



Alibaba Data Center Innovations

Yeye Shen
Alibaba IDC Platform



PUE



WUE

Qiandao Lake Data Center

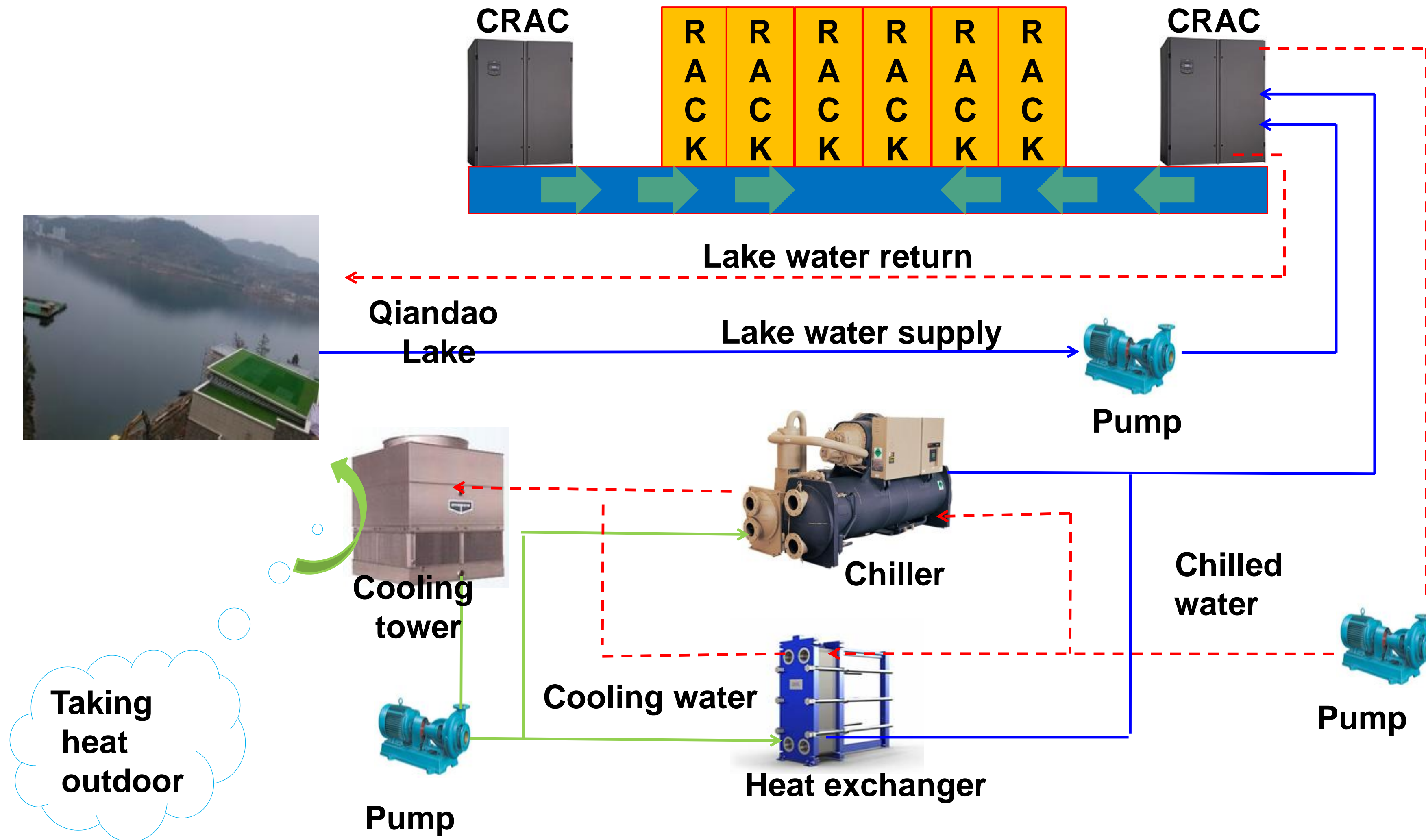


- 90% time does not require electrical refrigeration
- Average annual PUE1.3, Minimum PUE1.17
- WUE 0.197

