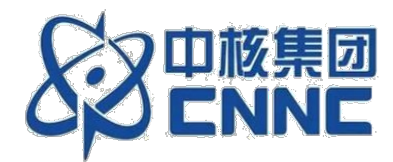


Chinese Program for Small Modular Reactors

-Status, Technology and Licensing

Hainan Nuclear Power Co., Ltd.



Nuclear Power for the Common Goals

China: 55 nuclear power units in operation

25 units under construction

10 units approved

CNNC: 25 nuclear power units in operation

15 units under construction

Low
carbon
Emission

High
energy
density

Stable
baseload
power

ACP100
(1*125MW)

HPR1000
(2*1200MW)

CNP650
(2*650MW)



Linglong-1 (ACP100)

An innovative SMR with its demonstration project under construction

Multi Applications

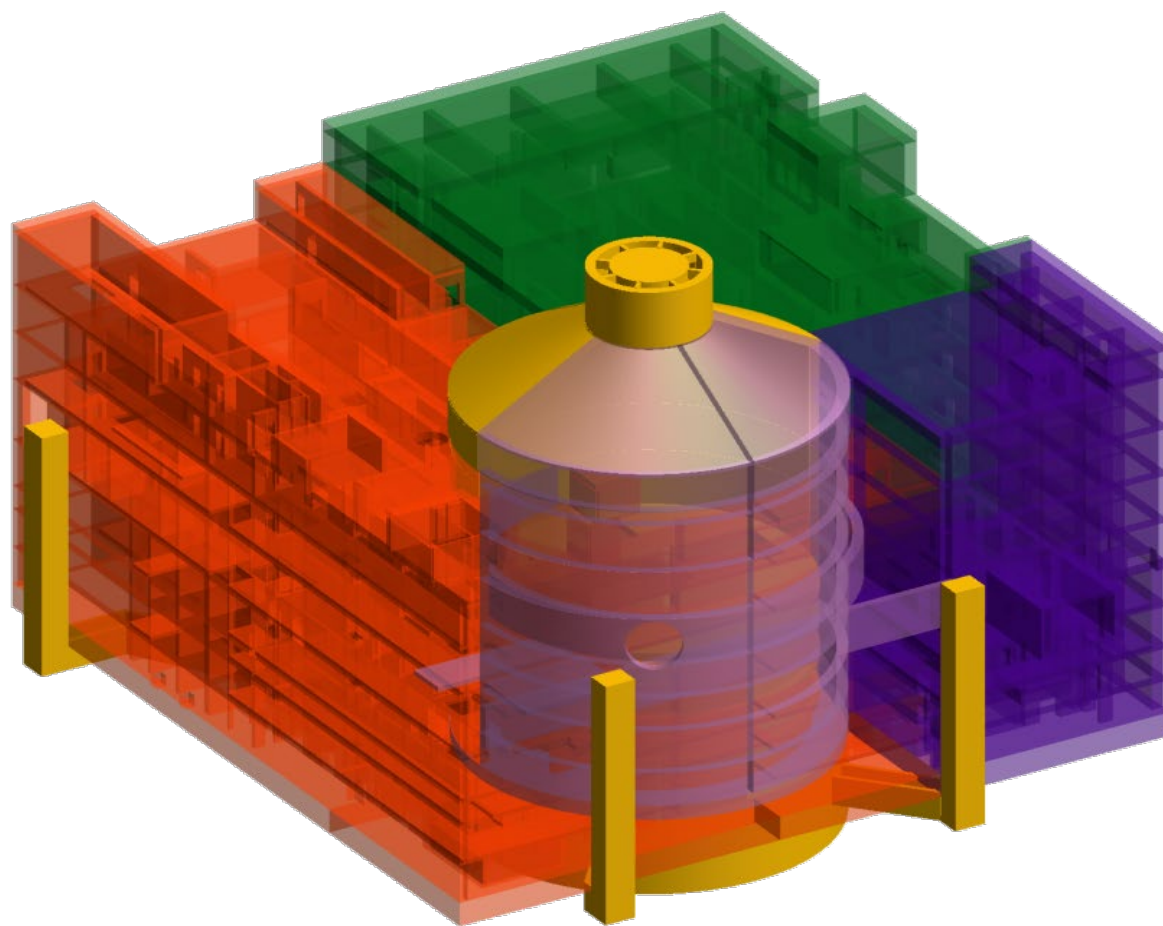
- Power Supply: easily connected to small and medium sized power grid
- Industrial Process Steam Supply
- Urban Regional Heat Supply
- Seawater Desalination

