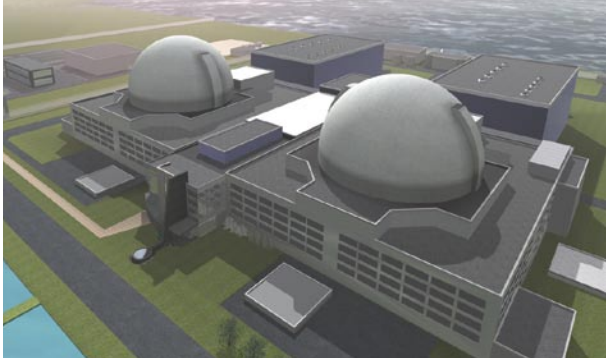
Advanced CANDU Reactor

ACR-1000

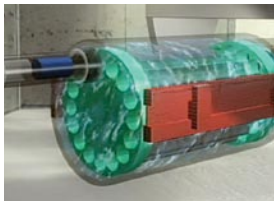
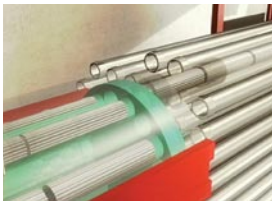
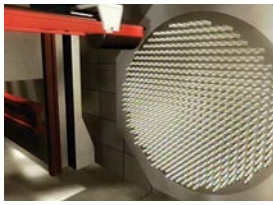
A new level of performance from proven CANDU technology

AECL

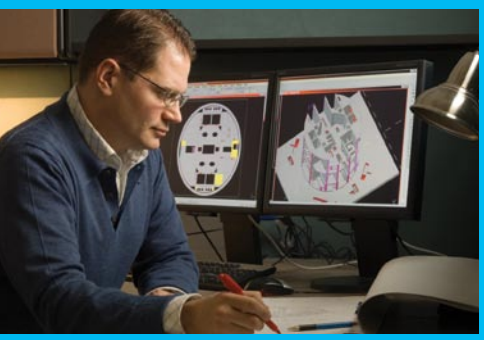


Built on the proven success of AECL's CANDU® nuclear technology, the ACR-1000® Advanced CANDU Reactor® is a Gen III+, 1200 MWe class nuclear power plant with evolutionary improvements in performance and reliability and the smallest environmental footprint of any baseload electricity generating option in Canada.

The ACR-1000 retains many essential features of the CANDU plant design, such as a modular, horizontal fuel channel core, a low-temperature heavy-water moderator, water-filled vault, two independent diverse shutdown systems, on-power fuelling and a reactor building accessible for on-power maintenance.

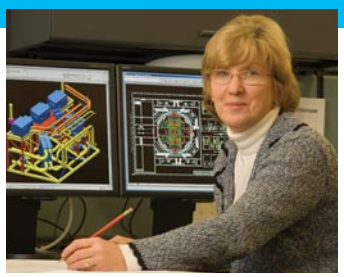





It was designed with a focus on Operations and Maintenance, drawing on AECL's experience in the design, construction and operation of CANDU plants for utilities around the world, as well as on valuable customer input.



ACR-1000: Designed to Meet Market Needs

- *Evolutionary design*
- *Competitive economics*
- *Short construction duration*
- *Low and stable operating costs*
- *Passive safety*
- *Hardened against external threats*
- *Enhanced performance and operability*
- *Clear, straightforward licensing*
- *Combines best aspects of CANDU and light water reactor (LWR) technology*



Evolved from well-established CANDU strengths

Drawing on the experience of decades of successful CANDU nuclear technology operation, AECL developed the ACR-1000 on the principles and characteristics of the proven CANDU design, but with several enhancements.

ACR-1000 enhancements include:

- A compact core design with improved stability and higher output
- Light water coolant, which reduces heavy water inventory by two-thirds
- CANFLEX-ACR® fuel bundles that use low enriched uranium (LEU) fuel to achieve higher burnup and negative void reactivity

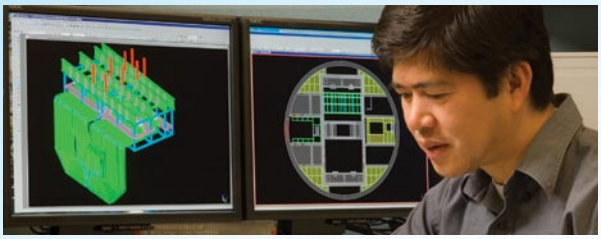
- Improved passive safety
- Superior accident resistance and core damage prevention features, including steel-lined, hardened containment
- Optimized plant layout
- Designed-in operability and maintainability
- SMART CANDU™ advanced operational and maintenance diagnostic systems for better station performance

CANDU technology is fully supported by AECL's comprehensive Services business and by R&D facilities at its Chalk River Laboratories.

Advanced safety systems

The ACR-1000 design incorporates CANDU safety features that have provided decades of event-free nuclear power plant operation around the world.

ACR-1000 safety systems are designed to prevent or mitigate severe accidents by ensuring reactor shutdown, removing decay heat, and preventing radioactive releases. Following traditional CANDU practice, the ACR-1000 incorporates two passive, fast acting shutdown systems that are physically and functionally independent of each other. The Shutdown Systems, Emergency Core Cooling System, Containment Systems and all safety functions meet the highest standards of reliability. Safeguards include system redundancy, diversity, separation, testability, and AECL's rigorous technical specifications and stringent quality assurance standards.



Designed-in satisfaction

Designed to meet real customer needs, the ACR-1000 features an improved plant layout for more efficient operation, and increased safety.

The new layout allows for easier and faster maintenance, with features such as lay-down areas, built-in lifting devices, permanent platforms/hoists/walkways for fast inspection, and air, power and water back-ups for essential outage equipment.

CANDU nuclear power plants use the only reactor technology designed to allow for on-power fuelling and on-line maintenance. Utilities in Canada, Asia, Europe and South America count on CANDU technology for higher lifetime capacity factors than competing technologies.

For security and physical protection, the ACR-1000 design ensures required response to potential common mode events such as fires, aircraft crashes and Design Based Threats.

Affordable to build, economical to operate

The ACR-1000 is designed to achieve the shortest practical construction schedule while supporting easier maintenance practices.

The design promises significantly reduced specific capital costs, and lifetime Levelized Unit Energy Costs. Its shorter construction time reduces financing costs and responds to market needs. Overall, the ACR-1000 is competitive with, or more economical than, gas or coal power generation, and other nuclear power generation technologies.

Clean energy

Every twin-reactor ACR-1000 nuclear plant can generate enough power to meet the daily needs of up to two million people with no emissions of nitrogen oxides, sulphur oxides, toxic heavy metals, aerosols, ozone, or other pollutants.

Environmental savings

- Up to 14.5 million tonnes of carbon dioxide (CO_2) emissions per year, when displacing traditional coal
- Up to 8.8 million tonnes of CO_2 emissions per year when displacing natural gas

A tradition of Canadian innovation

Atomic Energy of Canada Limited (AECL) is a crown corporation dedicated to the development of peaceful applications of nuclear power for more than half a century.

CANDU nuclear technology was originally designed in the 1960s, and has since undergone generations of continuous evolutionary improvement, always building on its core advantages of being a clean, safe, reliable and affordable energy option for utilities around the world.

For more information about the ACR-1000 and other aspects of AECL's clean, safe, reliable and affordable CANDU nuclear technology, visit
www.aecl.ca

AECL: Partnerships that power the world

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