
Investing in the Future – A Nuclear Imperative!

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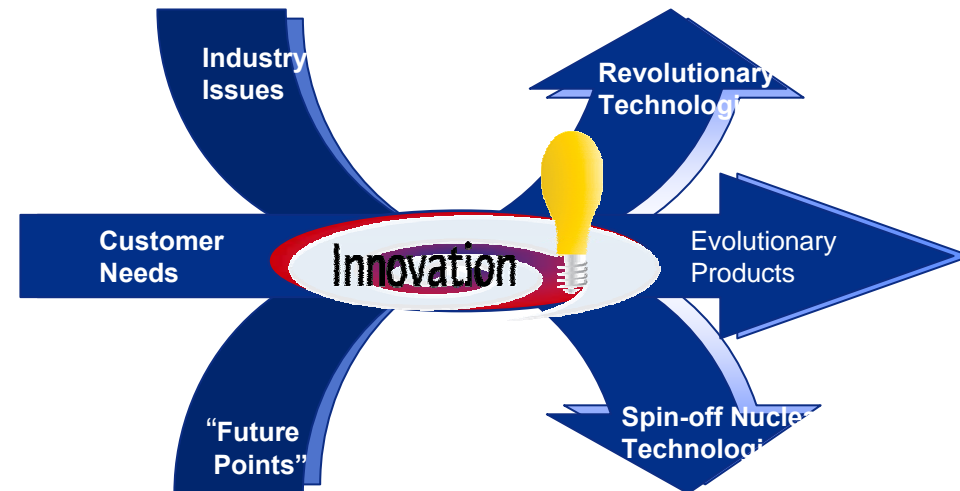
Westinghouse Investment in the Future

- **People**
 - Hired >2000 people in last 5 years
 - George Westinghouse Signature Awards for excellence
 - Technical Leader Program with defined technical ladder training
- **Processes**
 - Customer 1st Program
 - Innovation Program
 - “Future Points” development
- **Technology**
 - New reactor development
 - Advanced fuels development
 - Advanced control room and digital I&C
 - Enhanced services equipment

