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Adiabatic required on CO2 systems in California

California Title 24 energy code currently requires CO2 Condensing units to use adiabatic cooling in most California climate zones. Some may claim that adding adiabatic to a CO2 system adds unnecessary costs and complexity to new installations. As a manufacturer of CO2 equipment for more than 10 years, Refplus disagrees.

Refplus believes that the best way to achieve efficiency, reliability and still keeping the system simple on both design and maintenance fronts is to use adiabatic cooling. It is not as complex as some may be led to believe. This is especially true in California's warmer, drier climate and on condensing units since there are less or limited applications available to benefit from transcritical operation such as all sorts of heating (parking, offices, water, dehumidification, etc.) vs a rack.

One comment Refplus would like to convey is that we find the 165 BTU/W specific efficiency in adiabatic mode unrealistic for condensing units. Although it may be better suited for remote gas coolers, them using larger coils vs lower HP, the condensing units are smaller and thus pass this specific efficiency rating with greater difficulty as the HP/coil size ratio is traditionnally higher. Reducing HP inevitably reduces airflow and heat rejection capacity, resulting in lower capacity at peak conditions, higher peak energy demand and higher compressor overall energy use and cost. Refplus would appreciate that the 165 BTU/W be investigated to better fit the condensing unit reality. Thank you very much for your attention.