Technical Features & Parameters

- Advanced integrated reactor architecture
- Passive design of safety system
- Independently develop advanced DCS for NPP
- Modularity
- Nominal electric power: 125 MWe
- Design lifetime: 60 years
- Refueling cycle: 24 months

Changjiang Demonstration Project:
FCD: July, 2021; Placing Upper cylinder: July, 2022; Lifting Reactor Core: August, 2023.

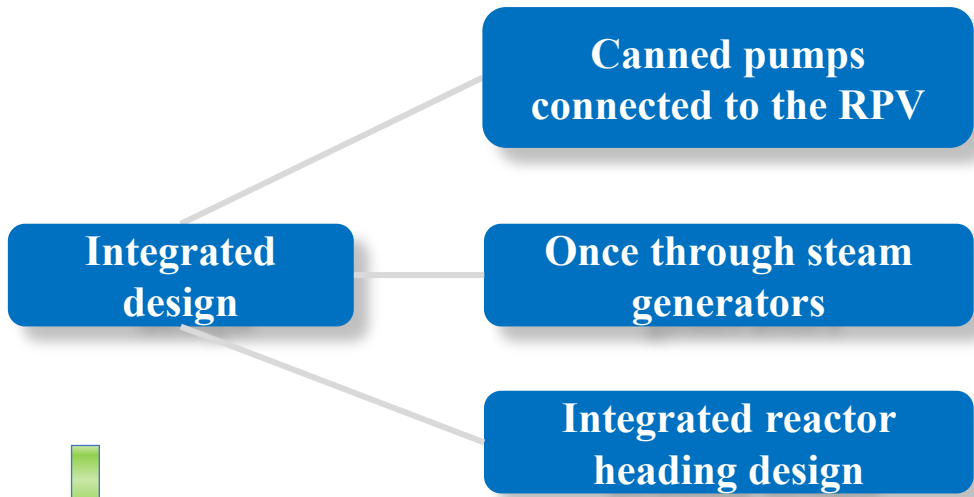
Key parameters of Linglong-1 (ACP100)



Indicator	Parameters
Thermal power, MWt	385
Electric power, MWe	125
Operating pressure of the reactor coolant system, MPa	15
Reactor outlet temperature at nominal flow, °C	319.5
Average reactor temperature, °C	303
Number of OTSG modules	16
Number of main pumps	4
Number of fuel assemblies, set	57
Refueling cycle, year	2
Number of control rod drive packages	20
Theoretical unit availability, %	> 90
SSE, horizontal peak acceleration, g	0.3
Design life span of the unit, year	60
Core damage frequency (CDF)	1E-7/reactor-year
Large release frequency (LRF)	1E-8/reactor-year

Key technical features of Linglong-1 (ACP100)

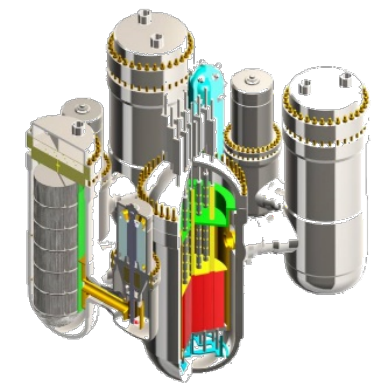
Integrated design



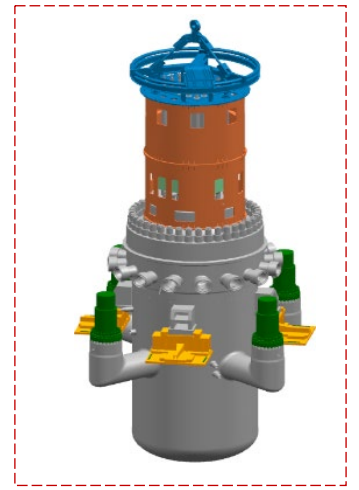
- ✓ Primary loop with high natural circulation capability, enhancing heat removal from the core during accidents
- ✓ Integrated arrangement eliminates coolant loss accidents caused by main pipeline break
- ✓ Elimination of pump shaft seal LOCA accidents



