

Status of Westinghouse AP1000® Plant Construction and Advanced Technologies in a Post-Fukushima World

*Presented to the Latin American Section of the American Nuclear Society
(LAS-ANS)*

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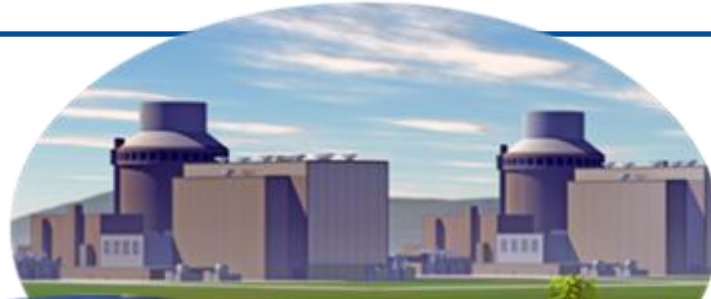
June 2013

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Today's Westinghouse

NUCLEAR SERVICES

Focused on operating plant success through reliable operation, maximized power output, better (shorter, more predictable) outages and component manufacturing



NUCLEAR POWER PLANTS

Specializing in the development and delivery of new nuclear power plant projects



NUCLEAR AUTOMATION

Instrumentation and control solutions to enhance the reliability of nuclear plant control and safety systems

NUCLEAR FUEL

A single-source fuel provider for PWR, BWR, VVER, AGR and Magnox reactors worldwide

Nearly 50 percent of nuclear power plants globally are based on Westinghouse technology



AP1000[®] Plant Global Project Delivery

- Eight **AP1000** units under construction worldwide
 - Four units in China
 - Four units in the United States



V.C. SUMMER

VOGTLE

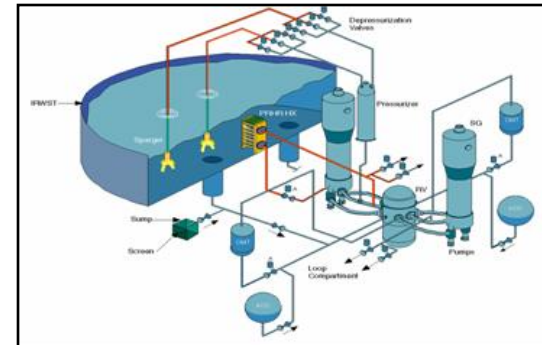
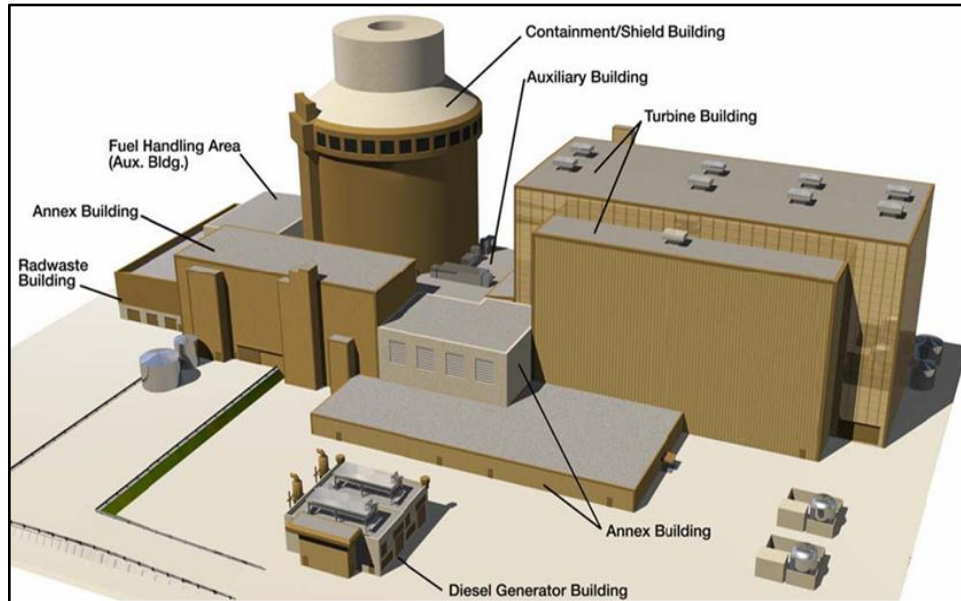


