



FUCA

FOCUS ON BUILDING REFRIGERATION ENERGY CONSERVATION
AND CLEAN ENVIRONMENT CONTROL

FUCA AUTOMATION TECHNOLOGY CO.,LTD

2023

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PROFILE**

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1

PART

ONE

**ENTERPRISE
PROFILE**

TWO MAJOR BUSINESS SEGMENTS

Focus on building energy saving and clean environment control



SCALE

The leader in the field of HVAC automatic control

8000+
user

20000+
project

350 People
staff

400million
Annual revenue

billion

Revenue target for the next
three years

FUCA

**TUYOU
ENVIRONMENTAL
ENERGY**

Full-life EPC delivery

**FUGA
INTELLIGENT
TECHNOLOGY**

Smart product research and
development and production

**GUANFU
CONSTRUCTION
PROJECT**

Project management and project
implementation

- Established Fujia Intelligent Technology, Tuyou Environment Energy and Guanfu Construction Project, focusing on intelligent product research and development, scheme design and project implementation, enabling the industrial chain, landing construction and industrial full-life energy management system integration services.

BRAND ABILITY

Focus on 20 years of deep cultivation, to create a model project

The first domestic

Guangzhou metro project is the first in China
The average annual energy efficiency ratio is > 6.0

National typical

Typical case of key energy conservation technology application of the National Energy Conservation Center

International leading

Ningbo Metro Project
Industry indicators delivery commanding heights
The average annual energy efficiency ratio is 6.93

Global awards

The Paulson Sustainability Award

Specialist, special and new

In Jiangsu Province in 2022

- Golden Bridge Award- -Excellent Project Award
- Top Cup of the Master Award-Excellence Award
- The Blue Sky Cup Outstanding Energy-saving Technology Award
- Blue Sky Cup continuous energy-saving operation Award
- The Urban Rail Transit Science and Technology Progress Award
- The Best practice case of energy conservation in public buildings of Tsinghua University
- National electronic energy saving and environmental protection excellent recommended product technology

BUSINESS RESULTS

20 city
77 circuit
1100+ site

rail transit

200+

Construction
building

3000+

Second class hospital
or above

500+

Electronic factory

2000+

GMP pharmaceutical
enterprise

Baihetan Hydropower Station
Three Gorges Dam
Hope no. 6
Horse head camp dry hot rock

New infrastructure
Super project

DEEP COOPERATION PARTNERS

Guangzhou subway

**Domestic initiative,
international advanced**

Serving Guangzhou metro with 11 lines
Participated in the construction of the first full-line contract energy management mode project

Shenzhen subway

**The order amount is nearly
100 million yuan**

Participated in the construction of the first full-line contract energy management mode project

Nanjing subway

Serving 15 lines

Ningbo subway

Ultra-high index delivery

Industry initiative and international leading
Continuous cooperation and efficient intelligent environmental control system construction project

Golden Eagle International

**24 commercial centers
across the country**

Sinopedicine Changchun Institute

**New Coronavirus vaccine /
varicella vaccine**

An aerial photograph of a road cutting through a dense green forest. A large, semi-transparent white number '2' is centered over the image. The text 'PART TWO' is written in white, bold, sans-serif font across the road. Below 'PART' is the text 'TYPICAL CASE' in a smaller white font.

PART

TWO

**TYPICAL
CASE**

TYPICAL CASE

ENERGY CONSERVATION

Energy efficiency toward 7.0 energy saving is visible

Precise control of quantitative energy efficiency indicators
We will promote the construction of tripartite co-management of public trust

Ningbo Metro **Guangzhou Metro**

Golden Eagle International

Kefu Medical

HuiyuPharmaceutical

CLEAN

Clean visible

High standard, super precision control
For the safety of product production escort

National medicine

Changchun Youth competition

pharmaceutical industry

Xianyang Rainbow

Big North Agricultural Group

Tiankeheda

ENERGY SAVING TYPICAL

Construction of Guangzhou Metro efficient machine room

The first domestic

 **> 6.0**

Average annual comprehensive energy efficiency ratio

 **50%**

fractional energy saving

53.5
thousand
cost

76.4
thousand
kW·h
quantity of electricity

635.6
Tons
Carbon row

▲ Individual sites save approx



Appraisal of Efficient Refrigeration System of Guangzhou Metro Underground

Station (Guangzhou, 2018)

"The project is technologically advanced, and the research results have reached the comprehensive energy efficiency ratio (including refrigeration pump) above 6.0, which is the first in China."

ENERGY SAVING TYPICAL


Construction of high-efficiency and low-carbon intelligent environmental control system in Ningbo



6.93 The industry's first

Appraisal results: The appraisal committee believes that the application of wind and water system full frequency conversion and blockchain technology of the project is the first in the industry, and the project results have reached the international leading level. It agrees to pass the appraisal and suggests the application in rail transit and more fields.