Conventional loop-type reactor



Improved reactor with a compact layout



Integrated innovative reactor

- More compact
- More advanced
- Safer

Key technical features of Linglong-1 (ACP100)

Passive safety system

Passive safety system

Passive core cooling

Passive residual heat removal

Natural air-cooled containment

Automatic pressure relief

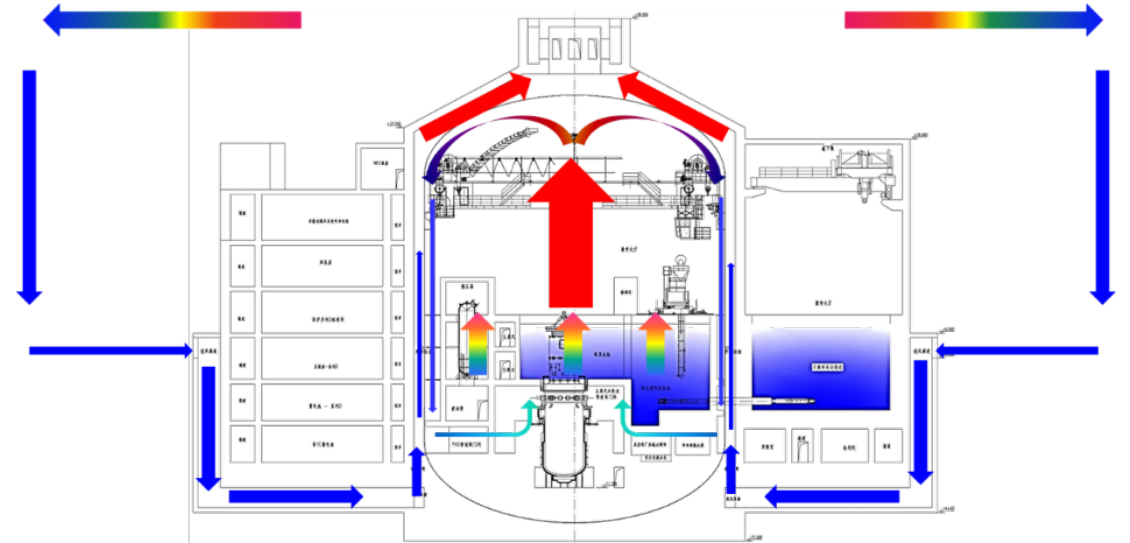
Passive Inhabitation main control room