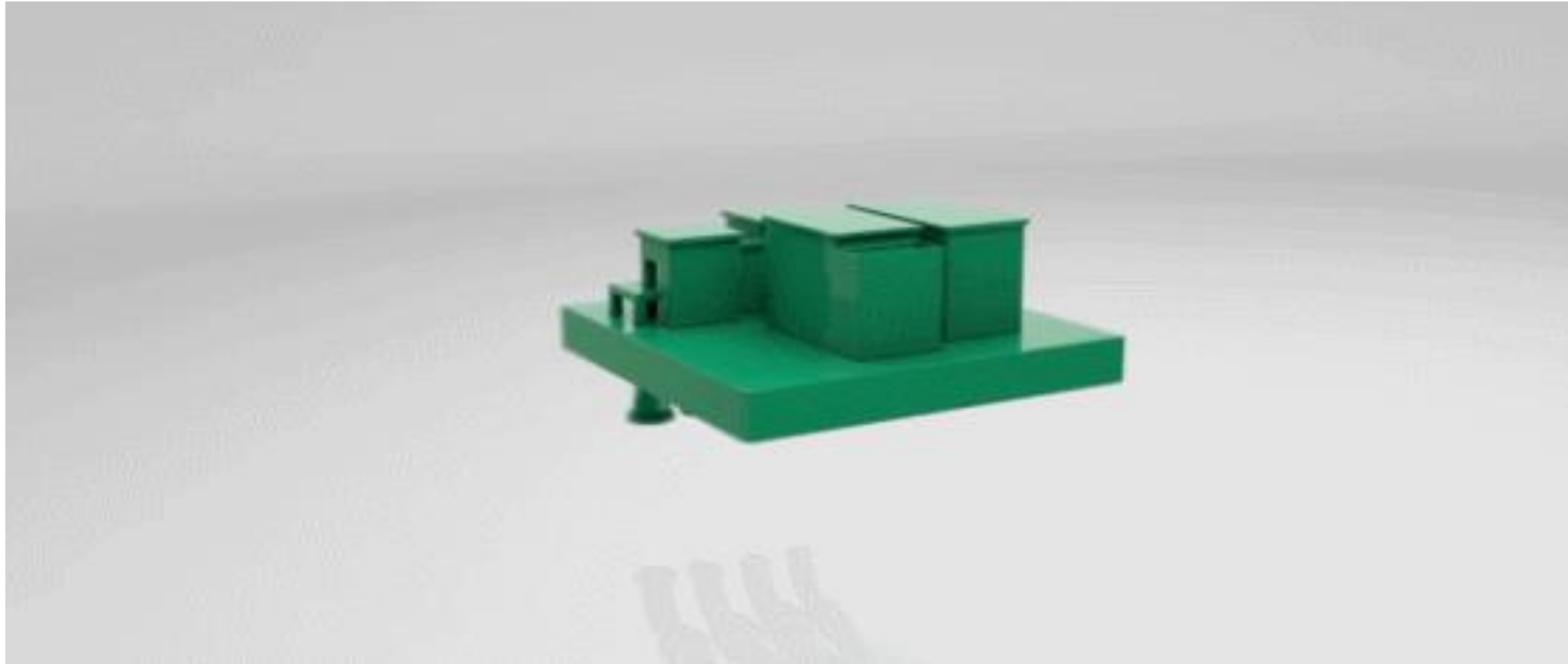




Principle of cooling system

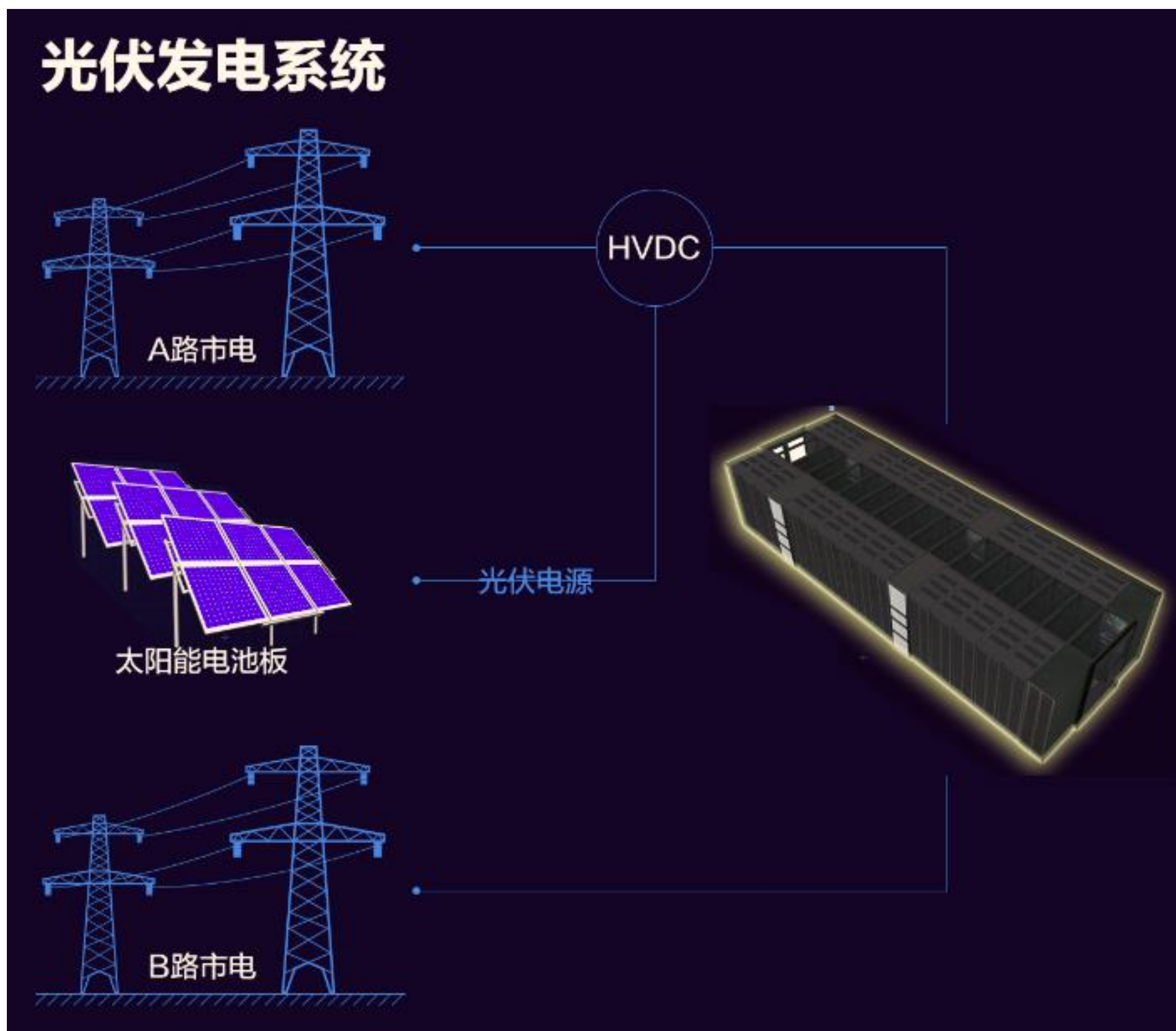


Principle of cooling system



Green Energy

- Photovoltaic system combined with 240V HVDC, to improve stability
- Heat recycling system for administrative area, energy saving



