GE Hitachi Nuclear Energy

ESBWR

fact sheet

Elegantly Simple, Standardized, Flexible and Economical

GE Hitachi Nuclear Energy's (GEH) next evolution of advanced Boiling Water Reactor (BWR) technology is the ESBWR. This simplified design provides improved safety, excellent economics; better plant security, a broad seismic design envelope, and operational flexibility that increases plant availability.

The ESBWR (Economic Simplified Boiling Water Reactor) builds on a long line of proven GEH BWR reactors. ESBWR employs passive safety design features. It is a simplified reactor design, allowing faster construction and lower operating costs.

A GEH-designed Gen III+ reactor, ESBWR is currently in the U.S. Design Certification process. The Design Control Document was docketed by the NRC in 2005, and the Referenced Combined Construction and Operating License (COL) application was submitted in 2007.

GEH is ready to support utilities looking to build an ESBWR nuclear power plant, with a well-established global supply chain.

Benefits and Features of the ESBWR

- Designed to be Simpler yet Safer than ever before
  - Residual heat transferred to the atmosphere
  - 11 systems eliminated from previous designs
  - 25 percent of pumps, valves, and motors eliminated from previous nuclear island designs
- Passive design features, such as passive containment cooling, reduce the number of active systems, increasing safety
- Incorporation of features used in operationally proven BWRs, including isolation condensers, natural circulation and debris-resistant fuel
- Optimized construction schedule from standardized and modularized design
- GEH offers an experienced team that is supply chain qualified, with a reference construction schedule (first safety-related concrete to fuel load) of 44 months

ESBWR Quick Facts

The ESBWR design's core damage frequency at power of 1.7×10^{-8}/year is the absolute lowest of any advanced reactor design available in the industry today

The ESBWR is designed to generate electricity while producing nearly zero greenhouse gas emissions during operation. Compared to typical generation on the U.S. grid, the electricity produced by an ESBWR would avoid the emission of approximately 7.5 million metric tons of CO_2 per year

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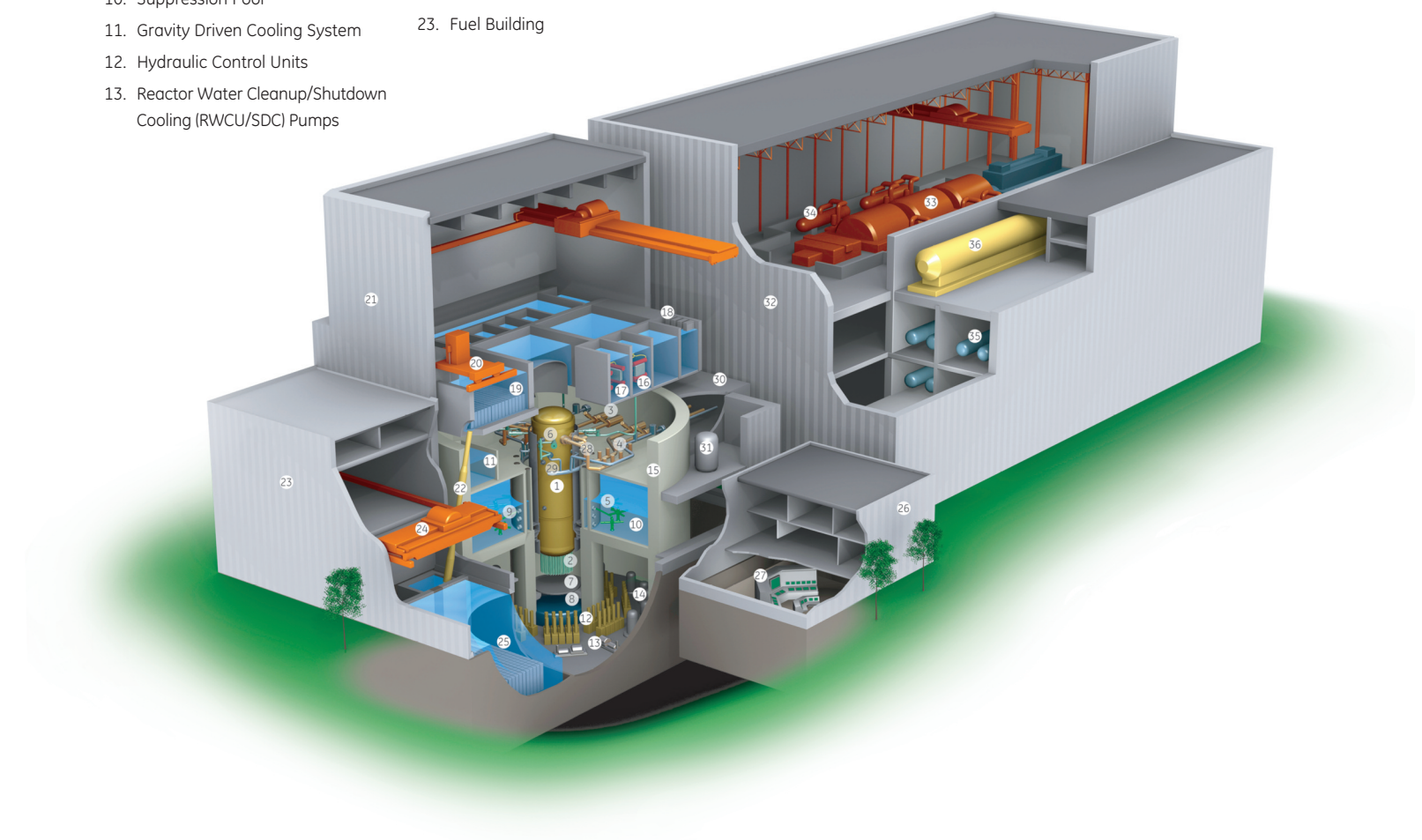
ESBWR

1. Reactor Pressure Vessel
2. Fine Motion Control Rod Drives
3. Main Steam Isolation Valves
4. Safety/Relief Valves (SRV)
5. SRV Quenchers
6. Depressurization Valves
7. Lower Drywell Equipment Platform
8. BiMAC Core Catcher
9. Horizontal Vents
10. Suppression Pool
11. Gravity Driven Cooling System
12. Hydraulic Control Units
13. Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) Pumps
14. RWCU/SDC Heat Exchangers
15. Containment Vessel
16. Isolation Condensers
17. Passive Containment Cooling System
18. Moisture Separators
19. Buffer Fuel Storage Pool
20. Refueling Machine
21. Reactor Building
22. Inclined Fuel Transfer Machine
23. Fuel Building
24. Fuel Transfer Machine
25. Spent Fuel Storage Pool
26. Control Building
27. Main Control Room
28. Main Steam Lines
29. Feedwater Lines
30. Steam Tunnel
31. Standby Liquid Control System Accumulator
32. Turbine Building
33. Turbine-Generator
34. Moisture Separator Reheater
35. Feedwater Heaters
36. Direct Contact Feedwater Heater and Tank



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