Severe accident prevention and mitigation measures

Severe accident prevention and mitigation measures

Water cooling for passive reactor cavity

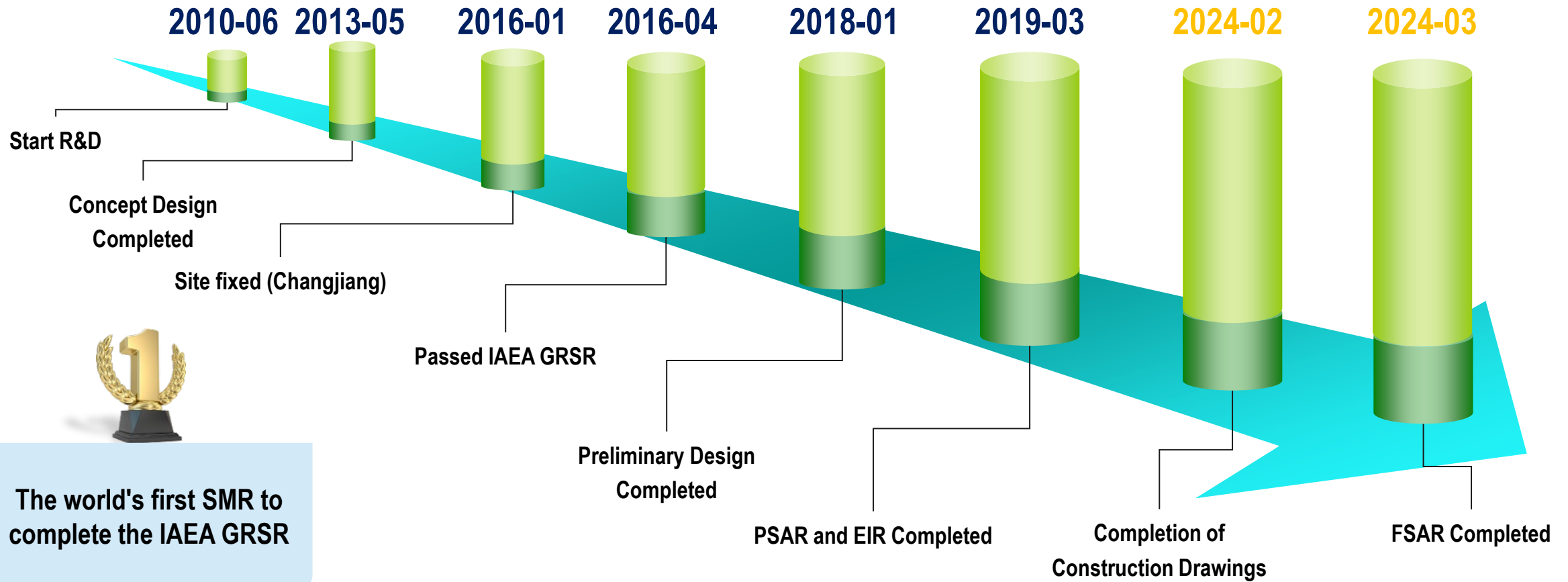
Passive hydrogen recombiner



✓ Achievement of post-accident reactor safety through **natural forces**, eliminating the need for safety-related **emergency AC power**

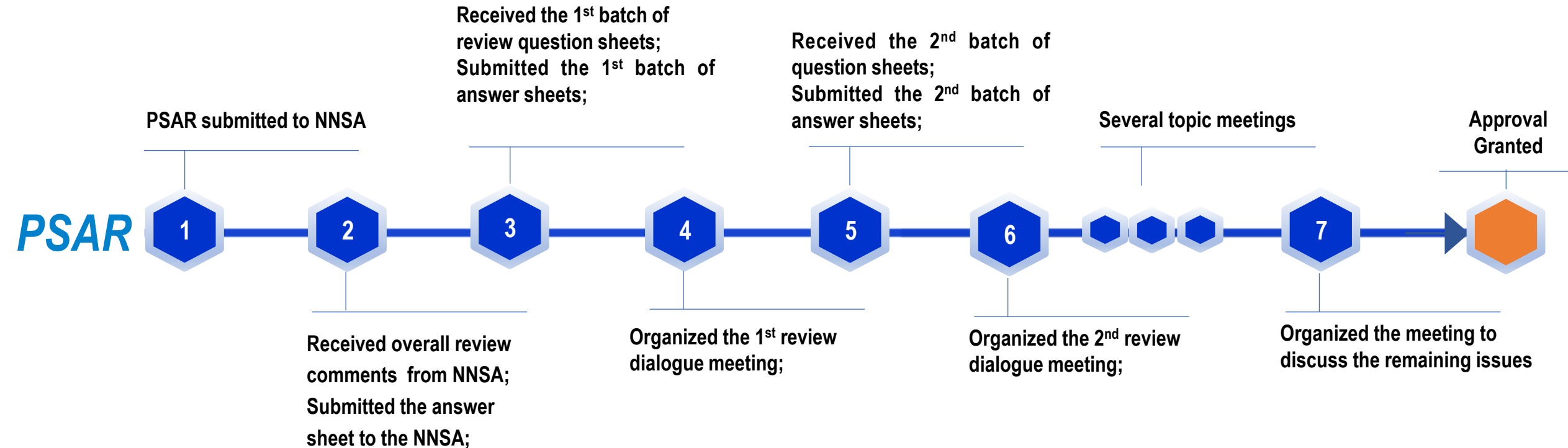
✓ No need for operator intervention within **72 hours** after an accident