Zhangbei Data Center

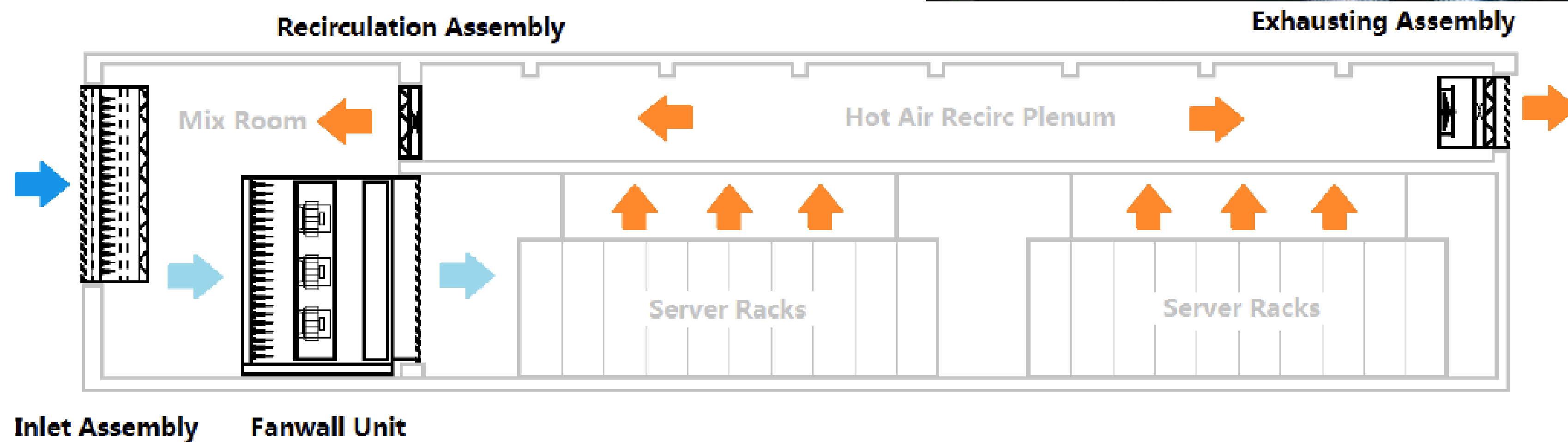
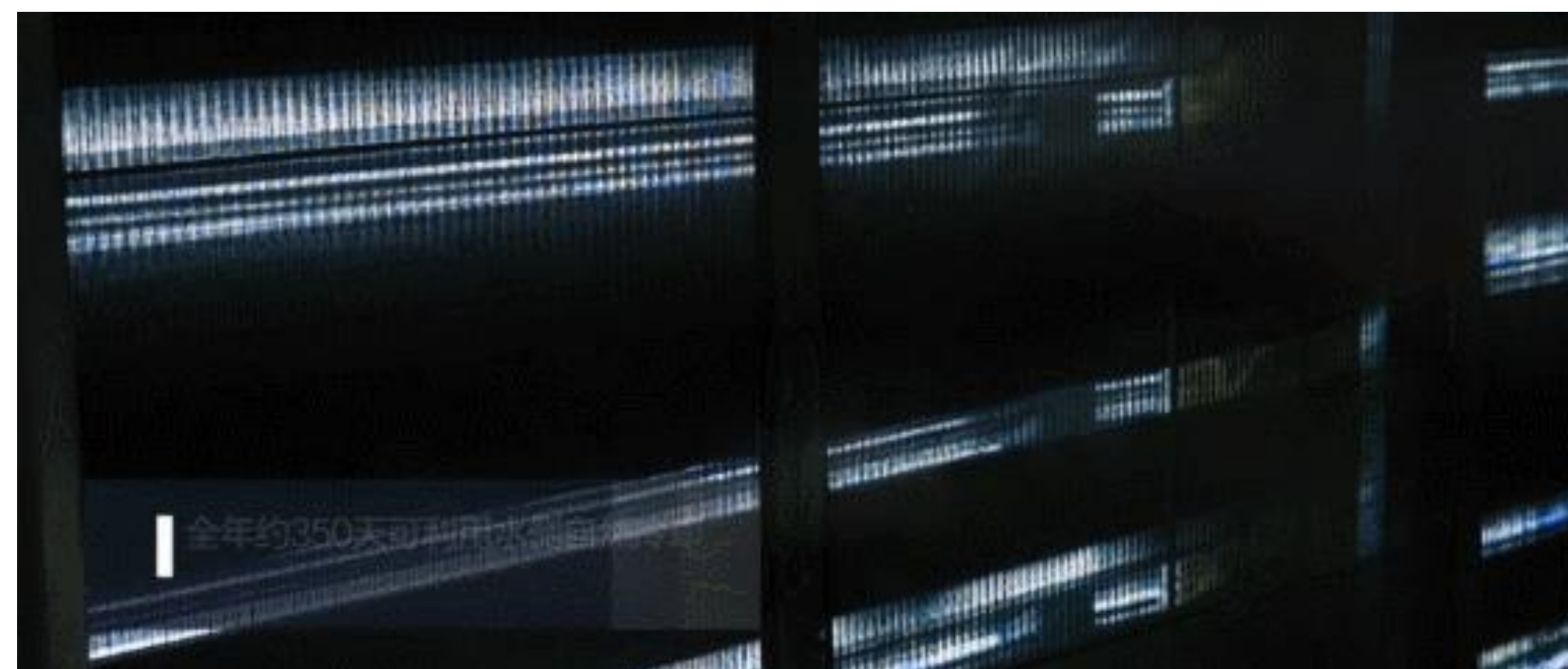