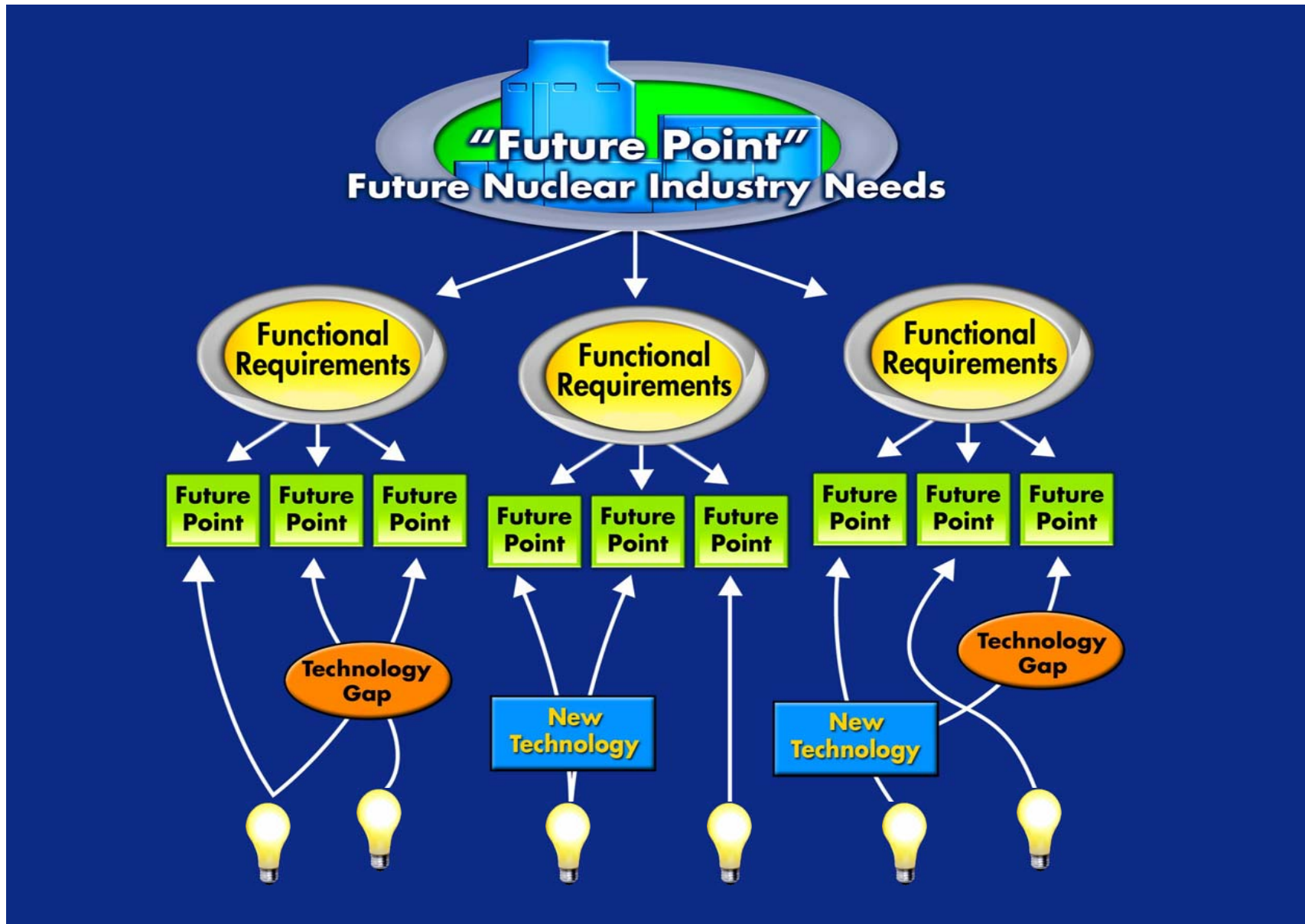


Encouraging Innovation

- Scenario Planning  “Future Points”
- Provide an environment that encourages free discussions and cross-company idea creation
 - Idea development sessions
 - Innovation Web-site
- “Virtual Product Development”
- “Fast” Money to explore ideas
- Quick Review Process
- Communicate to the Organization
- Celebrate new ideas and successes 



An Approach to Long Term Development “Future Points”



Westinghouse Technology Leadership

- Builds first industrial atom smasher (1937)
- Westinghouse nuclear plant powers USS Nautilus (1953)
- Westinghouse builds first PWR (1957)
- Westinghouse technology transferred worldwide (15 countries, including France, Japan, Korea, Spain, etc.)
- Half the world's nuclear power plants are Westinghouse designs
- Westinghouse technology is basis for robust Korea program
- Four AP1000 plants bid in China (2005)
- Selected by 5 US utilities for COL applications to deploy AP1000 (2006)



Seventy Years of Technology Leadership

Investing in the Future of New Plants

- **New reactor designs are long and expensive development process (~\$0.5 billion and ≥ 10 years)**
- **Uncertain future market – looking back 3 years; who would have thought!**
- **Unknown external influences, e.g., escalating energy prices, operating problems, enhanced environmental concerns, energy security, political shifts**
- **Human capital the most valuable and the most difficult to secure**
- **Preparing the supply chain for delivery before reactor orders**
- **Establishing a delivery team without firm orders**

Using Innovative Technology Approach

Builds on Our Experience to:

- **Design a Simpler Plant**
- **Increase the Level of Safety**
- **Reduce Plant Capital Cost**
- **Design for modular construction of the plant**
- **Achieve a Shorter Construction Schedule**
- **Achieve Reliable Operations**
- **Reduce O&M Cost**



