

SmartCool Algorithm Deployment Guide

1. Target Project Profile

- Number of chillers: ≥ 5
- Annual chiller energy use: ≥ 2 million kWh
- Floor area: $\geq 1,000,000$ sq. ft. (preferred: $\geq 1,500,000$ sq. ft.)

2. Deployment Procedure

1) Simulation Stage

Using historical operational data (1–3 cooling seasons; required data listed below), the SmartCool algorithm is retrospectively evaluated to estimate potential energy savings.

2) Pilot Deployment

SmartCool is operated during randomly selected half of the time periods, while the existing control strategy is applied during the remaining periods. The difference in energy consumption is used to quantify the actual energy-saving potential.

3) Long-term Deployment

3. Data Requirements for Algorithm Deployment

3.1 System and Equipment Information

1. Chiller plant system diagram
2. Rated electrical power and rated cooling capacity of each chiller

3.2 Sensor Data List

Variable	Unit	Description
chiller_Tchw_in	°C	Chilled water return temperature
chiller_Tchw_out	°C	Chilled water supply temperature
chiller_Tcw_in	°C	Cooling water return temperature (entering the chiller)
flow_chill_list*	m ³ /hour	Chilled water flow rate
flow_cool_list*	m ³ /hour	Condenser water flow rate
chiller_power	kW	Chiller power consumption

pump_power	kW	Chilled water and condenser water pump power consumption
CoolingTower_power	kW	Cooling tower power consumption

*: If flow meters are unavailable, pump rotational speed and rated flow rate are required to estimate chilled water and condenser water flow rates.