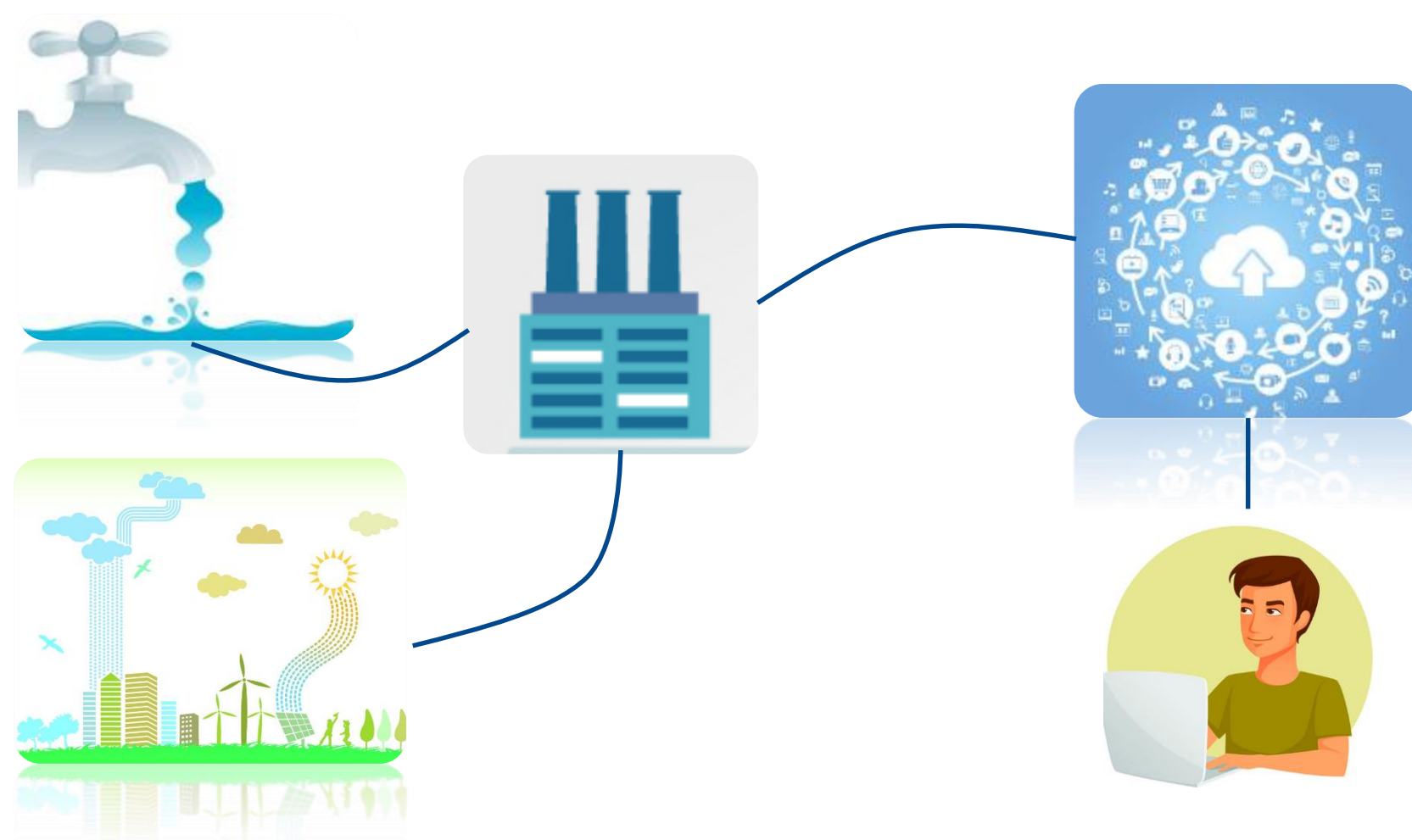
- Free cooling technology
- AC direct supply
- 240V HVDC
- Heat recycling technology

