

# **Panel on Innovations and Advances in Nuclear Technologies**

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

**ZHANG/Zuoyi**

**Chief Scientist, HTR-PM project**

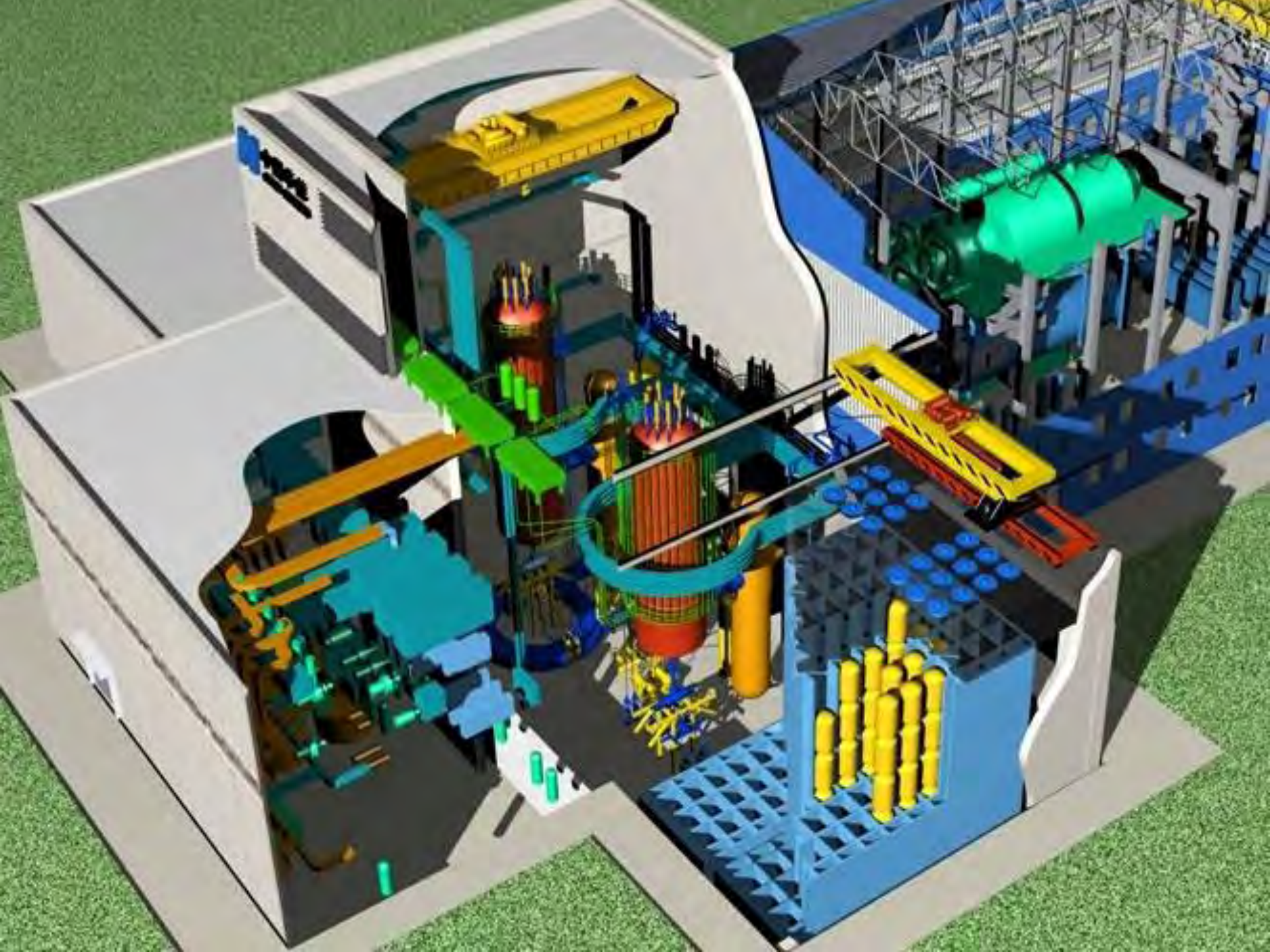
**Director, INET of Tsinghua University**

**International Ministerial Conference on Nuclear Power in the 21<sup>st</sup> 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 : 1<sup>st</sup> RPV installed
- 2016/08 : Start fuel production
- 2016/09 : 2<sup>nd</sup> RPV installed
- 2016/10 : Reverse transmission power
- 2017/10 : 1<sup>st</sup> 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**

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华能石岛湾核电站高温气冷堆示范工程

全球首台HTR-PM压力容器  
华能石岛湾高温气冷堆示范工程



# 5, Remarks

## 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**

# Reduce Costs

