



Smart CAC System -Overview of control system of CAC System

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- Better Energy Efficiency
- Better Thermal Comfort

More Convenient and Reliable Operation and Maintenance

Source of Video: https://www.youtube.com/watch?v=-F9H_GWX6dk&list=WL&index=4





02 How to get a Smart CAC System

03 Brief Introduction about CAC Control System

- Smart Sensors
- Optimized Algorithm
- Integrated Management System





Why we need Smart CAC System



How to get a Smart CAC System

03 Brief Introduction about CAC Control System

A Typical CAC control system





Traditional mechanical control system

- Electronic control system
- > DDC, PLC control system



DDC



Control Algorithm in CAC System 「」「」「」」「中国能源建设集团广东省电力设计研究院有限公司 CHINA ENERGY ENGINEERING GROUP GUANGDONG ELECTRIC POWER DESIGN INSTITUTE CO., LTD.

- Digital Control: On/off control
- > Analog Control:
 - PID Control
 - Fuzzy Logic Control
 - Neural Network

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- Chiller System:
 - Startup sequence: start cooling tower fan \rightarrow start cooling water pump \rightarrow start chilled water pump \rightarrow start chiller;
 - Stop sequence: Stop chiller → (delay 5 minutes) → stop chilled water pump → stop cooling water pump → stop cooling tower fan.



- > AHU Control Sequence in the VAV system
 - Start sequence: open the fresh air valve → open the return air valve → start the supply air fan → open the exhaust air valve → start the return air fan → open the chilled water / hot water regulating valve → open the humidification valve (start the humidifier).
 - Shutdown sequence: close humidification valve (humidifier shutdown) \rightarrow close chilled water / hot water regulating valve \rightarrow stop return air fan
 - \rightarrow close exhaust air damper \rightarrow stop supply air fan \rightarrow close fresh air valve, close exhaust air damper, stop return air damper.

- With a Smart CAC control system, we can set the control system
- in different mode during pandemic, post pandemic and resume to
- normal
- Fresh Air Volume will be different in different mode
- > Other Sanitize measure Such as UVGI, Ionization will be

operated accordingly and automatically

Measures to Achieve Energy Efficiency in a Smart CAC System

- Smart Sensor, such as human movement sensor to detect if there is human in the space and control the system accordingly
- VFD technology to reduce energy consumption when the system is not operated at the design condition
- Optimize the control algorithm to make the system to be operated at desired and stable state
- Integrate the control system with the building automation system to achieve whole building energy efficiency



Thank You

