NUCLEAR SERVICES OVERVIEW





WHAT RPC CAN BRING TO THE TABLE

RPC has more than 30 years experience developing, designing, and installing innovative solutions for the nuclear industry across Canada and around the world. In fact, in the early 1990's, RPC developed one of the world's first computerized ultrasonic flowmeters. With an expertise in the design of nuclear inspection tooling, RPC has developed proprietary technology in both high-temperature flowmetering and on-line ultrasonic systems. This, coupled with highly specialized staff, has given RPC an excellent reputation for solving very difficult problems in the nuclear industry. RPC's site-qualified staff have spent extensive time working in nuclear facilities worldwide and understand nuclear systems and the challenges faced while working in such an environment (ie. radiation, contamination, safety). Below are highlights of our experience to date.



ONLINE ULTRASONIC SYSTEMS

FOLTM System – Hydro Quebec, NB Power and KEPCO (Korea Electric Power Corp.)

In 1997-98, RPC designed, manufactured and installed the Feeder On-Line Thickness Monitoring (FOLTM) system. The first installations were at Gentilly, Pt. Lepreau and Wolsung 1 Nuclear Generating Stations.

FOLTM System – Ontario Power Darlington NGS

In 2001, RPC designed, manufactured and installed 24 FOLTM sensors at Darlington Nuclear Generating Station.

FOLTM System – Ontario Power Pickering A NGS

In 2007, RPC designed, manufactured and installed 24 FOLTM sensors at Pickering A Unit #1 Nuclear Generating Station.





HIGH-TEMPERATURE FLOWMETERING

RPC's Flowmeter Development

In 1992-93, RPC developed one of the world's first computerized ultrasonic flowmeters with an uncertainty of less than 1%.

Feeder Flow Measurement System – NB Power Pt. Lepreau

In 1998, RPC designed a flowmeter system to completely measure coolant flow in all 380 fuel channels in 36 hours. A similar system was used in 2012 during Pt. Lepreau Refurbishment Restart.

Development of Multi Flow/Temp Meter – Bruce Power, Ontario

In 2010-11, RPC designed, developed and manufactured a multi-flow and temperature meter to measure Thermal Reactor Power at all 8 Bruce Power reactors. RPC has held the contract for ongoing work ever since.

High Temp Flowmeter – EDF Group – Électricité de France

In 2012, RPC installed and tested our high temperature flowmeter at 350°C at EDF test facility in Paris, France.

SPECIAL PROJECTS

Hydrogen Effusion and ECP Probes at Candu Nuclear Plants

In 2005-2010, RPC collaborated with CNER to design, manufacture and install a hydrogen effusion and ECP (electro-chemical potential) probes at Pt. Lepreau NGS. In 2020, RPC and CNER successfully installed a new HEP design at Darlington NGS.





NUCLEAR INSPECTION TOOLING

Proximity Measurement Tooling – Ontario Hydro Bruce A NGS

In 1991-92, RPC developed and manufactured Class 1 proximity and sag tooling to measure between fuel channels and adjacent tubing. This inspection was completed on Unit 4 at Bruce Power and helped decide the life span of the reactor at the time.

Feeder Inspection Tooling – Atomic Energy of Canada

In 2007-08, RPC designed and manufactured radiography and magnetic rubber tooling for feeder inspection in Candu nuclear plants

End Shield Shift Measurement Tooling – Pt. Lepreau and Wolsung 1

In 2009, RPC designed, manufactured and installed tooling to measure end shield shift during fuel channel replacement. The system was used at Pt. Lepreau and Wolsung 1 in South Korea.

Feeder Clearance Measurement Tooling – Candu Energy

In 2010, RPC designed and manufactured feeder clearance measurement tooling that was used at Pt. Lepreau, OPG and Bruce Power refurb projects

Feeder Radiography Tooling – Candu Energy

In 2012, RPC designed, manufactured tooling to perform radiography on remote feeder tubing at Bruce Power.



NUCLEAR COMPONENT MANUFACTURING

RPC manufactures various nuclear components for reactors in Canada and around the world including freeze jackets, leakage collection indicators, FARE (Flow Assist Ram Extension) tools and emergency shut-down rods.

Experts in the manufacture of specialized corrosion test samples and artificially added crack defect calibration samples that are used by all periodic inspection companies working in Candu plants.





SUPPORT SERVICES

Metallurgy, Corrosion and Material Testing

RPC has extensive experience in metallurgy, failure analysis, specialized material selection, corrosion testing and mechanical material testing. RPC provides a broad range of material tests to measure corrosion resistance, mechanical properties and physical properties of metals, composites and alloys.

Validation and Testing

RPC offers bench and pilot-scale facilities for process validation and testing.

Analytical Laboratories & Process Engineering

- RPC has the only comprehensive, fully-integrated laboratory in Atlantic Canada, offering microbiology, organic and inorganic chemistry, air quality testing and specialty analyses all out of one modern laboratory.
- RPC also has a process engineering group with extensive experience designing, piloting and commercializing chemical processes.







WORLDWIDE EXPERIENCE IN THE NUCLEAR SECTOR



RPC CLIENTS

EDF • Bruce Power • GE Panametrics • Ontario Power Generation • Hydro Quebec • NB Power • JAEA • KEPCO • IHI AECL • Candu • Babcock & Wilcox • Southwest Research Institute • Fox Contractors • SNC Lavalin • Kinectrics • UNB • CNER

QUALITY

RPC is ISO 9001:2015 certified and holds over 100 accreditations and certifications including a diverse ISO 17025 scope from the Standards Council of Canada (SCC). Success in accreditation programs assures our clients that our services can be relied upon to meet all essential standards of quality.

RPC is the 1st company audited by NB Power to the new CSA N299 nuclear standard.

High Reynolds Flow Calibration at Alden Labs - RPC performs annual calibration of its flowmeter systems at Alden Labs in the United States.

CONTACT

For more informati on on our nuclear services or to discuss your needs, please contact: John Aikens, Director of Engineering Services Tel: 506-452-1212 Email: john.aikens@rpc.ca

ABOUT RPC

RPC is New Brunswick's provincial research organization (PRO), a research and technology organization offering contract R&D and technical services at our locations in Fredericton, Moncton, and St. George, New Brunswick. RPC's complement of over 170 scientists, engineers and technologists are supported by world-class analytical laboratories, extensive product development, design, manufacturing and testing services, and a wide variety of pilot facilities for the development and improvement of processes and products.

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