 **6.93**
Annual operating energy efficiency ratio of the refrigerator room

 **4.32**
Annual operation energy efficiency ratio of the whole system

ENERGY SAVING TYPICAL

03 Building buildings



Block A, Golden Eagle Center, Nanjing

Responsible for the implementation of 24 national Golden Eagle Festival energy projects

Energy saving rate > 35%, saving 60% of labor cost



The Xinjiekou Decki Building

Nanjing's top business center

Comprehensive energy efficiency index is > 5.5



The 23rd Shandong Provincial Games comprehensive Command Center

Energy-saving rate is > 25%

ENERGY SAVING TYPICAL

04 Other areas



Corfu medical equipment

Comprehensive energy efficiency index is > 6.0



Huiyu Pharmaceutical

The comprehensive energy efficiency index of eu phase I transformation is > 5.0
Eu phase II new comprehensive energy efficiency index > 6.0



Jinkosolar

Comprehensive energy efficiency index is > 6.0

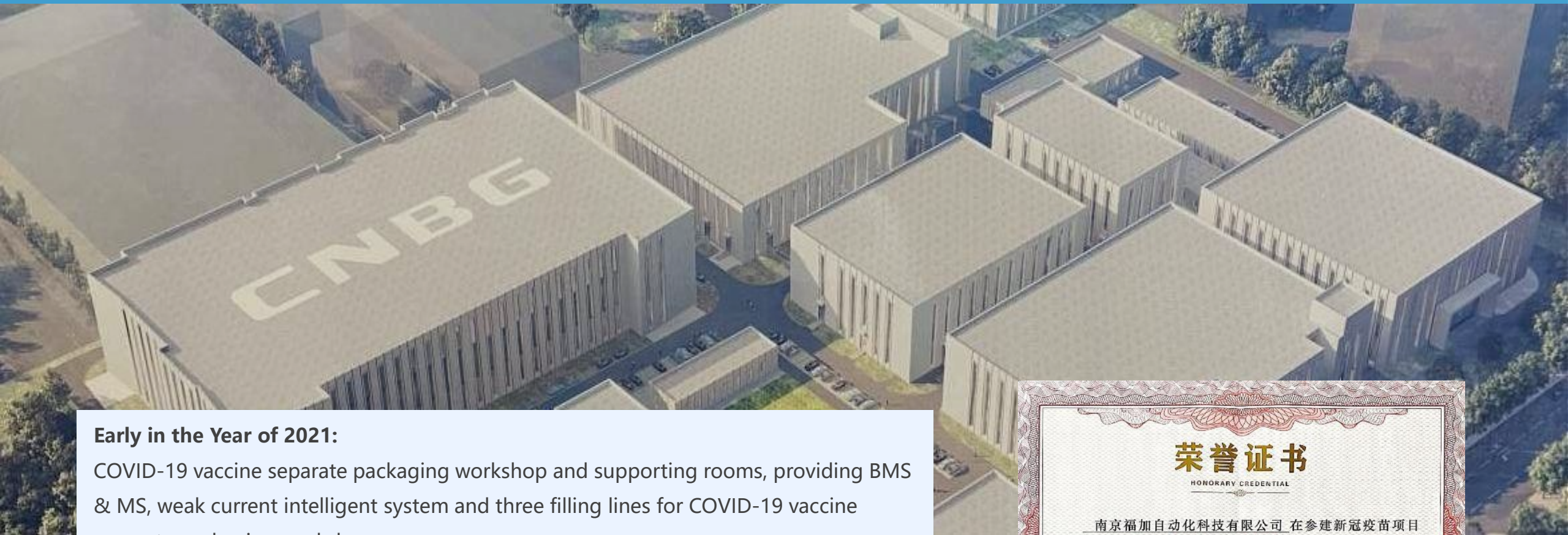


Kinsey pharmaceutical

Energy-saving rate is 44%

CLEAN TYPICAL

01 New Coronavirus vaccine workshop of Sinopharm Changchun, China



Early in the Year of 2021:

COVID-19 vaccine separate packaging workshop and supporting rooms, providing BMS & MS, weak current intelligent system and three filling lines for COVID-19 vaccine separate packaging workshop.

In June, 2021:

To continue the cooperation, to provide BMS & EMS, efficient machine room, process water and air pressure system and other centralized control system construction services.

