The Status of HTR-PM, a 200MWe High Temperature Gas-cooled Reactor demonstration plant constructed in China

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International Ministerial Conference on Nuclear Power in the 21st Century
Abu Dhabi, 30 October to 1 November 2017
1, Construction

- 2012/12/09 : FCD
- 2015/06/30 : Reactor plant
- 2015/12 : Full scope simulator
- 2016/03/20 : 1st RPV installed
- 2016/08 : Start fuel production
- 2016/09 : 2nd RPV installed
- 2016/10 : Reverse transmission power
- 2017/10 : 1st reactor module installed
2, Demonstration Test

- Control Rods Driving Mechanism, finished
- Small Sphere Absorption System, finished
- Control Room, finished
- Helium Circulator, finished
- Spent fuel canister, finished
- Fuel Handling System, finished
- Steam Generator, finished
Full Scale Fuel Handling System Test, 500 hours automatic operation, 7MPa helium hot condition, finished
Steam Generator tests was finished, 1/19, Primary Loop 10MWt 7.0MPa 250/750°C Helium, Secondary Loop 13.25MPa 205/570°C Steam
3, Fuel

- INET demo production facility, 100000/Year, 2010/10
- Irradiation test of fuels, Petten, The Netherland,
  - From 2012/09/08 to 2014/12/30,
  - 351 efpd,
- Commercial fuel plant, 300000/Year, Baotou, CNEC fuel plant
  - 2013/03/ started construction
  - 2016/03/ finished plant installation and commission
  - 2016/08/ started production
  - 2017/07/ 200000 fuels have been produced
4, Components

- Reactor Pressure Vessels, on site
- Metallic reactor internals, on site
- Full Scope Simulator, on site
- Distributed Control System, on site
- Reactor Protection System, on site
- Control Rods Driving Mechanisms, on site
- Small Sphere Absorption Systems, on site
- Helium Circulators, in schedule
- Fuel Handling System, on site
- Steam Generator, in final installation
Role of HTR-PM in China

- **Supplement to PWRs**, Especially to replace Coal-fired Power Plant in population dense region
- **Co-generation** of steam and electricity, Hydrogen production
- **Technology Innovation**
HTR-PM600

- 6 reactor modules connect to one steam turbine,
  - the same safety features,
  - the same major components,
  - the same parameters,
  comparing with HTR-PM demonstration plant;

- the same site footprint and the same reactor plant volume comparing with the same size PWRs.
Reduce Costs

200MWe HTR-PM Demo Plant

1×200MWe to 2×600MWe Plant

Eliminate 1st of its kind costs

Commercialized plants

40000 RMB/kWe

75%

50%

<40%
HTR-PM will provide:

- **Proven Technology and Budget;** the world first 200MWe pebble-bed modular high temperature gas-cooled reactor demonstration plant (HTR-PM) is under construction in China.

- **Generation IV Safety;** eliminate off-site emergency response through a Meltdown-Proof Reactor. It is Gen-IV+SMR.

- **Huge Market Potential;** provide 200, 600MWe high efficiency power plant and co-generate steam up to 560°C.