Korean Construction Program

Westinghouse Advanced Reactor Portfolio – Looking to the Future



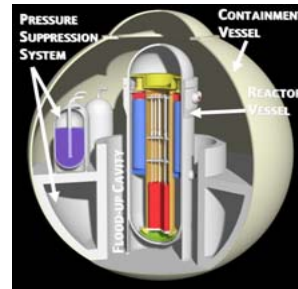
AP1000

Ready for deployment now



PBMR

Ready after 2011



IRIS

Ready after 2015

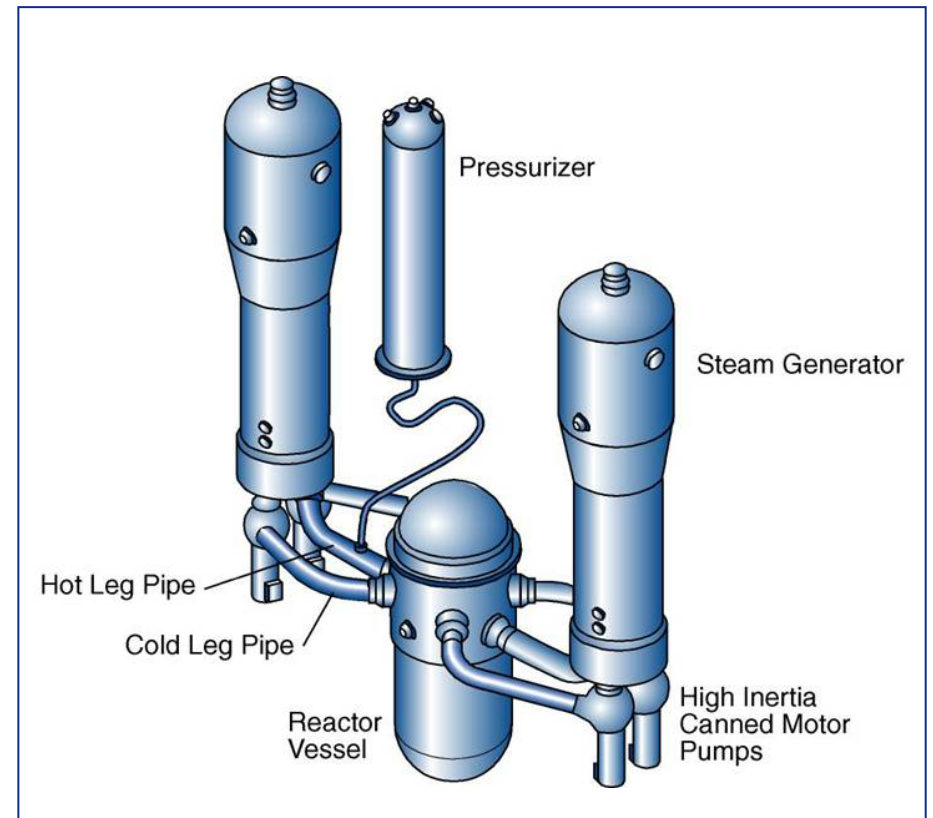
Invested Early for the New Plant Market – AP1000 Development

- Started investing in passive plant technology in 1985 as input to the EPRI Utility Requirements Document
- Obtained Design Certification of AP600 in December 1999
- Started development of AP1000 and NRC pre-licensing review in 2000
- Started working with customers in 2001 to build a business case for new plants based on AP1000
- Obtained Design Certification of AP1000 in January 2006



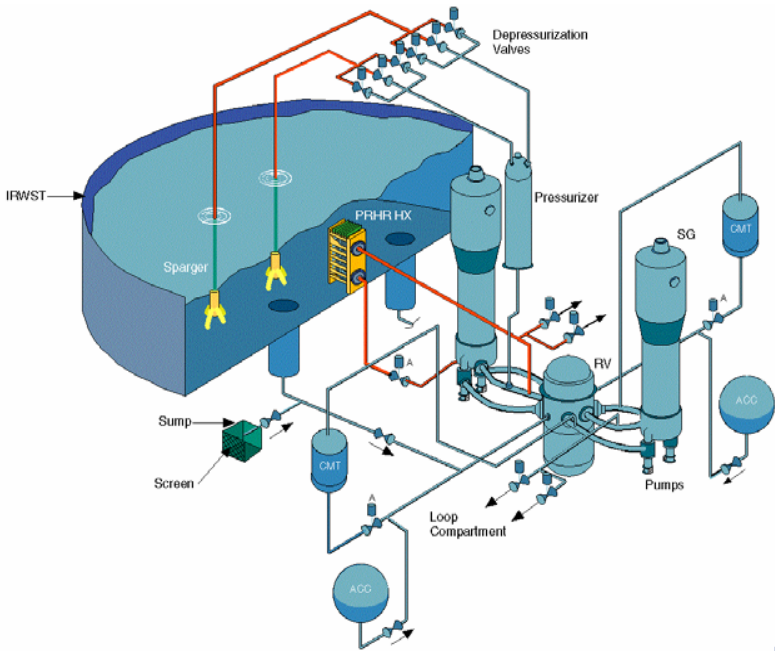
AP1000 Advanced Passive Plant

- 1100 MWe pressurized water reactor
- Uses passive safety systems with no reliance on AC power
- All new features of design thoroughly tested
- Bid 4 units in China – award pending
- Selected by US NuStart utility consortium for commercialization
- Picked by 5 US utilities for preparation of combined construction and operating licenses (COLs) for 12 units