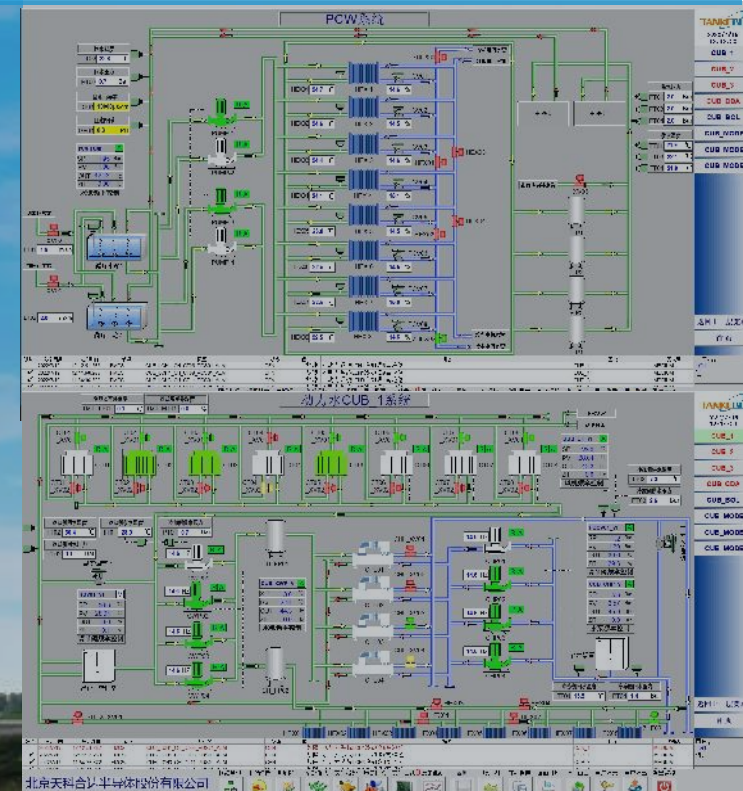
In July, 2022:

Cooperate with Changchun Institute for phase 3-varicella vaccine production workshop



CLEAN TYPICAL

02 Tiankoheda (electronic)



System construction plan

The upper centralized monitoring system includes: redundant data server, historical server construction and the construction of each subsystem workstation, so as to realize the operation data collection of the lower system and equipment monitoring.

The lower control system includes: clean and non-clean air conditioning control system, power system control, PCW / PV system control, gas room and chemical storage monitoring, plant leakage detection and alarm, etc.

CLEAN TYPICAL

03 Other areas



Xianyang rainbow photoelectric

$\pm 0.5^{\circ}\text{C} \pm 3\%$



Dabeinong Group

Agricultural research and development experimental building



Beijing nanwei

$\pm 0.1^{\circ}\text{C} \pm 2\%$



Zhao Fenghua biology

GMP workshop for live / inactivated seedlings

An aerial photograph of a road cutting through a dense green forest. A large, white, semi-transparent number '3' is centered over the road. The text 'PART THREE' is written in white, bold, sans-serif font across the road, with 'PART' on the left and 'THREE' on the right. Below 'PART' is the text 'BUSINESS SYSTEM' in a smaller white font.

PART

THREE

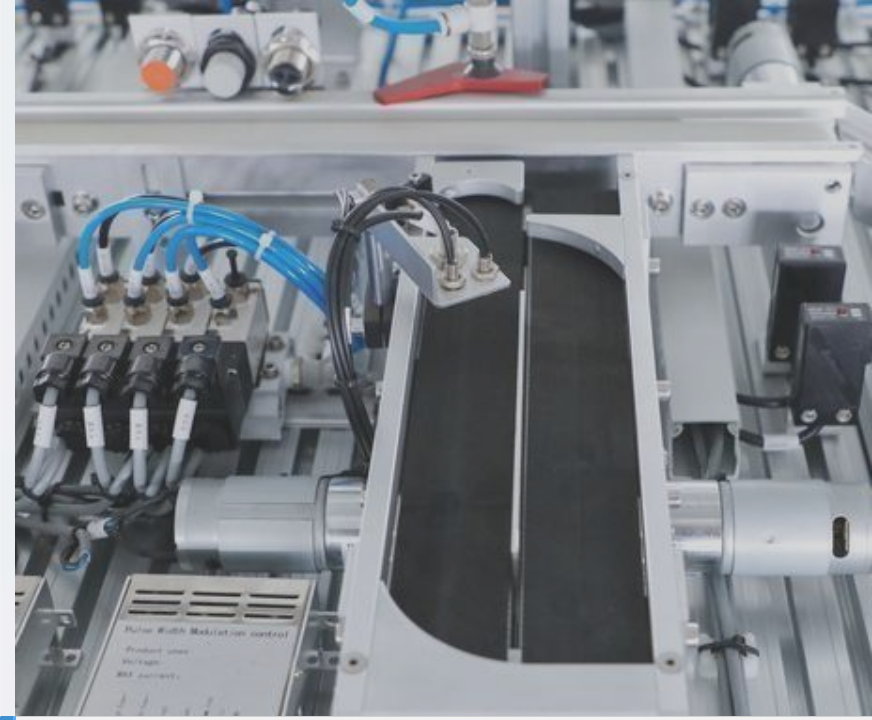
**BUSINESS
SYSTEM**



1

Building refrigeration energy saving

Efficient computer room system solution
System solutions with lower cost throughout life



core scheme



2

Clean environmental control

Pharmaceutical / hospital clean air conditioning control system overall solution electronic factory factory monitoring system solution

