



Wangaratta High School

Case Study



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The Wangaratta High School is located in North East Victoria. The school will be re-developed in 3 stages, with a new 2500m² Senior School as Stage 1. The result is a state of the art facility for teaching and learning. The construction of 4 buildings in 3 stages will realize a Geoexchange heating and cooling infrastructure that forms a district heating and cooling system.

The Project

Architects Taylor Oppenheim in conjunction with specialist Consultant Meinhardt Building Science Group, have developed an environmentally conscious design considering important factors including: insulation, daylighting, glazing, thermal mass, natural light, ventilation and heating and cooling.

Geothermal heating and cooling was selected in line with the projects key requirements of energy efficiency and environmental impact.

The ground heat exchange network is the heart of the schools heating and cooling system. A network of 42 by 100m deep ground loops filled with water function as a heat source and sink for the system. The ground loops supply thermal energy to the school's

radiant floor heating and cooling via Bosch geothermal heat pumps.

Benefits

The building maintains a very steady temperature in the range of 20- 26 C through extremes of summer heat and winter cold. In addition the school has seen a substantial 75% reduction in energy costs.

The completed Stage 1 redevelopment was the first Australian School building to be awarded the Four Star Green Star award.



Geothermal Installation Wangaratta, Victoria

Background

Wangaratta High School located at Wangaratta in NE, Vic, Australia.

Re-development

Stage 1: 2500 sqm building
Stage 2: 3200 sqm building
Stage 3: 2300 sqm building

Solution

Bosch FHP W:W geothermal heat pumps for radiant floor heating and cooling .

Stage 1 2 x WW360 100KW
Stage 2 2 x WW420 120KW
Stage 3 1 x WW180 52KW

Bore field of 42 by 100m deep holes for the heat exchange circuits

Geoexchange district heating and cooling for the whole campus, eventually 4 buildings

Outcome

- > Comfortable heating and cooling with stable temperatures in the range of 20 - 26C. through extremes of weather
- > Energy cost reduction up 75% of conventional technologies
- > First Australian school with Geothermal precinct infrastructure
- > First Australian school building to be awarded 4 Star Green Star

Meinhardt Building Science Group (MBSG) engineers designed a campus wide system to utilise renewable GeoExchange energy