Free Cooling Technology



- Average annual PUE 1.25, Minimum PUE 1.13



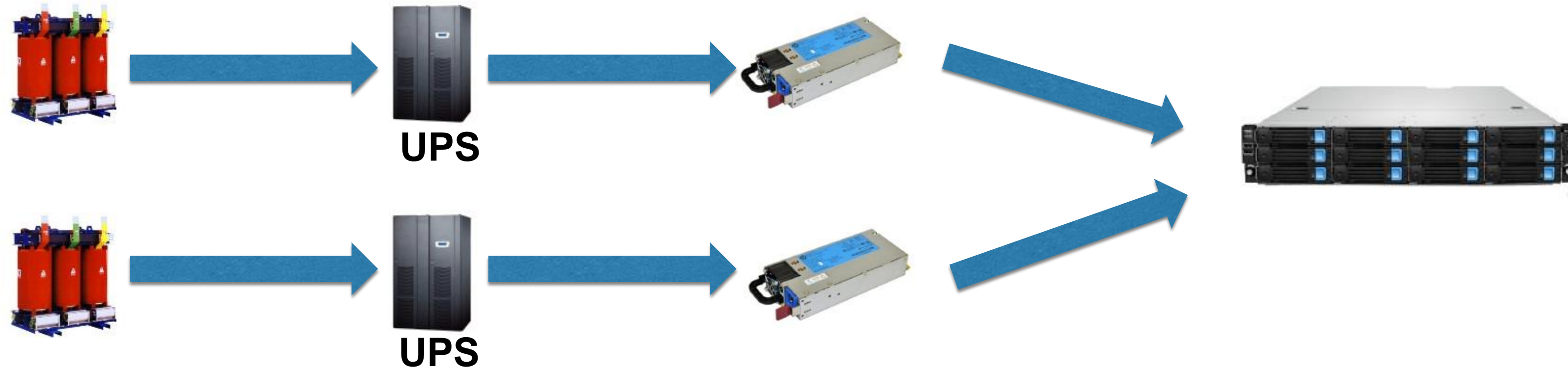


- Average annual PUE 1.25, Minimum PUE 1.13.
- Rich wind and photovoltaic solar energy in the city where DC is located.