CORE SCHEME

01 Efficient computer room system solution

1

load

Accurate load calculations

2

equipment

Rationalize the configuration of the equipment

3

control

Efficient refrigeration and energy saving navar

4

install

Optimization of the transmission and distribution system and prefabrication of BIM engineering

5

shakedown test

Fine debugging

6

appraise

Indicator delivery
Tripartite co-management



setting unrealistic production targets



noticeable



Tripartite trust



More worry

SOLUTION FOR EFFICIENT REFRIGERATION ROOM SYSTEM

Three key technol

**Energy efficiency
simulation**

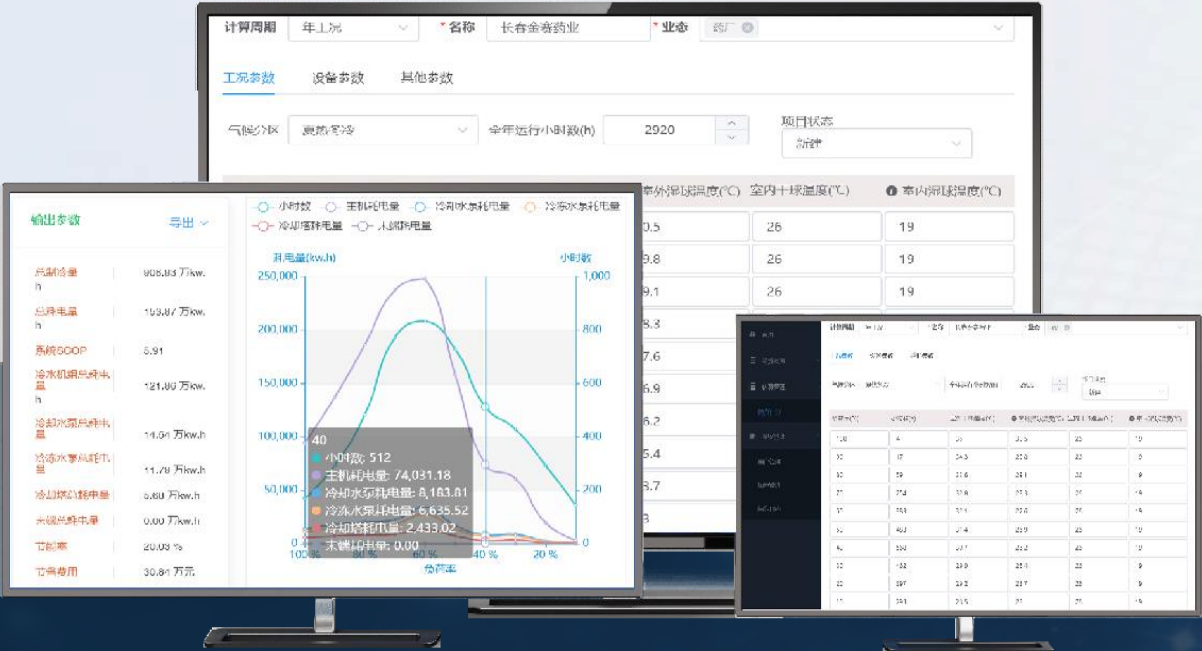
**Global active optimization
algorithm**

**Blockchain data
validation**


SOLUTION FOR EFFICIENT REFRIGERATION ROOM SYSTEM


Energy efficiency simulation


Based on 8760 hours a year
Simulation of energy efficiency of
air conditioning system