HAIYANG

SANMEN



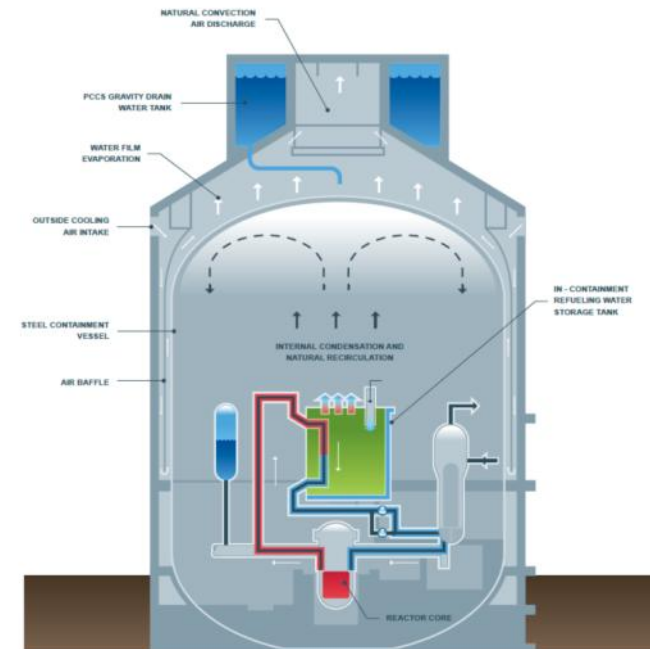
First Build of a New Standard Advanced Passive Generation III+ Plant



Passive safety features

The concept of standardized plants for China supports the country's fleet approach, aligns with the technology transfer principles and assists supply chain.

All critical Station Blackout Response Features
FAIL SAFE



AP1000 Plant Modular Construction

An Innovative Approach Unique in our Industry



- Improved Quality Control and Efficiency
- Reduced Construction Schedule and Optimized Costs

China AP1000 Plant Progress: Sanmen Site

Unit 1 First Concrete – March 2009



Unit 2 SG/Refueling Canal Module – February 2011



Unit 1 Reactor Vessel – August 2011



Unit 1 CVTH Set – January 2013



China AP1000 Plant Progress: Haiyang Site

Unit 2 First Concrete – June 2010



Unit 2 Auxiliary Building – December 2010



Unit 1 Reactor Vessel – January 2012



Unit 1 CVTH Set – March 2013



Progress of China Projects: Summary

- Major equipment delivered and installed at Sanmen Unit 1 and Haiyang Unit 1 includes:
 - Reactor Vessel
 - Steam Generators
 - Reactor Vessel Internals
 - Polar Crane
 - Integrated Head Package
- Containment Vessel Top Head (CVTH) was set at Sanmen Unit 1 on January 29, 2013, and Haiyang Unit 1 on March 29, 2013
- Digital I&C delivery is in progress
- Two classes of potential Sanmen operators have completed simulator training

Sanmen Site – February 2013



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Haiyang Site – March 2013



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Sanmen Site Progress: Time Lapse View

2009 to 2013



U.S. AP1000 Plant Progress: Vogtle Site

- First nuclear concrete pour for Vogtle Unit 3 completed March 14
- Assembly of Unit 3 Containment Vessel Bottom Head (CVBH) complete
- Seam welding of Unit 3 lower and middle rings in progress
- Assembly of Unit 3 Condensers ongoing
- Unit 3 Cooling Tower erection, permanent buildings, River Water Intake piping placement and Unit 4 Cooling Tower basin work are ongoing
- Unit 3 CR10 Module, which will support CVBH, installed April 11

Unit 3 First Concrete Pour – March 2013



Unit 3 CV Lower and Middle Rings – January 2013



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U.S. AP1000 Plant Progress: Vogtle Site

- Unit 4 CVBH assembly nearing completion
- Component and module fabrication proceeding
- Unit 3 Reactor Vessel head package offloaded
- Welding of first Shield Building panel commenced in January 2013
- First phase of backfill completed for Unit 3 Cooling Tower, Hot Water Intake and Circulating Water System piping to pumphouse

Unit 4 CVBH – January 2013



Unit 4 Main Condenser Components – October 2012



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U.S. AP1000 Plant Progress: V.C. Summer Site

- First nuclear concrete pour for V.C. Summer Unit 2 completed March 11
- Unit 2 Containment Vessel Bottom Head (CVBH) complete; assembly of lower and middle rings in progress at site
- Unit 2 CR10 module, which will support CVBH, installed April 3
- Unit 3 Nuclear Island lower mudmat complete; waterproof membrane installation and rebar planning in progress
- CA20 Module (Auxiliary Building) assembly under way at site

Unit 2 First Concrete Pour – March 2013



CR10 Installation – April 2013



U.S. AP1000 Plant Progress: V.C. Summer Site

- Unit 2 Cooling Towers under construction
- Switchyard turnover to customer completed in January 2013
- Unit 2 Reactor Vessel N-Stamp received in January 2013
- Unit 2 Condenser assembly in progress at site
- Hydrotest for major Unit 2 components (Core Makeup Tanks, Accumulator Tanks) completed

Cooling Tower 2A Structure – December 2012



Module Assembly Building – December 2012



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Summary of Key Conclusions

AP1000 Plant Response to Extreme Events

- Westinghouse assessment concluded that **AP1000** Plant maintains all safety limits
- The **AP1000** Plant passive design assures
 - Containment integrity
 - No fuel damage (both spent fuel and reactor)
 - No radiological release as a result of the event

AP1000 achieves and maintains Safe Shutdown, protects public health and safety, and prevents loss of utility investment.



