

The Workshop on Innovative Nuclear Energy Systems

Innovative Nuclear Energy Systems Resilient to Natural Disasters

-Development of Toshiba's innovative Reactor-

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Toshiba Next Generation BWR : iBR

- **Safety Concept: No Need for Emergency Evacuation**

- No Containment Venting even in Sever Accident with High Confidence

- **Grace Period: 7 days**

- Double Cylindrical Containment Vessel, Passive Safety Features

- **Experienced Construction Method**

- Based on ABWR Construction Experiences

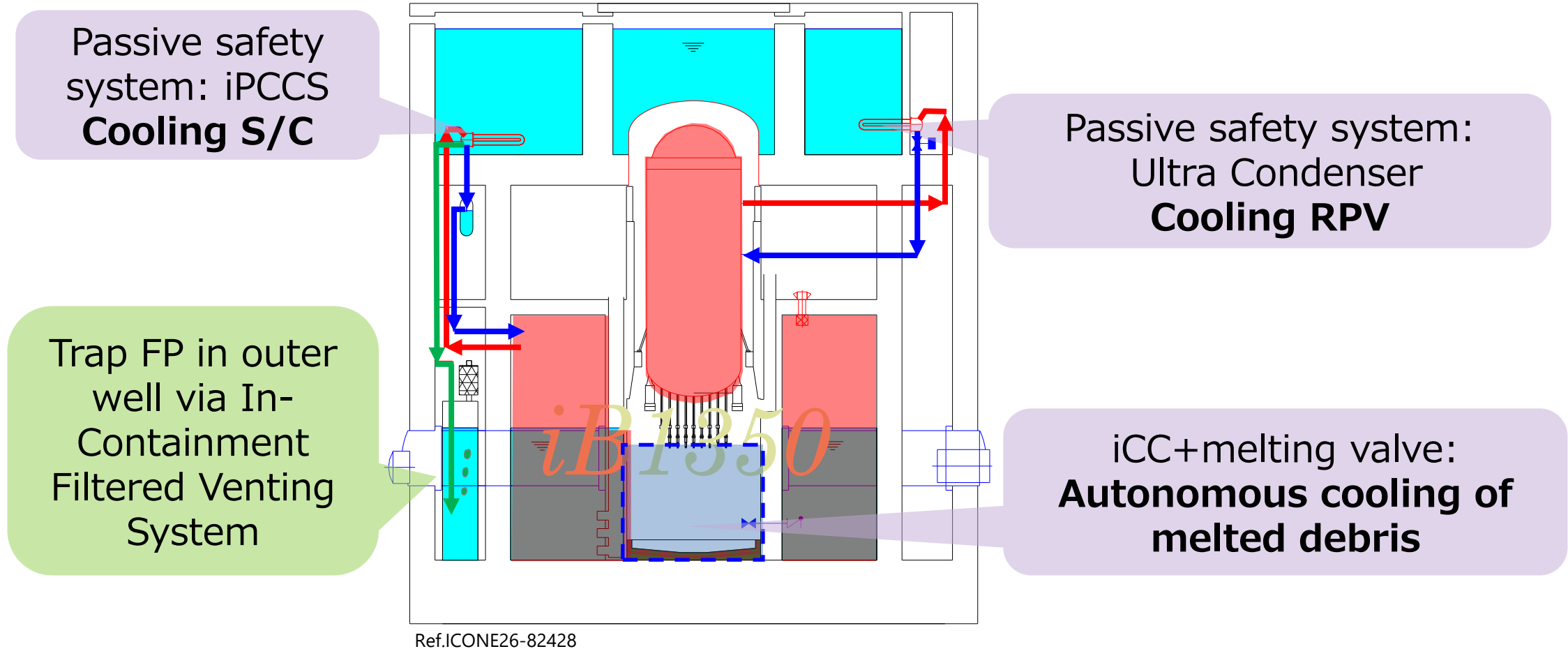
- **High Economical Efficiency**

- Containment Vessel designed against Aircraft Impact may change the design of the Emergency Countermeasure Building



Innovative Safety Reactor can Coexist with Local Community and Provide Excellent Economical Efficiency