Milestones of Development and Design

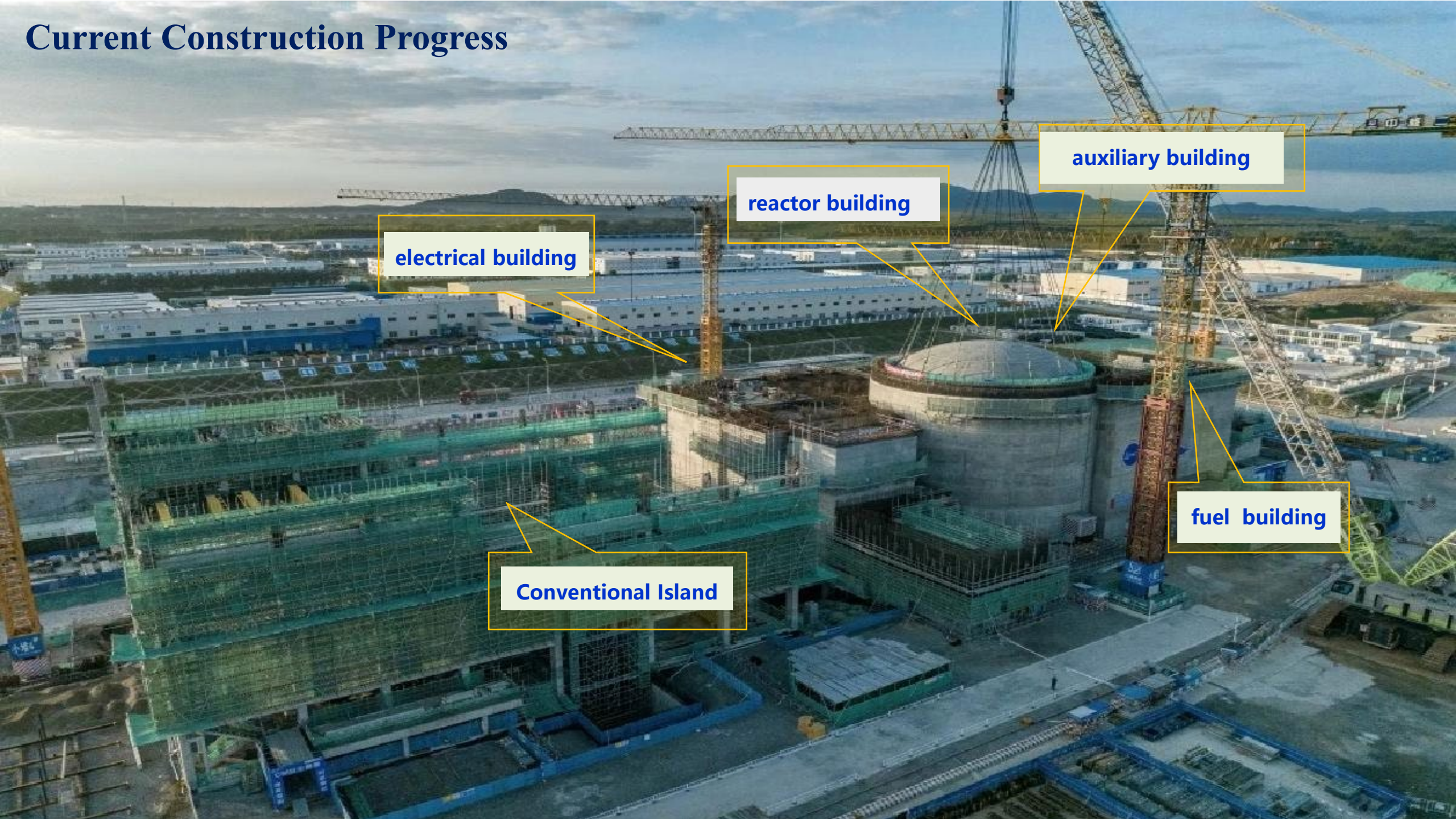


License Application Process

TYPICAL SAFETY REVIEW PROCESS



Current Construction Progress



electrical building

reactor building

auxiliary building

Conventional Island

fuel building

Current Construction Progress



ACP100 FCD
July 13, 2021



CV Bottom Head Positioned
October 24, 2021



**Hoisting of the Lower Cylinder of
the Containment Vessel**
February 26, 2022



Hoisting of the Pressurizer
July 6, 2023



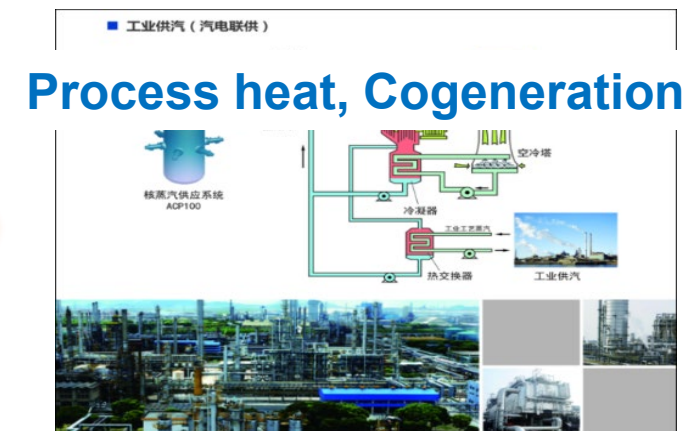
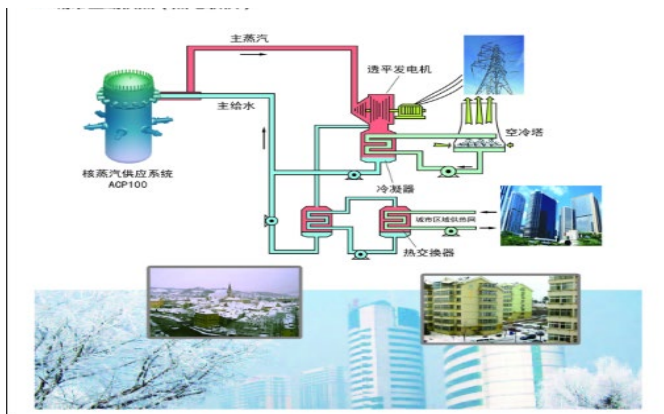
the RPV Module Positioned
August 10, 2023



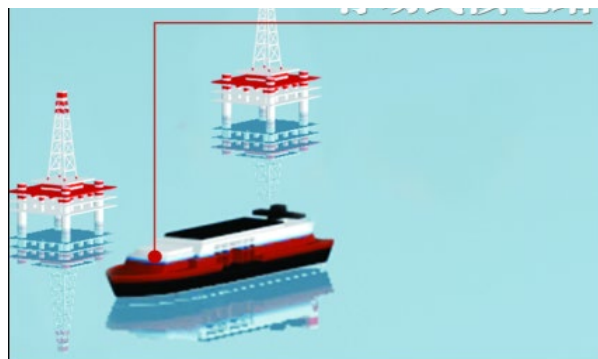
Hoisting of the CV Doom