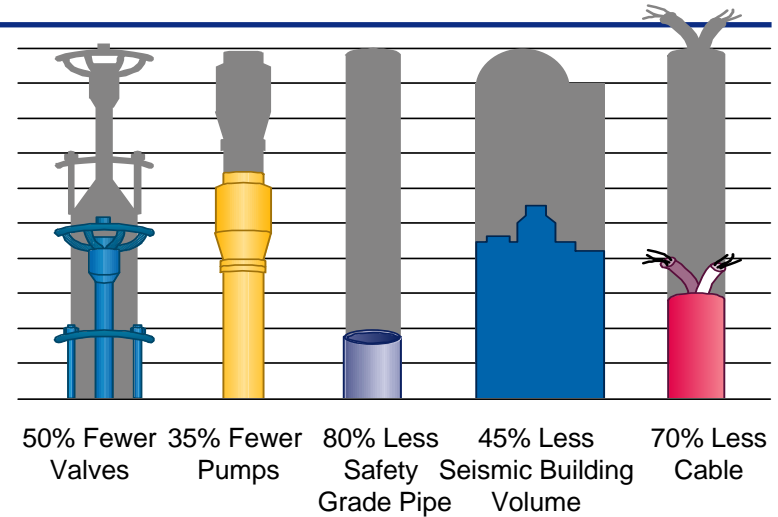


AP100 Design

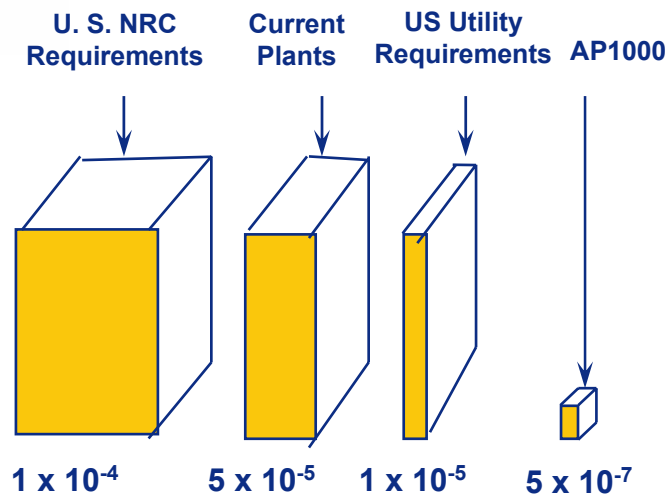
Designed a Simpler and Safer Plant – AP1000 Results



