this state of the art bottling facility located in the historic Sunshine Coast hinterland town of Corooy. With modern bottling equipment and expanded manufacturing space this new facility for Wimmers provides for a positive future with significant growth opportunities.

Wimmers owners sort to achieve positive social and environmental outcomes for their new facility. Critical to this was the maintaining the Wimmers presence within the Corooy township where it had been for over 100 years.

Future Focused

Nestled within the rolling hills of the Sunshine Coast hinterland, the new Wimmers Facility rests easily within this ecological habitat. Designed to have as little impact on the environment as possible, this facility is a statement to what can be achieved with an integrated sustainability approach.

With a view to creating a liveable building with the highest levels of sustainable design, the owners of Wimmers integrated into the building fabric solutions that are both commercially and environmentally astute. These initiatives included;

1. Rain water harvesting
2. Black water treatment
3. PV solar
4. Geothermal air conditioning

Geothermal Air Conditioning

QPS Geothermal was selected to install our proprietary GeoAir air conditioning system for the administration offices and syrup rooms. A 102kW system was required to cool and heat the required spaces within the building.

Each zone within the building is controlled by individual wall mounted thermostat. This configuration enables the optimal use of the installed system as they only operate when space is occupied.

GeoAir system was also installed to cool the temperature sensitive syrup storage room. Waste heat from the GeoAir system provides pre heating of water for the bottle wash plant.

Installation Overview

1. Geothermal Loops

Installation commenced in November of 2014 with the installation of the geothermal loops. The GeoAir Installed external to the building and below a future nature area adjacent to the building. The head contractor provisioned for access of the geothermal loops into the building for connection to the GeoAir heat pumps.



Geothermal Loops installed below nature strip

Geothermal loops are installed using specialist drilling equipment and qualified technicians. Grouted in place using highly conductive geothermal grout, the loops require no maintenance or access. All loops are at 8m separations and installed below nature strip adjacent to the building.

Geothermal loops rely on the thermal conductivity and diffusivity of the earth to both reject and collect heat for the operation of the system. When operating in cooling mode, a hot refrigerant gas is circulated through the installed loops where the heat is transferred to the surrounding sub surface.

The refrigerant condenses and is returned to the surface as a liquid and equal to the ground temperature. With constant sub surface temperatures, the GeoAir system will provide high efficiencies regardless of ambient air temperatures.

2. Horizontal Line Runs

Geothermal loops are connected to plant location by way of excavated trenches at nominally one (1) meter below surface levels. Coordination with all other in ground services was required prior to commencement to prevent conflict.

All lines are installed within protective insulation and backfilled with sand and warning tape.

3. Geothermal Heat Pumps

Quiet and compact, GeoAir heat Pumps require no ventilation and can be integrated into any building design. Wimmers chose to install heat pumps at an elevated position within the warehouse area. This positioning reduced the need for external plant platforms and associated works.

Geothermal heat pumps are connected to geothermal loop field by refrigerant lines insulated with 20mm closed cell insulation.



4. Controls

Standard thermostatic controls are used within building space. More complex, BMS integrated controls are available where greater control is required.

5. Heat Recovery

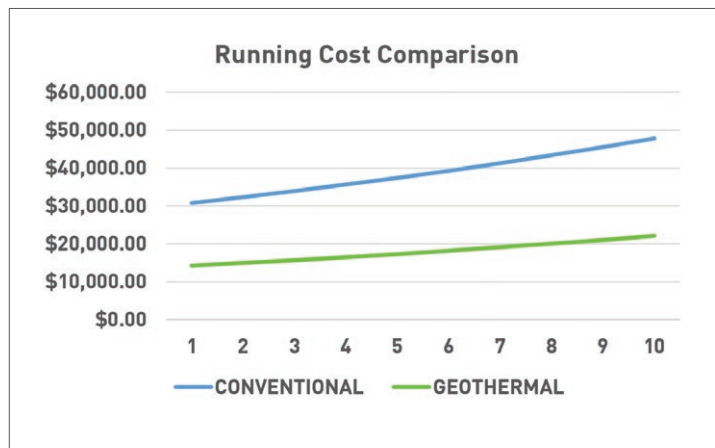
When in operation, waste heat from the geothermal heat pumps is used to produce waste heat for bottle wash within factory. With a boiler in place for primary heating, geothermal system provides pre heat of water reducing load and energy consumption of boiler.

System Efficiencies

The GeoAir system will operate at an average Co-efficient of Performance of 6.5 regardless of ambient air temperatures. This delivers on average an energy saving of 60% against a conventional air conditioning system.

When combined with water pre heat, this facility will achieve significant operational energy cost savings over its life.

Based on normal operating conditions and a standard conventional system, anticipated operating cost comparisons is detailed above.



Installation Summary

Unit	Zone	Capacity	GeoAir Loops	GeoAir Heat Pumps	Fan Coil Unit	Control
FCU1	Museum	20kW	2 off	GEO61AT	In Ceiling Ducted	Thermostatic
FCU2	Board Room	9kW	1 off	GEO24AS		
FCU3	Lunch Room	12kW	2 off	GEO36AS		
FCU4	General Offices	12kW	2 off	GEO36AS		
FCU5	Museum	20kW	2 off	GEO61AT		
FCU6	Dispatch	9kW	1 off	GEO24AS		
FCU7	Syrup Rooms	20kW	2 off	GEO61AT		

Installation Benefits

1. Significantly reduced running costs of air conditioning plant
2. No external plant removed need for costs associated with roof top plant
3. GeoAir heat pumps are compact and quiet and were installed internally for ease of access
4. Less moving parts reduces ongoing servicing costs
5. Waste heat from the GeoAir system provides pre heating for the bottle washing plant reducing consumption by gas boiler



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