[...], as has been pointed out to me by Japanese colleagues as they reflect upon Fukushima, had the plant been operating AP1000 reactors, it is likely that the outcome would have been very different. The AP1000's passive safety systems provide the ability to maintain core cooling for at least 72 hours with little human intervention. 72 hours to make repairs, transport emergency equipment, and take other actions in response to the earthquake and tsunami that assaulted the Fukushima site would have made a very significant difference.

US NRC Commissioner William D Magwood

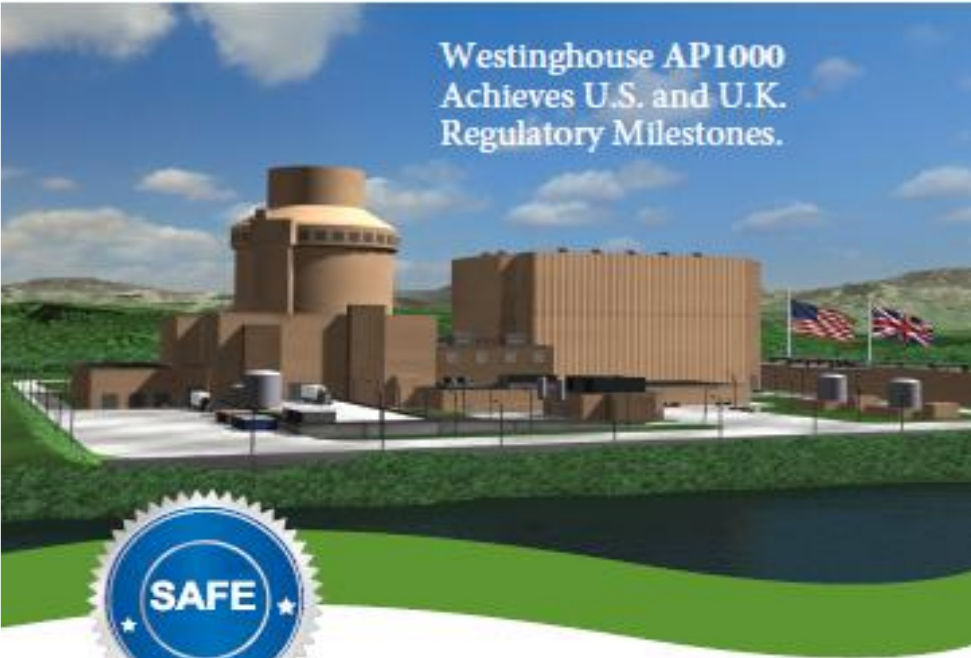
Westinghouse Prepared to Support Latin America on Meeting its Challenges

- Westinghouse is committed to continue providing ongoing technical support to operating fleet in Latin America
- Post Fukushima, the industry understands that the AP1000 Plant achieves and maintains safe shutdown, protects public health and safety, and prevents loss of utility investment.
- A Worldwide fleet approach for standard nuclear design provides maximum efficiencies for long-term, competitive electricity generation
- The **AP1000** Plant assures licensing, cost and schedule certainty
- Significant supply chain opportunities for regional industry to support both plant equipment manufacture and construction workforce


Westinghouse: Partnering with Latin America to provide safe, reliable, competitive nuclear generation for years to come!

Please visit us at:

<http://www.westinghousenuclear.com/>



**Westinghouse AP1000
Achieves U.S. and U.K.
Regulatory Milestones.**




***AP1000 is Safe – But Don't
Just Take Our Word For It***

As Westinghouse work to bring clean, reliable and affordable energy to countries around the world, we fully expect to come under the scrutiny of numerous safety authorities. The communities in which we operate today's plants, and which we hope to build tomorrow's, have the right to expect our reactors to meet the very highest standards of safety. For that reason, our engineers have always put safety at the heart of everything we do.

So we have been immensely proud – but not particularly surprised – to see our AP1000® reactor given two highly significant accolades recently by two of the world's most rigorous and demanding regulatory bodies. In the United States the AP1000 design was awarded Design Certification by the country's Nuclear Regulatory Commission. Across the Atlantic in the UK, the Office for Nuclear Regulation and the UK Environment Agency have jointly awarded Interim Generic Design Assessment approval to the plant.

These milestones are vital steps towards bringing the Westinghouse AP1000 reactor into commercial operation – delivering not just decades of clean and safe power to future generations, but also thousands of high quality jobs during construction and operation.


Check us out at www.westinghousenuclear.com



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if it's Westinghouse



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