



KINECTRICS

Inspection and Maintenance Systems (IMS)

Design, Build & Deployment of CANDU Reactor Inspection Tooling



Supply of Specialized Tooling and Services to support Life Cycle Management

We provide clients with expert cradle-to-grave tooling development capabilities to engineer new tools—from concept design studies through to detailed design, fabrication, testing, qualification and post-delivery support.

Kinectrics has state-of-the-art on-site machining and prototyping capabilities to fabricate and qualify maintenance tooling parts. We also operate a unique Zone 3 laboratory for radioactive decontamination, maintenance and testing of IMS tooling.

Kinectrics provides ongoing support for existing inspection tools through the supply of parts, components and on-site tool support services.



CWEST (Circumferential Wet Scrape Tool)*

An Innovative Fuel Channel Inspection Solution.

- Shorter outage sampling campaign duration
- Reduced nuclear safety risks by elimination of ice plugging
- Greatly reduced operator dose uptake
- Near and far rolled joint and body-of-tube sampling
- Fail-safe cutter actuation and retraction
- Optimized scrape profile and improved analysis accuracy
- Integrated sample tray and transfer flask
- Light water injection to prevent deuterium uptake in sample
- Designed to CSA N286.2/Built to CSA Z299.2 Standards

* not available for sale outside of Canada until after November 30, 2027



CRD & Moderator Relief Duct Inspection Equipment (MORDIE)

Unique tool for Non Destructive Evaluation (NDE) of nuclear moderator duct piping.

- Custom tool for CANDU Moderator Relief Duct inspections.
- Built to provide advanced NDE inspections
- Designed to traverse and inspect interior walls of 18" sections of piping systems
- Inch Worm Crawler has interchangeable tool heads used to remotely inspect
- Uses onboard NDE technology
- MORDIE testing carried out in Kinectrics' 15,000 sq. ft. Mechanical Lab



Bruce Power Reactor Inspection Maintenance System (BRIMS)

Automated delivery system that deploys fuel inspection and maintenance tools.

- Deploys CWEST to pressure tubes
- Reduces radiation dose to workers
- Reduces time spent during planned maintenance outages
- Safer and more productive execution of work
- Reduces overall outage preparation and maintenance costs
- 80% reduction in critical path set-up and tear-down time
- 50% reduction in Fuel Channel inspection time
- Reduces cabling while accelerating data acquisition speed
- Minimized reliance on fueling machine trolleys



KI North

Full tooling and decontamination area at KI North.

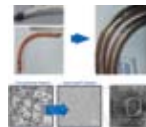
- 37,000 sq. ft facility, 3km from Bruce Power
- Rapid response to customer needs
- Permanent work space to optimize work flow
- Fosters accountability and HU, technical, and process innovation



CIGAR and ANDE

Kinectrics developed ANDE (Advanced Non Destructive Evaluation) and CIGAR (Channel Inspection & Gauging Apparatus for Reactors), and is the current supplier for parts and Zone 3 maintenance facilities.

- Full-length CANDU fuel channel inspection
- Ultrasonic flaw detection and sizing
- Pressure tube Sag measurement
- Dimensional Gauging (diameter & wall thickness)
- Garter Spring Location and gap measurement-Eddy Current Detection
- Operates in high radiation environment



Electrosleeve Technology

A nanocrystalline nickel material containing micro-alloyed phosphorus. Pulse Plating:

- Favours nucleation of new grains over growth of existing grains
- Results in an ultrafine grain structure throughout the coating
- Makes a fully-dense metal: does not use or produce nano powders
- Metallurgically bonded electrochemically deposited fine grain coating which is applied to the internal surfaces of the CRD
- Repairs cracks on components using Electrosleeve Nickel coating
- NI layer is structural coating and will arrest crack growth and fill existing cracks



Feeder Inspection

Advanced feeder inspection tools to facilitate faster, better and more cost-effective feeder inspections.

