

# NIC Nuclear Conference

## The AP1000<sup>®</sup> Plant – Safe, Simple & Proven

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Director, New Plant Market Development

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Mike Waite

Director, New Plant Market Development

Westinghouse Electric Company

Mike Waite is, the Director of New Plant Market Development for Westinghouse Electric Company and is the global market lead for new and emerging Nuclear Power Plant opportunities.

He joined Westinghouse in 2009 and has since gained great experience in European, Middle Eastern, African and South East Asian markets. His current focus is the developing nuclear new-build programmes in the United Kingdom, Czech Republic, Slovenia and other global emerging markets.

Prior to joining Westinghouse, Mr. Waite enjoyed 10 years in senior management positions in companies designing and manufacturing products for the global nuclear industry. He has spent his career working for major multinational corporations and has been based on 3 different continents.

Mr. Waite received his BEng Honours Degree in Mechanical Engineering in 1989 from Bath University.



# The AP1000® Plant

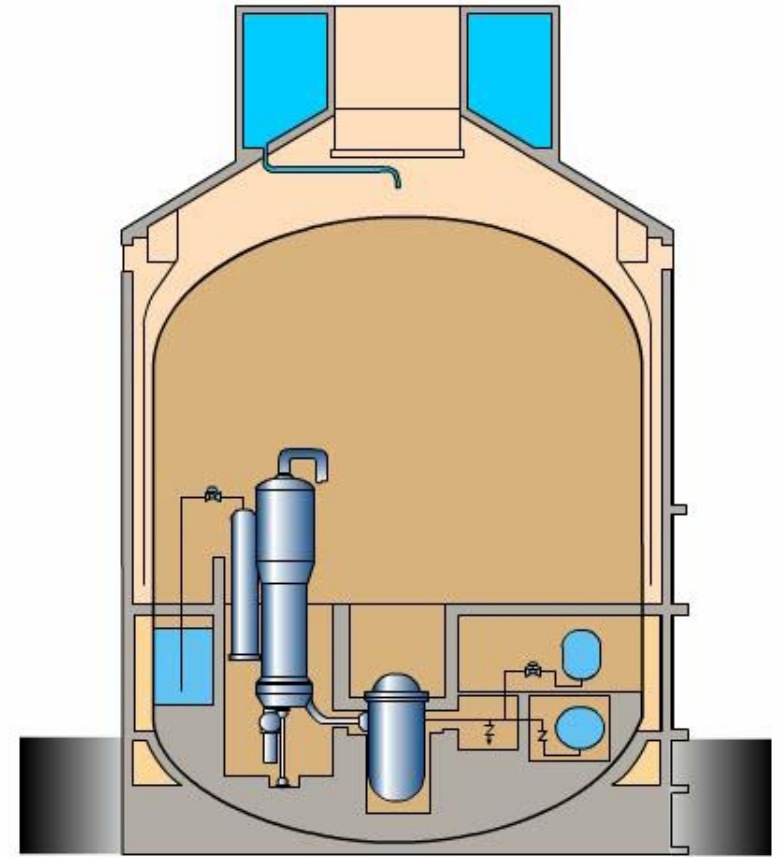
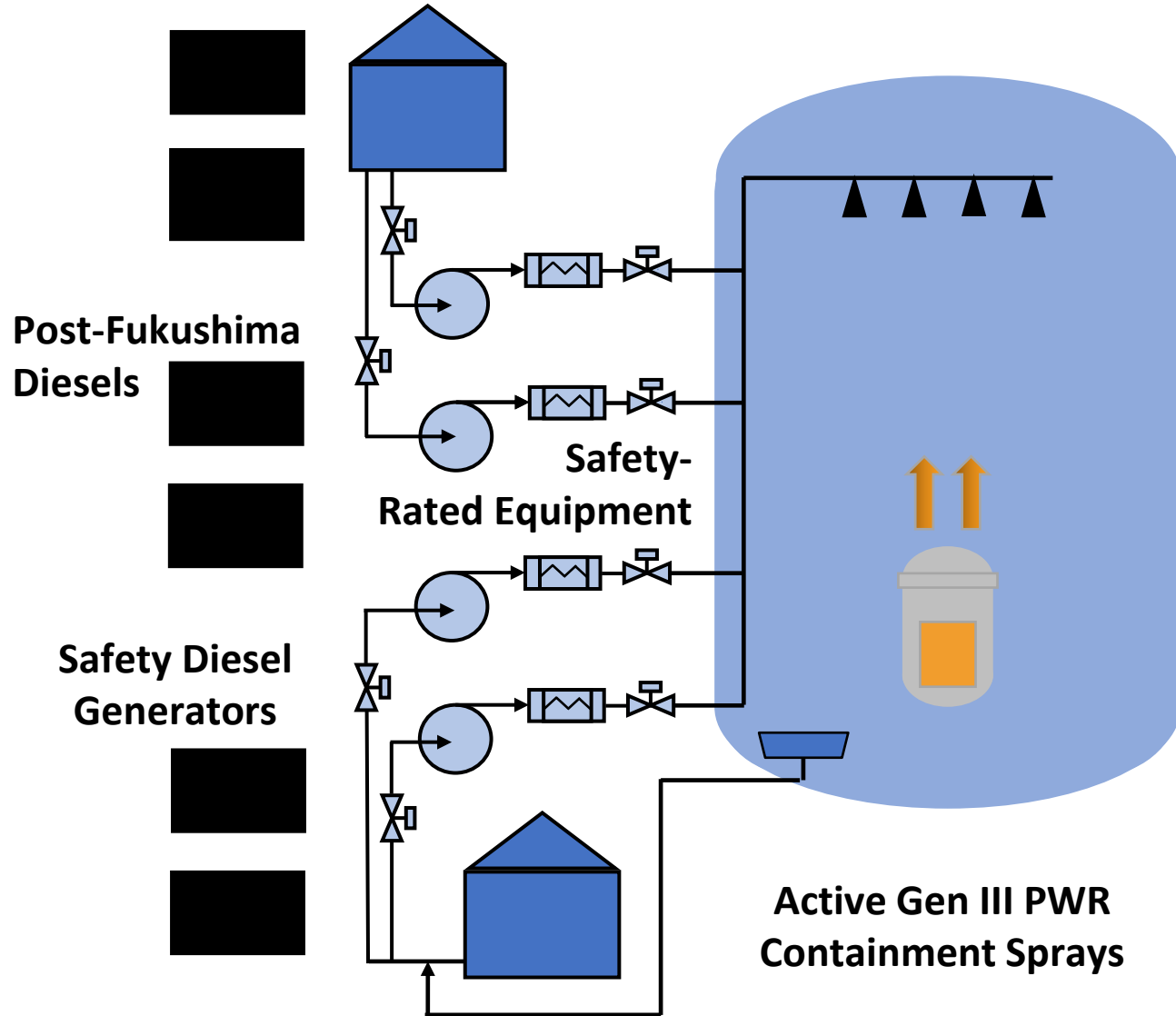
## Safe, Simple & Proven

