

EcoMESH Case Study #1 - Adiabatic cooling of air on a chiller condenser 13th Dec. 2014

The objective of this case study is to corroborate international studies that show adiabatic cooling can create a wet bulb/dry bulb variance of up to 25% (eg Yang, Jia et al. "Application of water mist pre-cooling on the air-cooled chillers" Eleventh International IBPSA Conference, Glasgow, Scotland, July 27-30, 2009)

Case Study Site: Air Cooled Carrier Chiller (Model 3ORA, 25 kW) located at SA State Records Gepps Cross, Adelaide

Case Study Method: Use Micro Lite USB temperature loggers to measure the dry bulb ambient and air-on-condenser temperatures, then transfer the data to a spreadsheet and chart the results.

Fig. 1 Carrier chillers located in a north-west compound with corrugated walls and roof that is heated up by afternoon sun



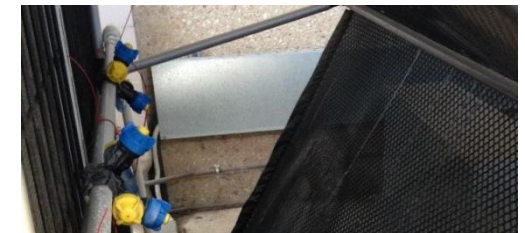
Fig 2 Carrier chiller 1 with a 1.2 m EcoMesh and dual sprayers installed



Fig. 3 Ambient data logger mounted on top of cabinet



Fig. 4 Air on condenser data logger mounted in centre of mesh



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Case Study Conclusion: We measured a significant cooling effect at the centre of the mesh – up to 14 degrees at an ambient of 39 C. This study can be further improved by measurements along all the mesh sets mounted along a 250kW chiller. A record of compressor current draw – with and without cooling – would be useful to measure actual energy savings.