all-year
dynamic
cooling load

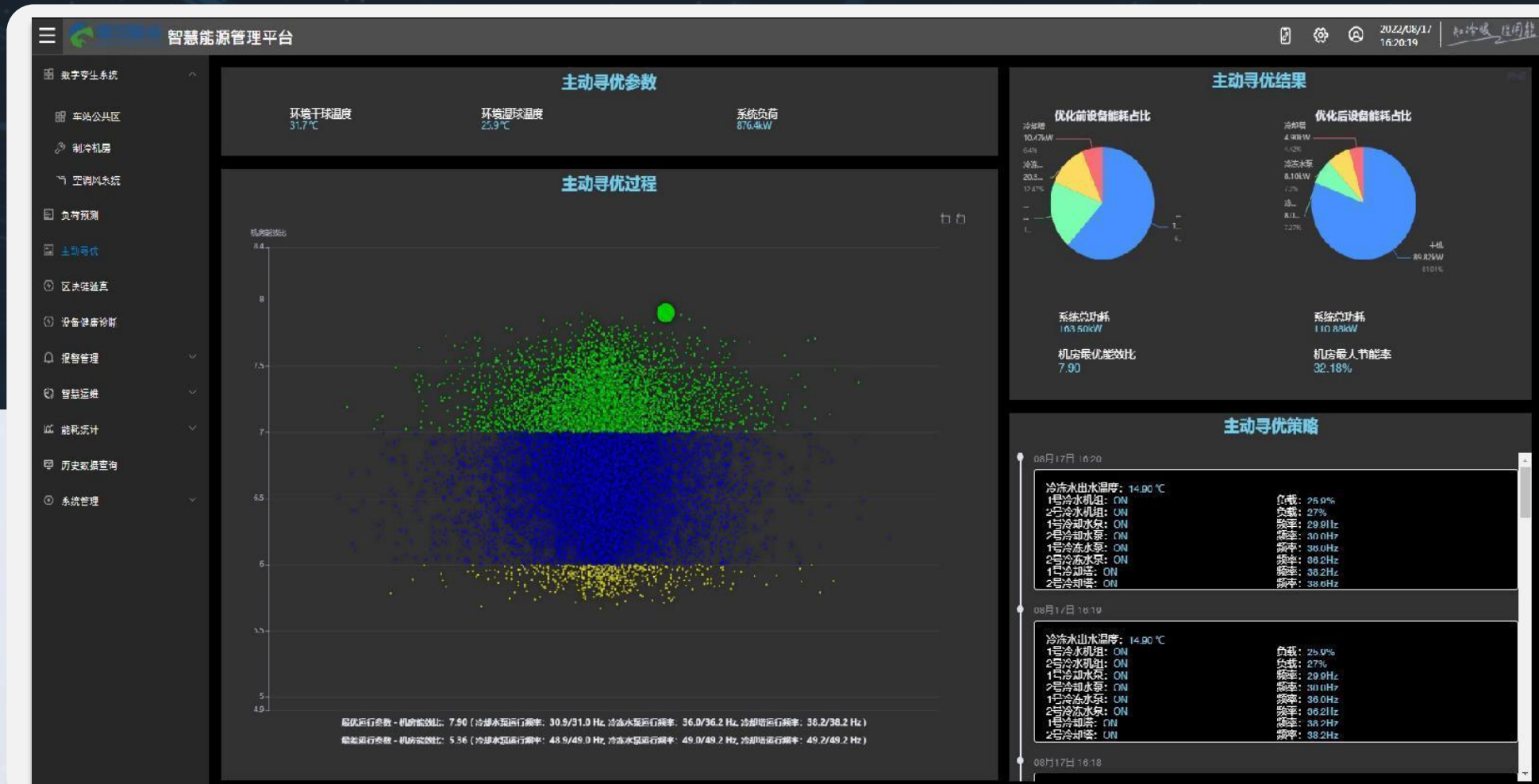

Partial load
distribution
characteristics


Develop
optimized
operation
strategy


System
energy
efficiency
and energy
saving rate

SOLUTION FOR EFFICIENT REFRIGERATION ROOM SYSTEM

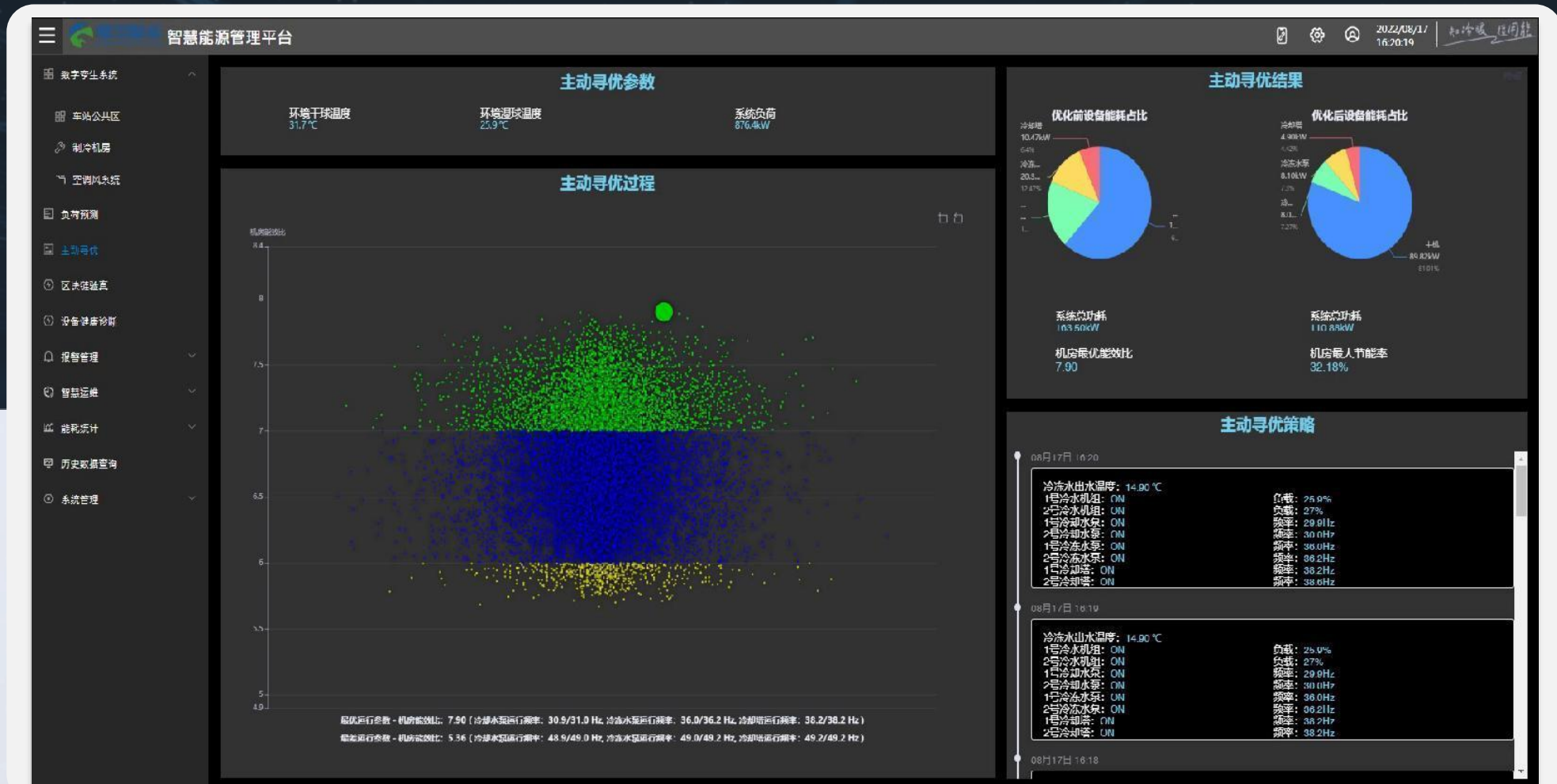
Global active optimization algorithm



Through massive data analysis, tens of thousands of times per second, Accurately track the high efficiency area of the equipment, and find the coupling point, so that the whole machine room runs at the highest energy efficiency point.

EFFICIENT COMPUTER ROOM SYSTEM SOLUTION

Core technology-global active optimization control algorithm



Through massive data analysis, tens of thousands of times per second, Accurately track the high efficiency area of the equipment, and find the coupling point, so that the whole machine room runs at the highest energy efficiency point.

EFFICIENT COMPUTER ROOM SYSTEM SOLUTION

Core product- -Smart energy management cloud platform

Visual-intuitive

Global visualization
Energy visualization
System visualization



Controlled-easy to use

real-time monitoring
autonomous system
Remote operation and
maintenance



Excellent-iteration

Optimize the analysis
optimization
algorithm
actuator



EFFICIENT COMPUTER ROOM SYSTEM SOLUTION

Core product- -highly efficient refrigeration and energy-saving control system



| function

Intelligent system integration

A 3D visual and interactive interface

Optimize the host operating conditions

Track the energy efficiency curve of each device

|algorithm

Active optimization control technology

Multivariate coupling effects

load prediction

|apply

rail transit

Mall hotel

Commercial office building

Park factory, etc

CORE SCHEME

02 System integration scheme with lower cost in full life period

Based on the financial investment and reasonable balance

Air conditioning system energy saving scheme

overall

- Whole-process design (based on the financial model)
- The whole process is executed
- Full-service (smart O & M)