- First operational **Generation III+** plant
- Only available plant with **fully passive safety systems** and 72+ hour coping after station blackout
- Standardized, optimized design utilizing **advanced modular construction** philosophy
- **Global licensing pedigree** in Europe, USA and Asia
- 4 operating units, 2 units nearing completion, 4 further units approved for construction
- **Record setting** start-up/commissioning, operational **performance** and short outage durations
- Advanced load-following capabilities
- **Safe, clean, reliable, power**



# The AP1000<sup>®</sup> Plant

## The Passive Safety Difference

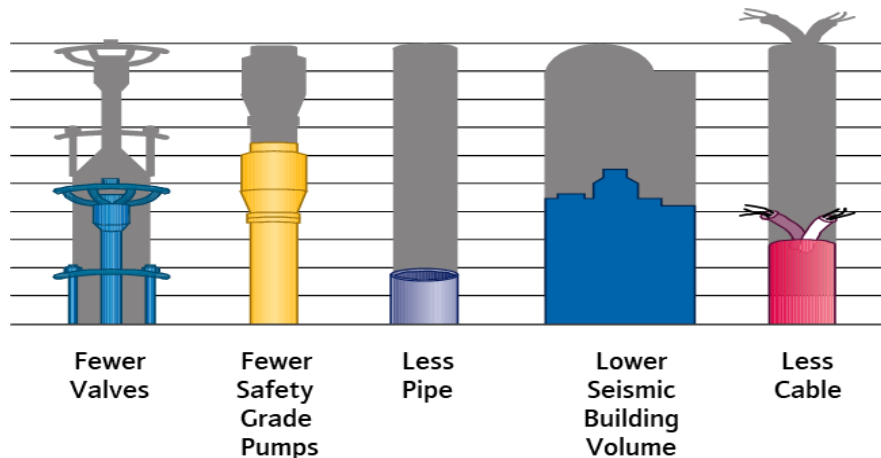


Passive Containment Cooling

# The AP1000<sup>®</sup> Plant

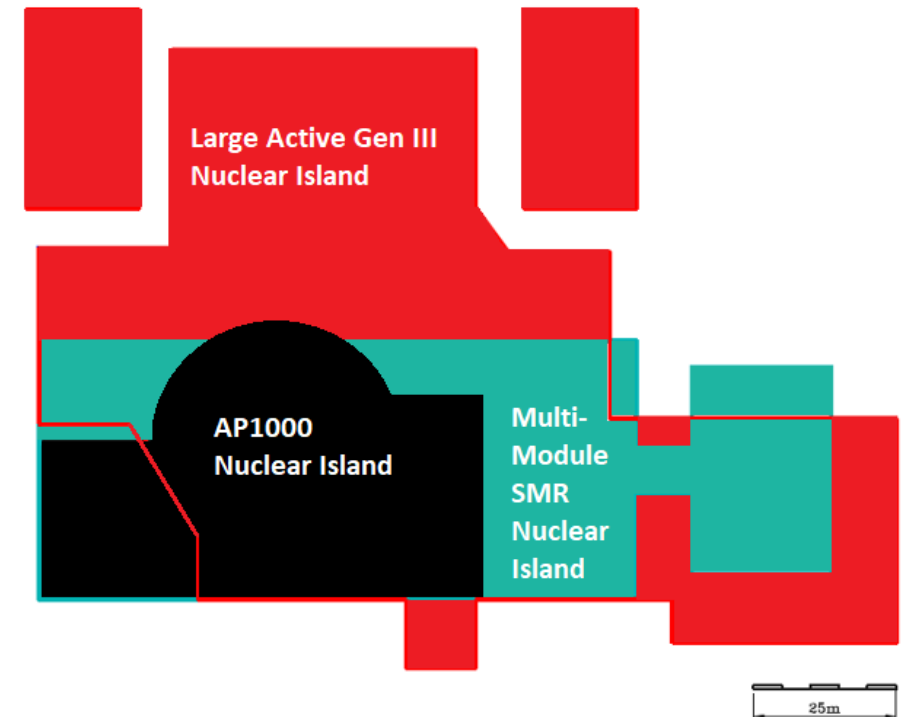
## Simplified with Reduced Footprint

- Passive safety systems located inside containment/shield building
- Active non-safety systems optimized for normal operation but not needed for accident scenario or station blackout response
- Simplification significantly reduces safety-related equipment quantities
- Reduced safety class equipment provides much greater localization potential
- The AP1000 Plant has the **lowest carbon footprint** per installed MW of any available nuclear technology



Plant	Net Power Output	Safety Related Footprint	Safety Related Footprint (m <sup>2</sup> ) per MWe
Westinghouse AP1000 Plant	1,170 MWe	~3,015 m <sup>2</sup>	2.6
12-Module SMR	878 MWe	~5,750 m <sup>2</sup>	6.5
Large Asian Active Plant	1,418 MWe	~10,300 m <sup>2</sup>	7.3
Large European Active Plant	1,600 MWe	~13,100 m <sup>2</sup>	8.2

