

# Free-Cooling Chillers for Data Centres

Emicon, a specialist manufacturer of chillers in Italy since 1984, have a wide range of chillers and close control units for data rooms which can utilise the cooling energy of the outside air to reduce energy consumption. HL Cooling (Aust) Pty Ltd is the exclusive distributor of Emicon product in Australia and New Zealand and can offer a cooling solution for virtually any cooling process from 5 to 2000kW. Specialist applications from -32°C glycol chillers to applications with 55°C ambient conditions are all designed and specified by factory based engineers. Emicon products are manufactured with high quality components from world leading companies such as Bitzer, Carel, Copeland, Alfa-Laval and Danfoss.

Emicon has been supplying product for many years to customers such as British Telecom, Alitalia, IBM, Olivetti, Bosch, Telecom France, BMW, Mercedes Benz and the Grand Louvre in Paris to name a few.



Free-cooling is available in air-cooled chiller sizes from 50–800 kW utilising R134A refrigerant. Free-cooling commences when the ambient temperature is 2°C below return temperature water. A 3-way valve is activated and diverts returned water from the process to an auxiliary coil which utilises an increasing proportion of condenser fan power, instead of compressor motor power, to cool the fluid as the ambient temperature reduces.

For example, a chiller operating at water temperatures of 10°C leaving and 15°C returning would start to reduce the energy consumption at an ambient of 13°C and 100% free-cooling operation would be available at around 1°C ambient. Producing 750kW of cooling from only 24kW of condenser fan energy is extremely energy efficient.

At an ambient of 7°C, the chiller can run on approximately 50% energy input with free-cooling technology.

Applications such as Data Centres which operate 24/7/365 can benefit from substantial savings on energy due to the stored power of the available ambient temperature.

The close control units are equipped with an additional coil, which, when coupled to an external fluid cooler, allow the

energy saving production of cold water using the external temperature. The free-cooling function utilises the reduction in external temperatures to give increasing energy savings.

Installations in climates with low ambient temperatures can benefit to a greater extent.

Creating thermal storage using large water tanks is a further method of reducing energy costs. This is realised using the colder ambient temperatures at night together with lower off peak energy tariffs.

The other added benefit of stored capacity is that if a short term cooling outage occurs, server equipment can be kept running whilst back-up cooling capacity is activated as server room temperatures increase dramatically in a very short time.

Server shut-downs due to lack of cooling are very expensive and can sometimes lead to hefty penalties to operators.

A well designed, energy efficient cooling system which complies to local energy regulations and future CPRS and carbon trading law consideration should be an important factor in your buying decisions.

**For more information, contact John Symons of HL Cooling (Aust) Pty. Ltd on 03 9310 5741, [john@hlcooling.com.au](mailto:john@hlcooling.com.au) or visit [hlcooling.com.au](http://hlcooling.com.au).**