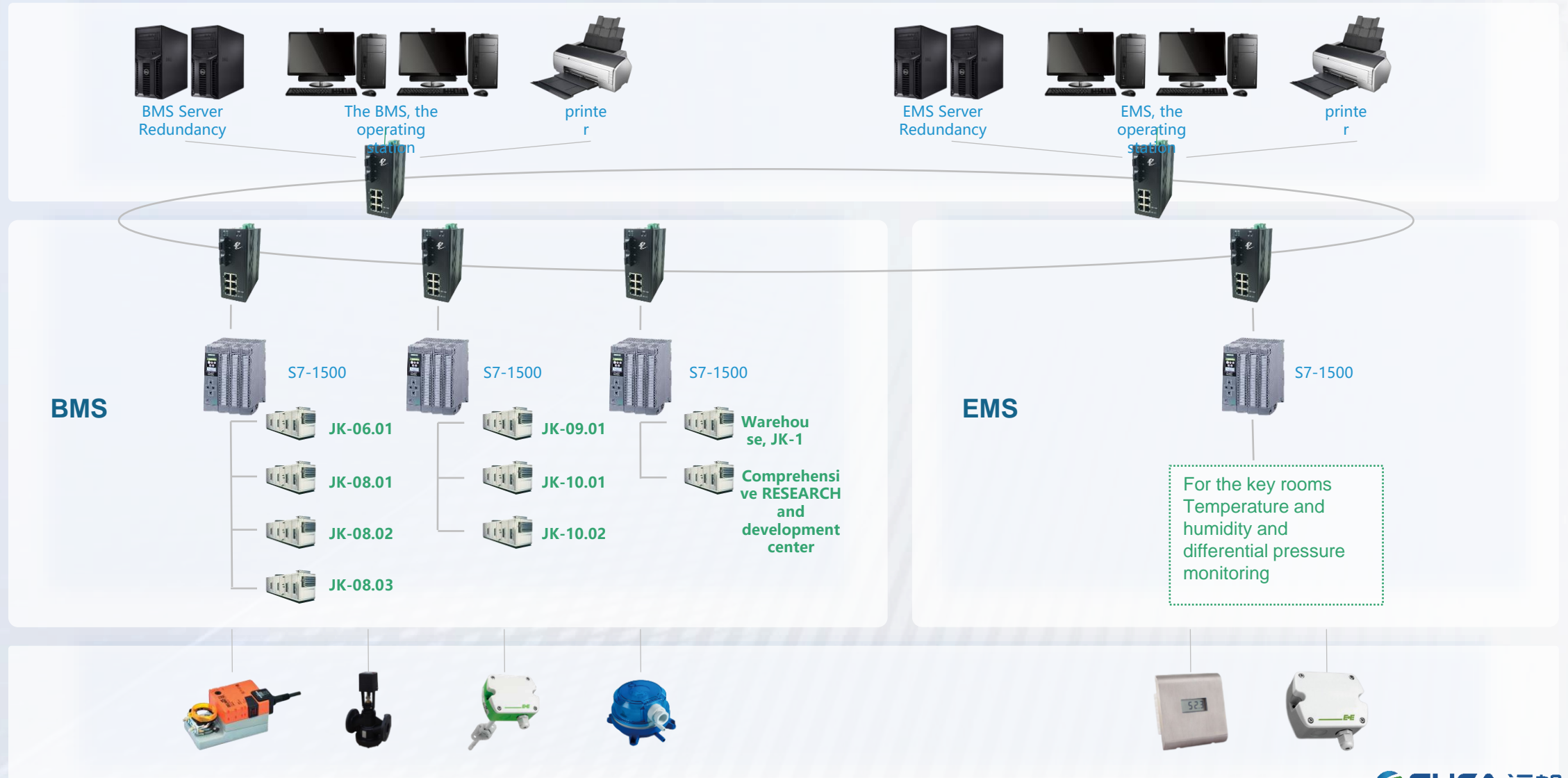
over a long period of time

- Sustainable energy saving
- The whole life period cost is lower and the benefit is higher