AP1000 Safety Systems

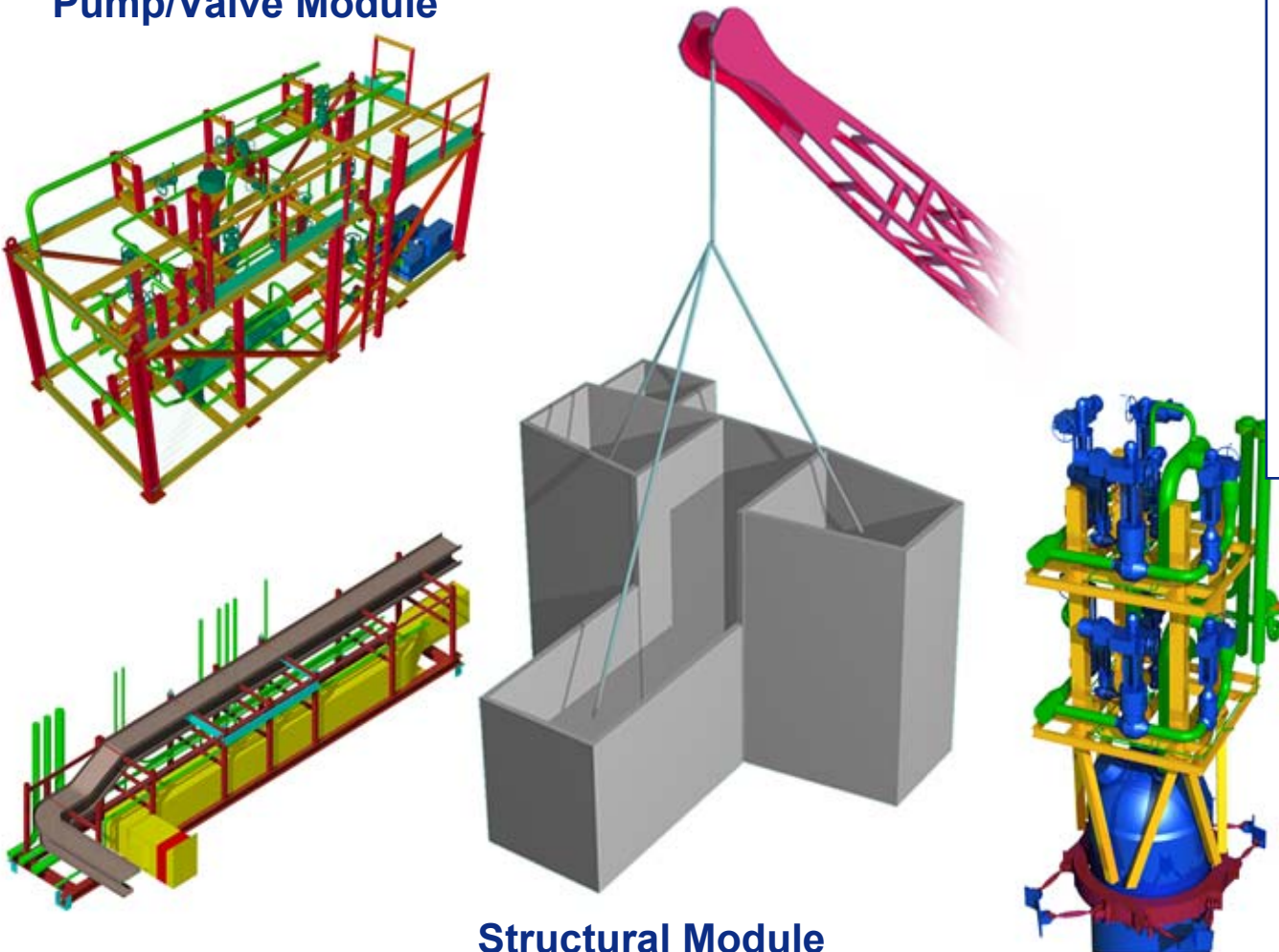


Reduction of Plant Commodities



Increased Safety (Core Damage Frequency)

Designed to Be Built Faster Through Innovative Modular Construction



Pump/Valve Module

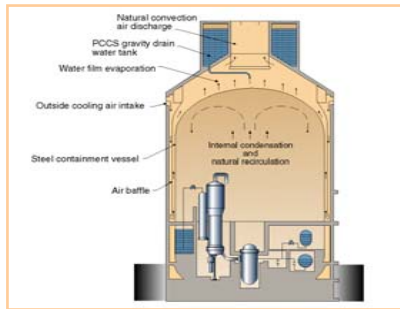
Raceway Module

Structural Module

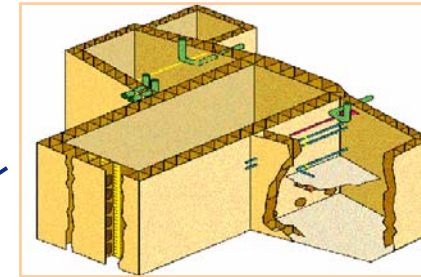
Depressurization Module

<u>Module Type</u>	<u>Number</u>
Structural	122
Piping	154
Mechanical Equipment	55
Electrical Equipment	11
TOTAL	342