Sources: World Nuclear Association, UK Planning Inspectorate, U.S. NRC

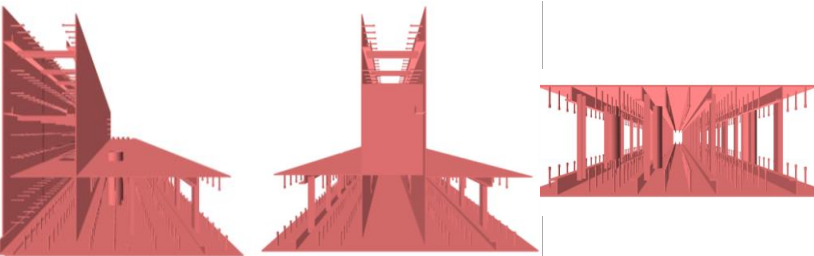
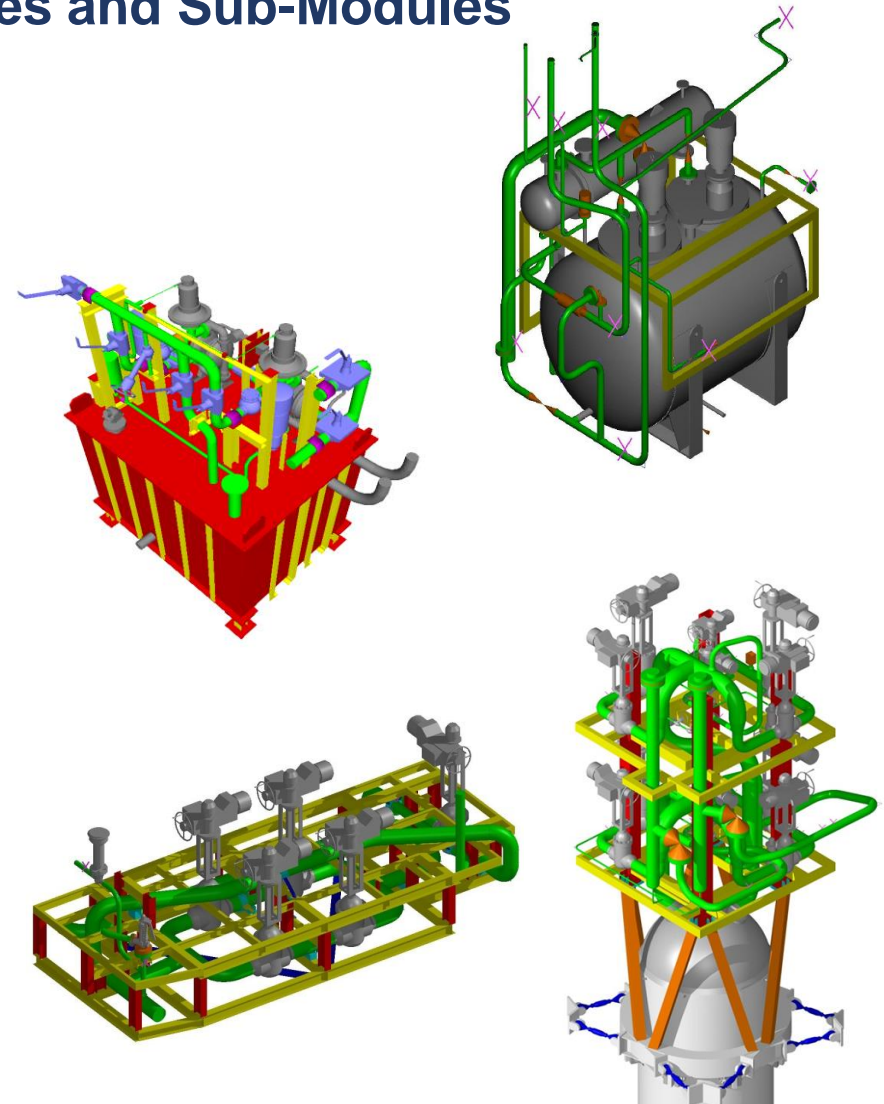
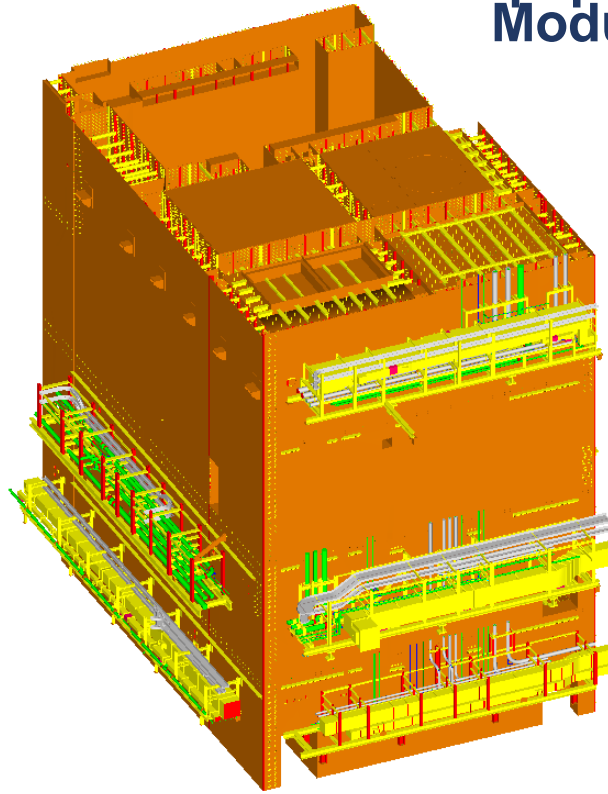


