The Maximum Potential Energy Savings from Optimizing Cold Deck and Hot Deck Reset Schedules for Dual Duct VAV Systems

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Simultaneous heating and cooling are reduced with optimizing cold and hot deck reset schedules in dual duct constant volume systems. In a Variable Air Volume (VAV) system, instances of simultaneous heating and cooling decrease by reducing total airflow, as the load decreases. When operating at minimum airflow, the VAV system becomes a constant volume system. Therefore, optimizing the reset schedule of the hot and cold deck temperatures may be able to decrease simultaneous heating and cooling for a VAV system.

Physical models have been presented for the maximum potential thermal energy savings from optimizing the hot deck and cold deck reset schedules for dual duct variable air volume systems. The maximum potential savings can be determined by using these models combined with basic system operating parameters and bin data. The system performance can be evaluated by comparing the actual savings with the maximum potential savings. The energy savings from optimal cold deck and hot deck reset schedules in multi-zone buildings should be at least 75% of the maximum potential savings.