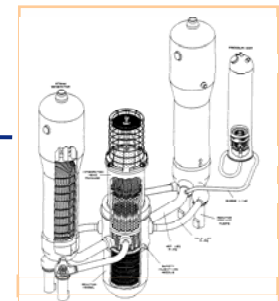
Westinghouse 20-Year Investment in Passive Technology – We Are Ready Now



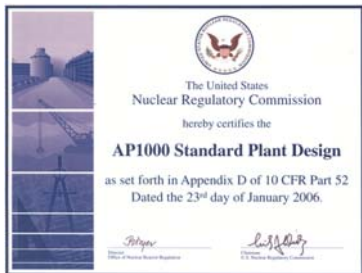
Passive Safety Systems



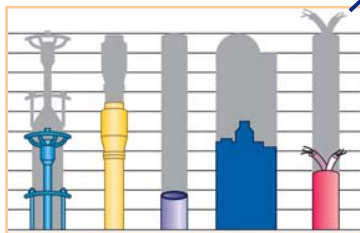
Modular Construction



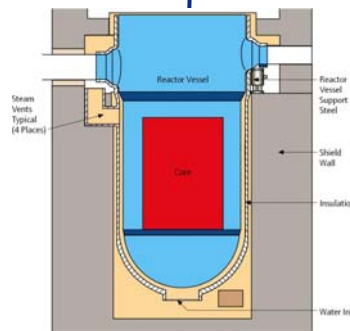
Advanced Design Features



US Licensing Approval



Reduced Components & Commodity Components



Severe Accidents Mitigation Features

Item	Rev	Issued	By	Check	Approved	Notes
1000000000	1	01/23/06
1000000001	1	01/23/06
1000000002	1	01/23/06
1000000003	1	01/23/06
1000000004	1	01/23/06
1000000005	1	01/23/06
1000000006	1	01/23/06
1000000007	1	01/23/06
1000000008	1	01/23/06
1000000009	1	01/23/06
1000000010	1	01/23/06
1000000011	1	01/23/06
1000000012	1	01/23/06
1000000013	1	01/23/06
1000000014	1	01/23/06
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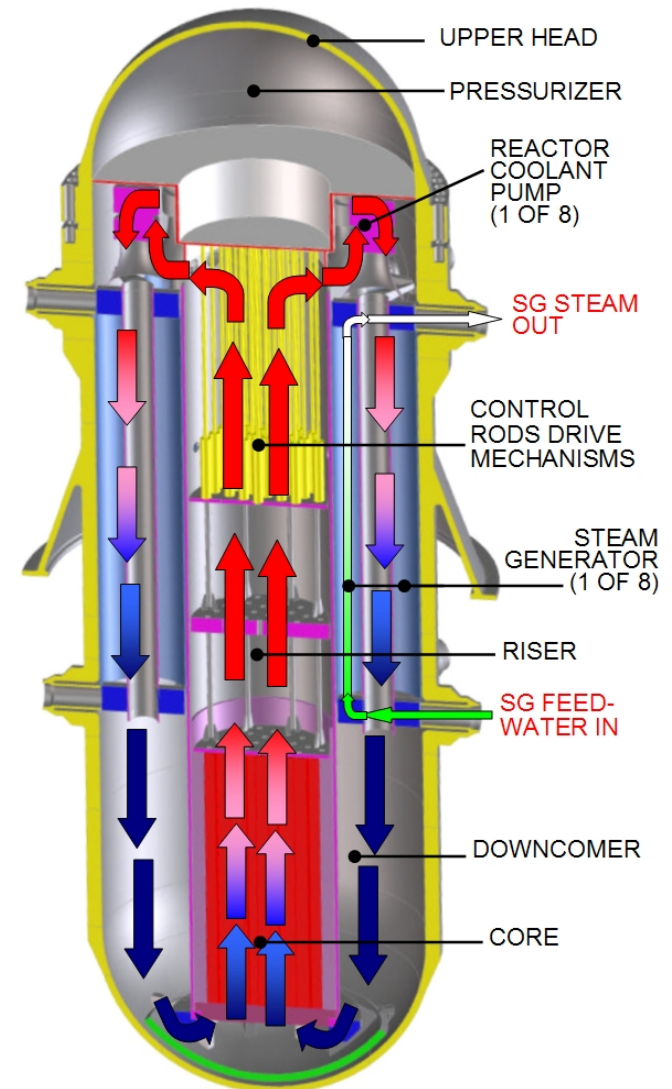
Short Engineering and Construction Schedule

Diversity of Markets – Who Will Be Ready?