iBR Passive safety system



Autonomous cooling of the core and containment vessel during severe accident

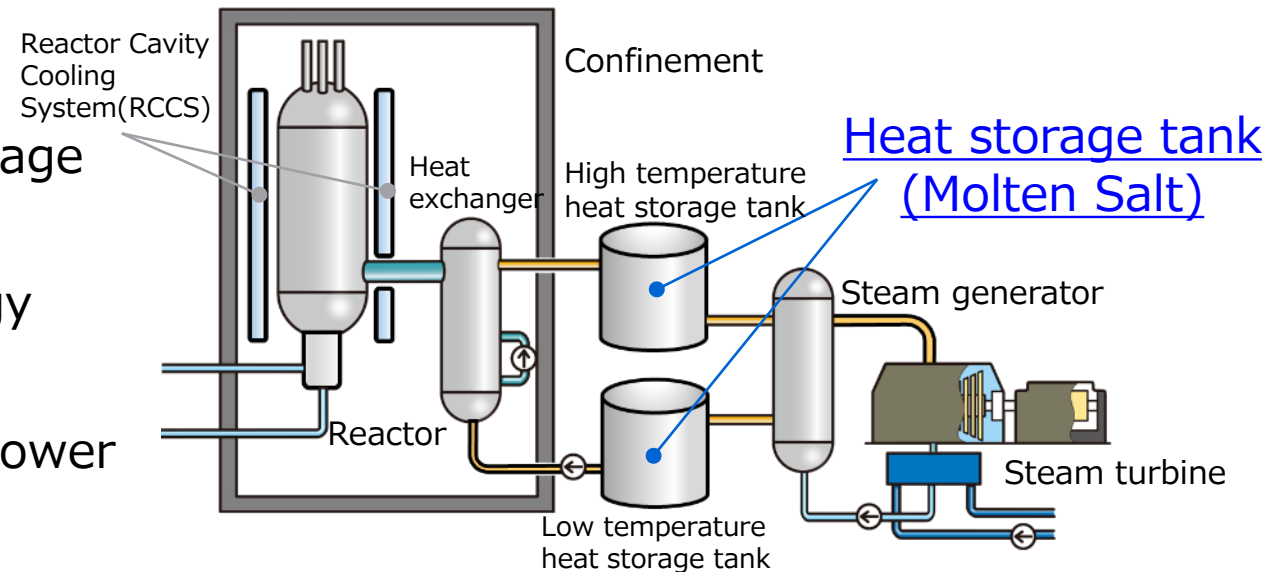
HTGR Heat Storage System

■ Various heat utilization

- [Hydrogen production](#), desalination, industrial heat source, etc.

■ Load Following (Flexibly)

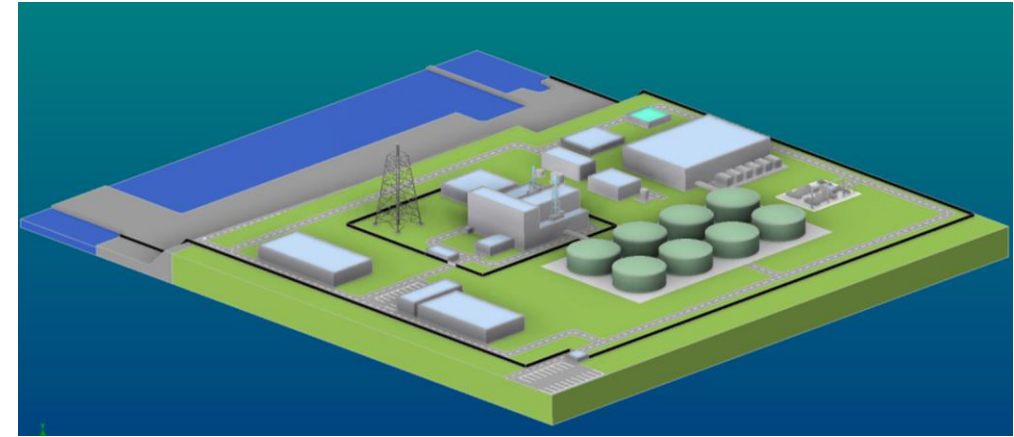
- ✓ Heat storage system with the advantage of high temperature process heat
- ✓ Flexible response to renewable energy output fluctuations
- ✓ Already performed in solar thermal power generation system



Support 'harmony with hydrogen society' and 'contribution to various demand' with inherent safety

HTGR (High Temperature Gas Reactor)

- **Early commercialization based on the experience of HTTR construction**
- **Inherent Safety and Passive Safety**
 - ✓ No fuel melting
 - ✓ No need for immediate action at accident
 - ✓ No chemical reaction with fuels (No hydrogen/vapor explosion)
 - ✓ Decay Heat Removal System by Natural Circulation
- **High Temperature Gas (>750°C)**
 - ✓ High potential for multi purpose use



Bird's-eye view of a 1,000MWe-class steam turbine power plant
Composed of four reactors, including heat storage system

Establish 1,000MWe class HTGR concept with 4 module

Toshiba promotes development of innovative reactors to meet social needs

■ iBR

Responding to large-scale power demand as a next-generation large LWR with improved safety and economic efficiency

■ High Temperature Gas Reactor

Responding to the needs of medium-scale power sources, incorporating the benefits of high temperature and inherent safety.

Pursuing the added value of nuclear power, including the coexistence with renewable energy that utilizes the ability to load following system

TOSHIBA