ADB

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Smart CAC System

-Overview of control system of CAC System

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2021.09

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Why we need Smart CAC System

- 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

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How to get a Smart CAC system

- Smart Sensors
- Optimized Algorithm
- Integrated Management System

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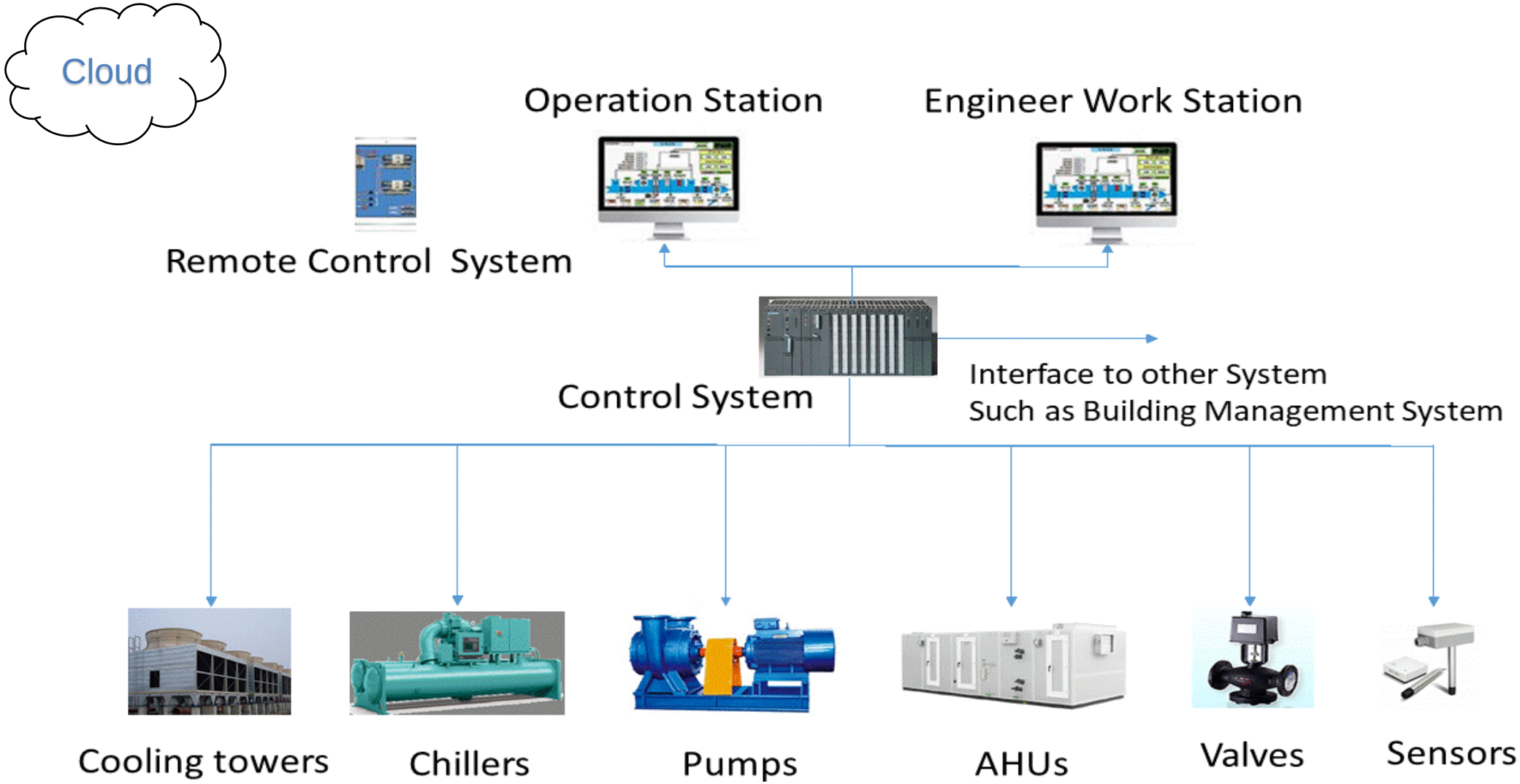
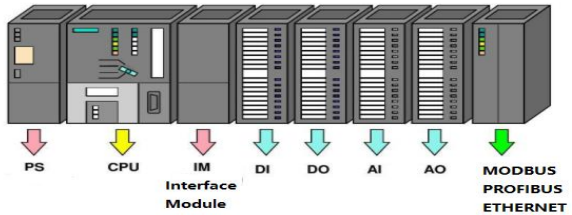
A Typical CAC control system



Hardware used for CAC system

- Traditional mechanical control system
- Electronic control system
- DDC，PLC control system

DDC



PLC

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

- Chiller System：
  - Startup sequence: start cooling tower fan → start cooling water pump → start chilled water pump → 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) → close chilled water / hot water regulating valve →stop return air fan → close exhaust air damper → stop supply air fan → 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