6-Pack Tool

- Small UT probe which fits next to Grayloc Hub welds
- Encoded circumferential scan 360 degrees
- 6 transducers on 2.5mm spacing
- Models fit 2", 2.5", 3" and 3.5" feeder diameters



Feeder Internal Delivery System (FIDS)

- Robotic pipe crawler capable of horizontal and vertical navigation in water-filled piping
- Includes onboard video cameras
- Payload platform for deployment



Feeder Visual Inspection Tool (FVIS)

- Provides coverage of hanger supports and seismic blocks within feeder cabinet quadrant
- All video recordings are captured electronically and contain time & date stamp, with specific hanger location
- Overall time to perform visual observations in Feeder Cabinet is 14 hours
- 75% reduction in time compared to manual methods
- 50% reduction in personnel requirements
- Contributes to over 100 mSv / 10Rem of dose savings



Feeder Scanner System (FS)

A system used to find fuel defects in the reactor core.

- Ability to test and maintain the Feeder Scanner equipment outside containment and off critical path prior to a Unit outage
- No degradation of equipment properties over time, due to temperature and radiation effects
- Utilization of the latest technology in gamma detection and digital data acquisition/ graphical data display
- Utilization of Commercial-off-the-Shelf (COTS) components to reduce technical risk and ease of maintenance.



Acoustic Leak Inspection System (ALIS)

A practical tool to assess leakage from divider plates in steam generators.

- Effective, non-intrusive method of detecting leaks
- Ability to monitor condition of a divider plate over outages
- A tool to support effective plant life management
- Enhanced capability to predict and estimate costs



Long Radius Bend Inspection Tool

- Thickness measurements for limited-access situations
- 4-probe UT head, probes 90 degrees apart
- 2-axis head manipulation to provide flexibility for tight access situations



Grayloc Area Inspection Tool (GAIT)

- Semi – remote version of 6-Pack to improve repeatability, speed and reduce dose
- Single tool can be configured for both 2" and 2.5" feeders
- Customized, removable hub adapters to fit a variety of field configurations
- Single probe element replacement



Hot Particle Removal

Removal of high radiation particle from nuclear primary heat transfer system using custom-designed robots.

- Kinectrics supplies and operates a set of customized remotely controlled robotic crawlers
- Robotic technology was developed and rigorously tested by Kinectrics
- Removes hot particle without necessitating any dose to personnel



TRUSTIE™ (Tiny Rotating Ultrasonic Tube Inspection Equipment)

Steam generator testing and monitoring.

- Enables effective plant life management
- Minimizes repair and replacement expenditures
- Optimizes inspection and maintenance scheduling
- Improves prediction of expenses
- Protects investment



Spacer Location and Repositioning LIM Control Centre – SLAR LCC

A Control Centre to Perform SLAR Activities.

- LIM manufacturing & testing
- EC location of spacers & LIM for moving spacers
- EC for measurements of PT calandria tube gap
- UT for blister crack detection
- Successful LCC calibration campaigns since 2002
- A tool to support effective plant life management



www.kinectrics.com

Head Office

800 Kipling Ave., Unit 2
Toronto, ON M8Z 5G5
Canada
416-207-6000

Canada

393 University Ave. 4th Floor
Toronto, ON M5G 1E6

USA

2135 City Gate Lane, Suite 100
Naperville, IL 60563

United Kingdom

17-18 Frederick Sanger Road
Surrey Research Park
Guildford, Surrey GU2 7YD

Germany

Hertha-Lindner-Strasse 10-12
01067 Dresden

Denmark

c/o 360 Law Firm
Gl.Kongevej 60
DK- 1850
Frederiksberg C

Romania

59 Grigore Alexandrescu Street.,
2nd Floor Bucharest 010623

India

Sy No.125,
Banda Mailaram Village,
Mulugu Mandal, Siddipet District
Telangana – 502 336