Power Supply System

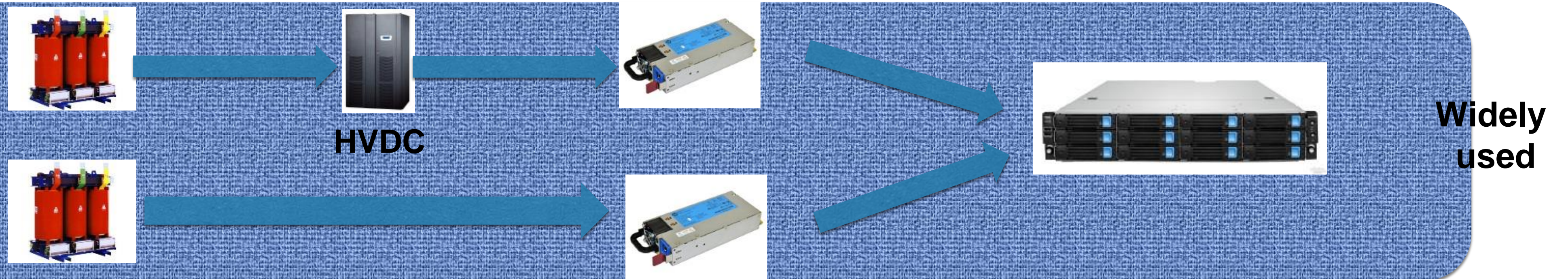
Dual UPS

Efficiency:
 $88\% \times 94\% = 83\%$



AC direct supply & HVDC

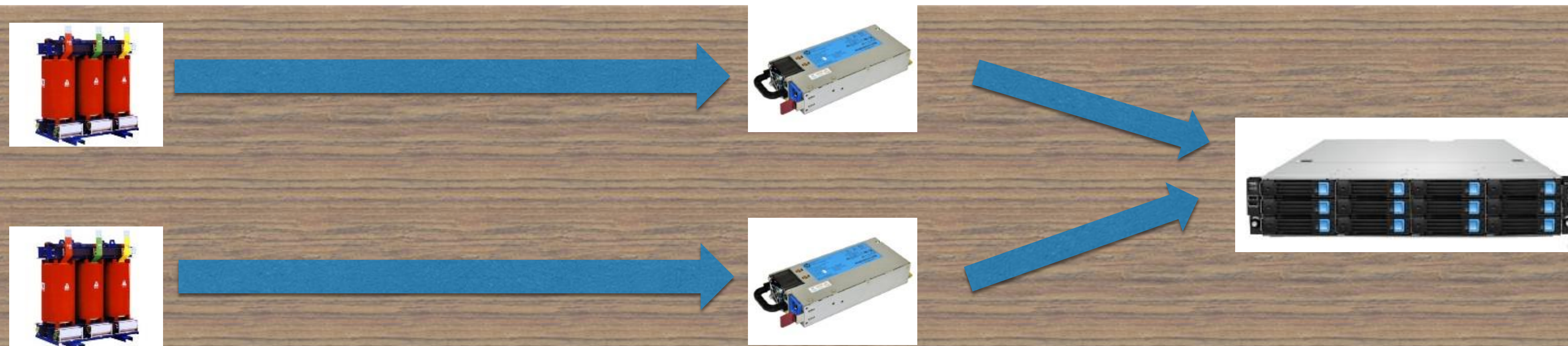
Efficiency:
 $(94\% + 94\% \times 94\%) / 2 = 91\%$



Widely used

Dual AC direct supply (BBU)

Efficiency:
94%



Small-scaled used

AC direct supply

other

other



Free cooling

Direct free cooling, indirect free cooling,
water cooling

Green energy

Solar energy, wind energy, fuel cells,
geothermal energy

Energy storage

Lithium-io battery, water,.

Thank you