- **Nuclear markets are becoming broader and more diverse**
 - **United Kingdom**
 - **United States**
 - **China**
 - **Eastern Europe**
- **New opportunities beyond traditional markets are emerging**
 - **India**
 - **Indonesia**
 - **Vietnam**
- **Preferences based on experience or external influences will motivate diversity of designs**
- **Applications beyond electricity are being considered**
 - **Process heat**
 - **Hydrogen generation**
 - **Desalination**

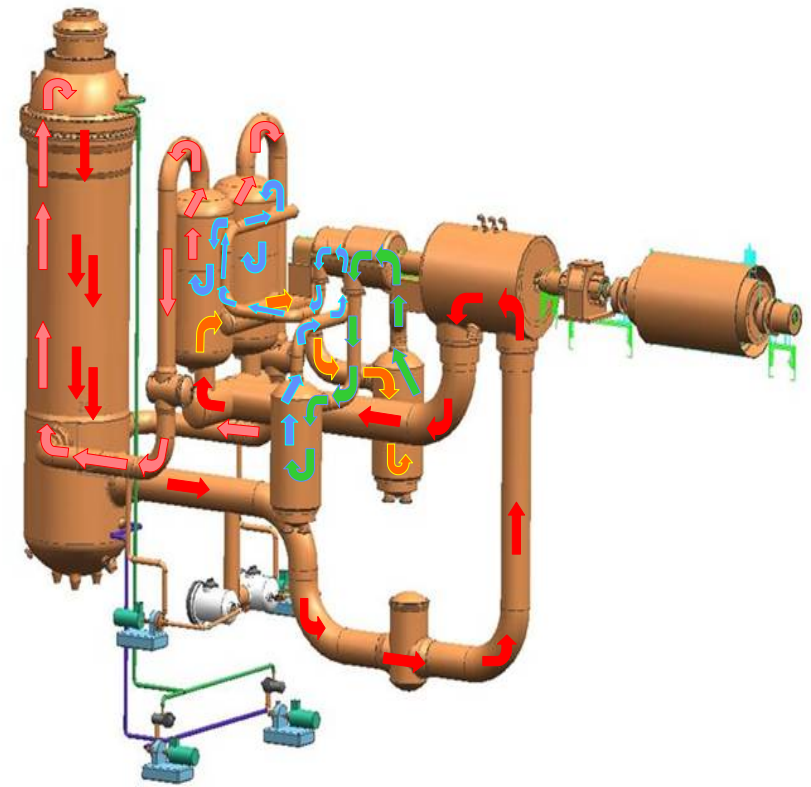
International Reactor Innovative and Secure (IRIS)

- 335 MWe Integral PWR
- All major reactor coolant components incorporated into reactor pressure vessel
- Uses Safety-by-Design™ approach, e.g., eliminates most major accidents by design
- Innovative high pressure containment design reduces LOCA consequences
- Under development by consortium of 20 organizations from 10 countries
- Currently in pre-application review by US NRC
- Included in US Global Nuclear Energy Partnership (GNEP) program as example small scale reactor for deployment in developing countries



Pebble Bed Modular Reactor (PBMR) – Nuclear Gas Turbine

- 165 MWe high temperature gas-cooled reactor (900°C outlet temp)
- On-line refueling with ceramic pebble coated particle fuel design
- Inherent safety systems with virtually melt-proof core
- National Strategic Project in South Africa with Demonstration Plant planned to start construction in 2007
- Licensing ongoing in both South Africa and US (pre-application review)
- Extensive testing ongoing for all aspects of design
- Excellent technology for process heat applications



Summary

- **Technology leadership is the key to long term success**
- **Investing in the future is a necessity to be ready for the marketplace**
- **Successful preparation includes investment in**
 - **People**
 - **Processes**
 - **Technology**
- **Uncertainty in the market requires a portfolio of products to meet customers future expectations/needs**
- **Innovative thinking is necessary to harness the imagination of people and target future products**
- **Perseverance is essential to develop these products so that they are ready when needed**