November 3, 2023

Multiple Applications of Linglong-1(ACP100)

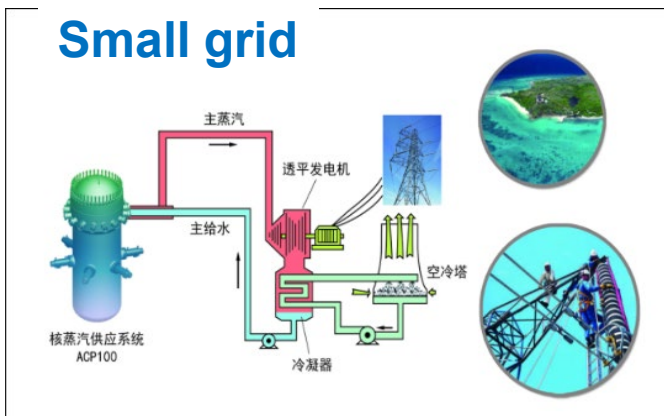
Home and city heating,
replace small thermal plant



Floating nuclear power units




Small grid



Supply Chain Management

- 
- Resilient Chinese supply chain
 - Global procurement as per Owner's requirements
 - Optimized localization content

Systematic training services

- 
- Nuclear regulatory system training
 - Nuclear power pre-project work training
 - Engineering, design, and safety training
 - Fuel procurement training
 - Project management training
 - Manufacture training
 - Operation and maintenance training
 - Simulator training
 - Commissioning training



Thank you for your attention!