# The AP1000<sup>®</sup> Plant

## Advanced Modular Construction



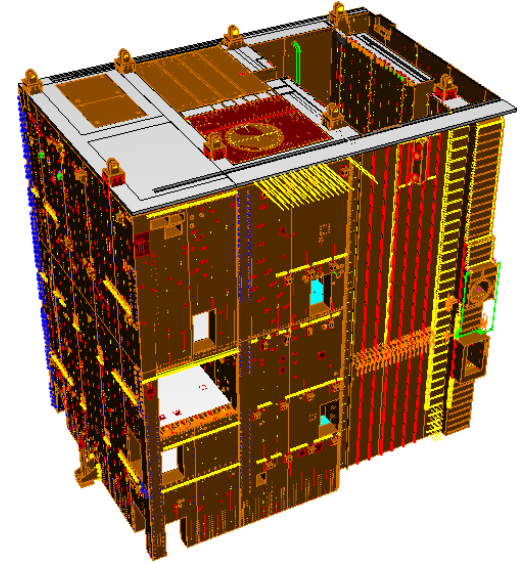
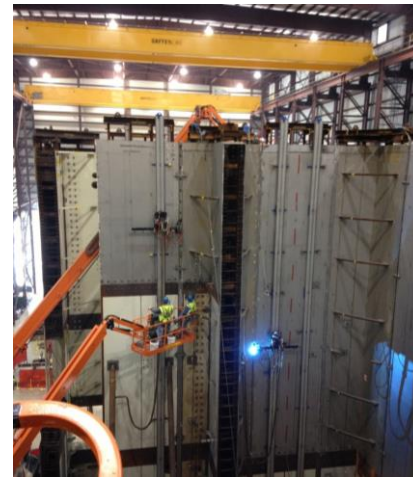
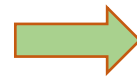
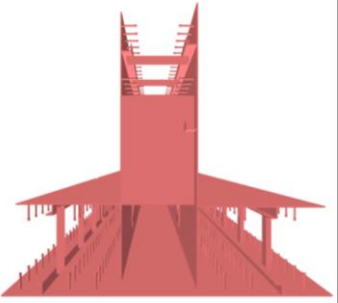
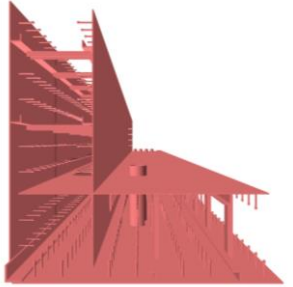
Equipment, Piping, Structural  
Modules and Sub-Modules



Over 400 modules/sub-modules  
in the AP1000 plant design

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## Large Structural Module Route

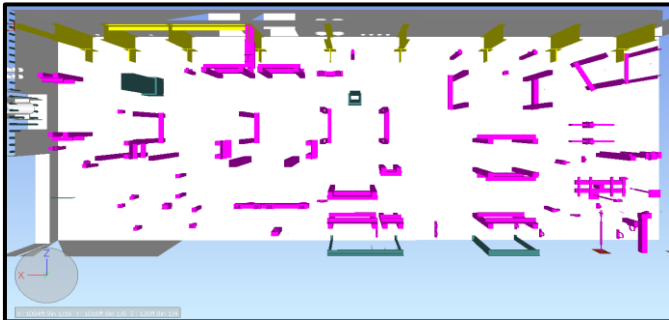
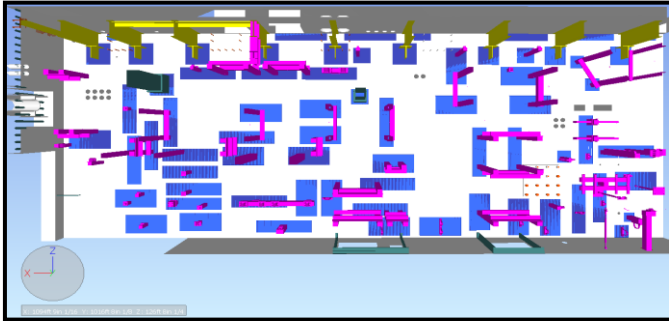


