ACR-1000®: THE ADVANCED CANDU REACTOR®

The ACR-1000 is economically competitive or superior to all other forms of nuclear generation, and gas or coal power generation.

EVOLUTION:

AECL has capitalized on the proven features of CANDU® technology in designing the evolutionary Advanced CANDU Reactor the ACR-1000. The ACR-1000 is designed to be cost competitive, while achieving higher safety and performance standards in meeting customer expectations.

The ACR-1000 has a gross electrical output of approximately 1200 MWe to best meet utility production requirements, consistent with typical grid capacity.

PROVEN CANDU FEATURES:

Heavy water moderator, horizontal fuel channel design and on-power fuelling.

- Simple fuel design – easy to handle and manufacture
- Low-pressure heavy water moderator – inherent passive core cooling capability
- Series of parallel pressure tubes rather than single pressure vessel – modular, easy and economical to manufacture, and replaceable
- Two independent, fast-acting safety shutdown systems and a unique inherent emergency-cooling capability

ACR-1000 INNOVATIONS:

- Slightly enriched uranium fuel for extended fuel life and reduced spent fuel volume
- Light-water coolant system
- Compact, highly stable reactor core design
- Improved thermal efficiency through optimized, higher-pressure steam turbines
- Modular, prefabricated structures and systems
- Advanced construction techniques – successfully used in other CANDU projects

ECONOMICS:

- Significantly reduced specific capital cost
- Lifetime capacity factor > 90%
- Short construction time reduces financing cost and responds to market needs
- Competitive or more economical than gas or coal power generation

SAFETY:

- Highly stable reactor core design
- Passive safety systems
- Large operating margins
- Zirconium-alloy pressure tubes minimize corrosion risk
- Long lead-times for operator intervention
- Containment barriers meet highest safety standards

CANFLEX® Fuel Bundle

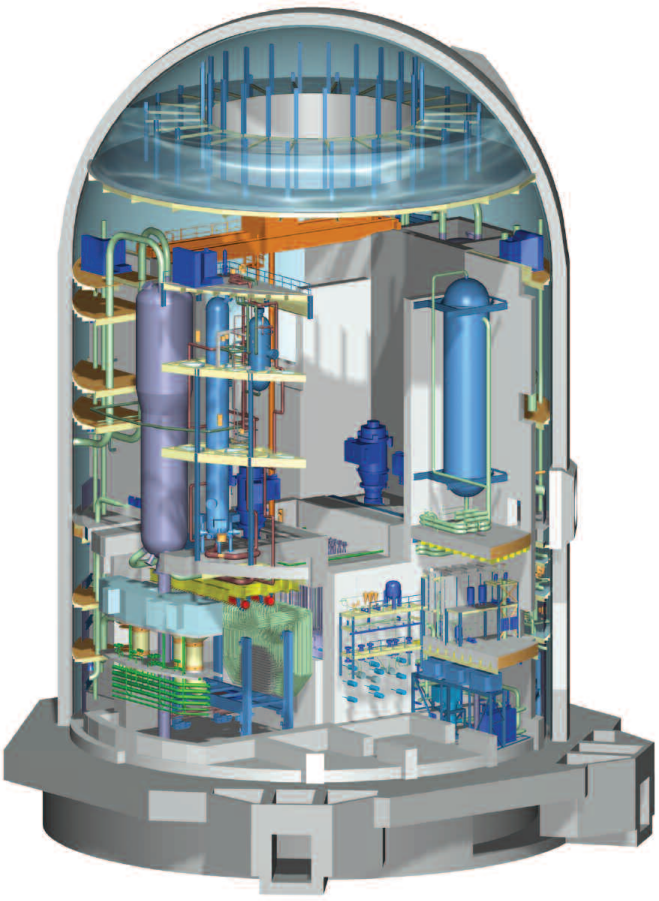
AECL

OPERATIONS:

- Built on the excellent lifetime performance record of CANDU reactors worldwide
- Enhanced monitoring diagnostics and control capability
- Integrated plant life management program
- Maintenance-based design for improved reliability and reduced service frequency

PLANT SECURITY:

- High-integrity containment
- Fully redundant secondary control centre
- Enhanced security systems
- Incorporates system redundancy, separation of safety systems and reliable safety system actions



Advanced CANDU Reactor Building Cutaway

LICENSING:

- Current CANDU reactors licensed worldwide
- ACR-1000 design enhancements further strengthen licensing case
- Meets Canadian regulatory requirements and applicable international requirements

PROJECT SCHEDULE AND CONSTRUCTION:

- 42 months from first concrete to fuel loading for the n^{th} unit
- Innovative use of open-top construction methodology
- Prefabricated systems lift into place as ready-built modules
- Builds on experience from recent successful CANDU projects:
- Wolsong Units 2, 3 and 4 in South Korea (completed 1997, 1998, 1999 on budget, on schedule)
- Qinshan Units 1 and 2 in China (completed 2002 and 2003 under budget, ahead of schedule)