CORE SCHEME

03 biopharmaceutical clean air conditioning system overall solution

Monitoring layer operating network



CORE SCHEME

03 biopharmaceutical clean air conditioning system overall solution

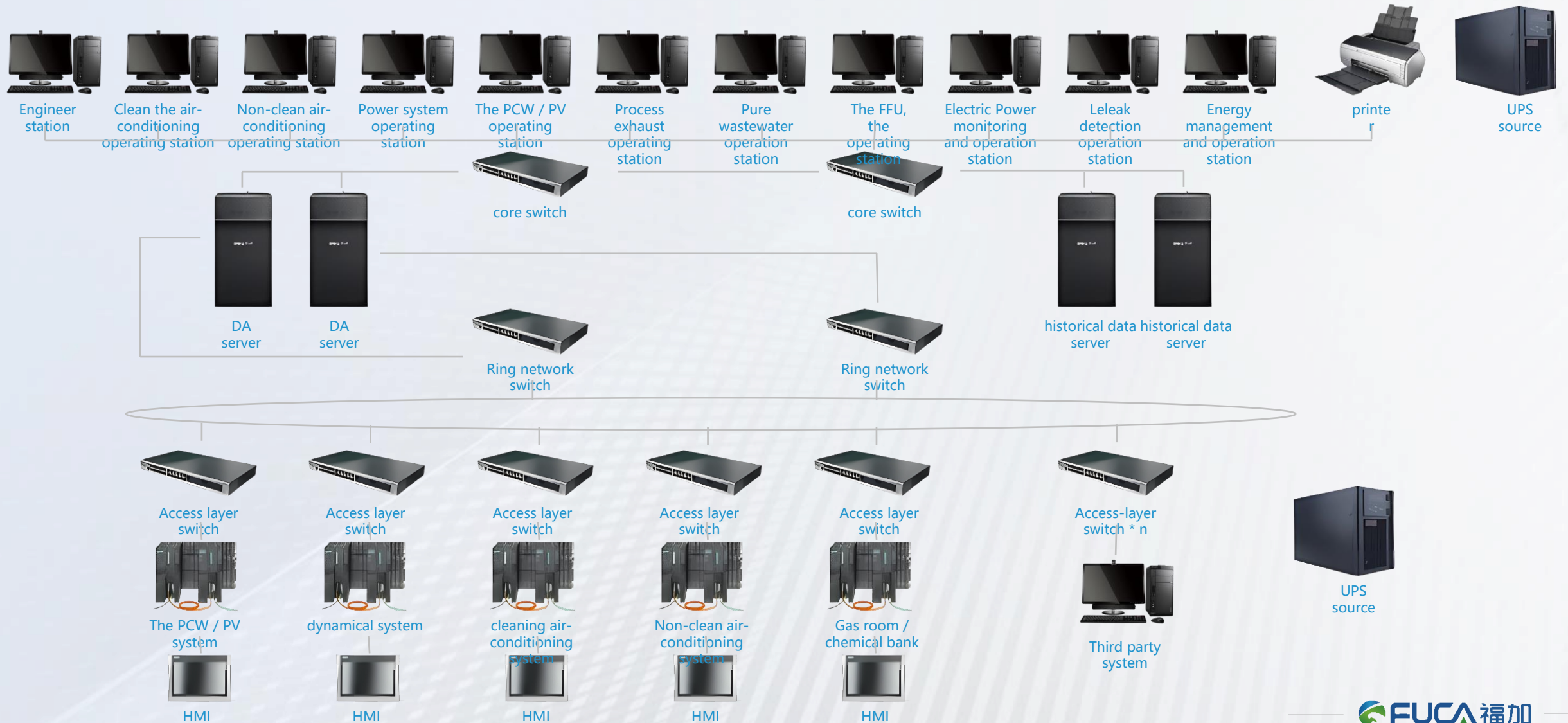
BMS, EMS construction, and verification

- The system operation is stable and reliable
- Intelligent equipment management, high operation efficiency
- Quick response, efficient implementation
- Data Storage / Data Report (platform control)
- GMP, FDA validation
- Energy consumption monitoring and energy efficiency optimization



CORE SCHEME

04 Electronic factory factory monitoring system overall solution



CORE SCHEME

04 Electronic factory factory monitoring system overall solution



**centralized
management
and control**



**real-time
monitoring**



**Abnormal
feedback**



**Intelligent
operation and
maintenance**



**Open
compatible**

The FMCS factory affairs monitoring system consists of several subsystems
Common subsystems include hvVAC, process exhaust, process cooling water, chiller, chilled water
distribution and cooling tower, boiler, air compressor, water supply and drainage, etc

CLEAN AIR-CONDITIONING CONTROL SYSTEM SOLUTION

Core product-Clean environment control system

function

Constant temperature and humidity control
Adjust air quality
Constant air supply control

Room pressure difference adjustment
Equipment interlock control
Regular boot and alarm

algorithm

Trend judgment and advance adjustment
Multi-working conditions, multi-mode application

Multivariate fitting
Ultra-high precision $\pm 0.1^{\circ}\text{C}$, $\pm 2\%$

apply

operating room
Electronic workshop
Pharmaceutical factory room

cleaning shop
Precision instrument room, etc



长春所 (新冠疫苗车间)

大北农 (农业研发实验室)

塞莱克斯 (电子)

CLOUD TUBE INTERCONNECTION PRODUCT SYSTEM

Efficient computer
room system solution

Full-life cost is lower
System solutions

Pharmaceutical / hospital
clean air conditioning
Overall solution

Electronic factory factory
monitoring
System solutions

Efficient refrigeration
and energy-saving
control system



Clean environment
control system



Energy efficiency intelligent
diagnosis platform



Smart hand box



Intelligent valve
controller



EC fan control box



BUSINESS MODE

Full-life energy tube (EPC) mode

Including design, BIM, installation, assembly, debugging, promote the promotion and application of EPC mode in professional fields, landing building and industrial full life energy management system integration services.

The EMC contract energy management model

Provide energy efficiency consulting, efficient equipment room design, overall equipment room delivery, full life period operation and maintenance, data monitoring, financial model optimization of one-stop comprehensive services, flexible investment mechanism, strong replication, effectively shorten the payback period.



An aerial photograph of a road cutting through a dense green forest. A large, semi-transparent white number '4' is centered over the road. The text 'PART' and 'FOUR' are positioned on either side of the road, and 'VALUE PROPOSITION' is written below 'PART'.

PART

FOUR

**VALUE
PROPOSITION**

VALUE PROPOSITION

节能 能效指标交付 7.0 看得见

Index delivery, tripartite co-management

Quantify the energy saving index of the whole air conditioning system, accurately control, and achieve the visible effect of users

Give full play to the traction function of the platform, promote the cloud co-management and monitoring of the three parties, and enhance the public credibility construction

FUCA VISION

**Do China's leading smart environmental energy management
Solution providers and service providers**



THANKS

知冷暖 擅用能

南京福加自动化科技有限公司
NANJING FUCA AUTOMATIONG TECHNOLOGY CO.,LTD