Structural Sub-modules

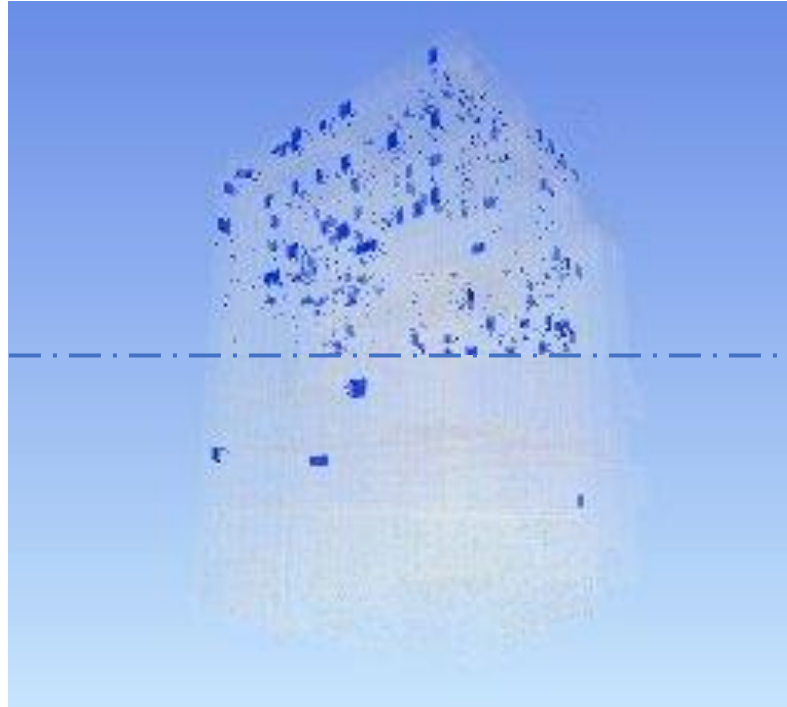
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## Structural Module Simplification/Optimization

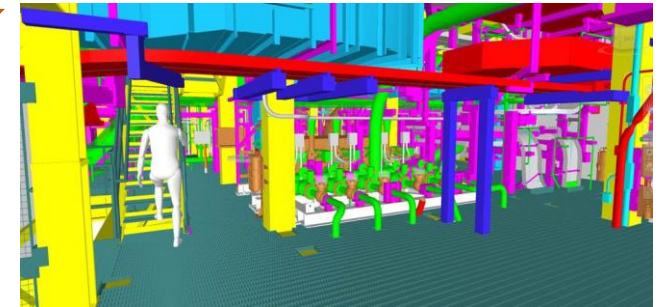
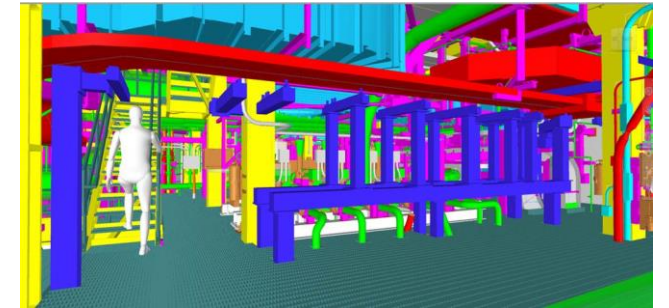
Permanent form-work plates eliminate the need for 25-100 embedments per wall



Overlay plates significantly reduced



Consolidated and Simplified raceway supports



Efficiency further improved with digital delivery model



# The AP1000® Plant

## Safe, Simple & Proven

### Start-up performance:

- Dramatically reduced start-up test programs from 10 months to 5 months or less (incl. 1 month @ full power)

### Early cycle performance:

- Industry and national performance records set for first and second operating cycles

### Refueling outage performance:

- Industry and national performance records set for first cycle refueling outages (28 days)
- Industry and national performance records set for second cycle refueling outages (19 days)

### Load-following capability:

- Plants used in both baseload and load-follow modes
- Advanced digital systems controlling chemical-free changes of up to 5% per minute down to 15% power

### District Heating performance:

- Haiyang plant provides heat to local city population



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Thank you!  
Dankuwel!

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