As the global nuclear industry leader, AREVA’s unique integrated offer to utilities covers every stage of the fuel cycle, nuclear reactor design and construction, and related services. Explore our portfolio of products and services, and contact us to deliver our expertise and excellence on your next project.
AREVA’s Engineering Products & Services

AREVA combines a unique blend of engineering expertise with equipment and system knowledge, rigorous project management experience and regulatory expertise — all driven to reduce risk while saving time and money.

Plant Engineering Modification Group

- Dedicated Responsible Engineers (REs)
- REs cover all disciplines with diverse experience providing the highest quality modification packages
- Managed task capabilities backed by the breadth of AREVA resources and expertise
- Work to utility procedures and processes, under overarching AREVA Quality and Human Performance standards, infrastructure and Appendix B program
- Wide-ranging capabilities including BWR and PWR modifications
- Cost-effective and workable solutions to any operational issue
- EPC project support, providing engineering resources for SGT and ADZ partnerships
- Experienced staff in engineering software applications INDUS Passport (NAS, NAMS) MAXIMO, LOTUS, INDMS, ICRDS, etc.
- Field support provided for modification installation and Field Design Change Notices
**Balance Of Plant Services**

- Balance of Plant (BOP) Projects
- BOP Engineering, Design, Analysis, Procurement, and Construction on:
  - Complete Procurement Services
  - Decommissioning
  - Design Change Packages
  - Electrical and I&C Services and Products
    - Digital Upgrades
  - Engineering Field Support
  - Field Engineering
  - General Construction Management Projects
  - Major Plant Component Replacements
  - Plant Upgrades
  - Power Uprates
  - Radiological, Valve and Condenser Services
  - Specialized Machining, Welding and Precision Measurements
  - Task Management and Craft Labor
  - Work Planning & Packages
- Testing and Turnover

**Engineering Control Center**

- Dedicated Customer Hotline - 24/7/365
- Engineering Services Oversight & Coordination
- Robust Technical Support
- Single-Point of Contact for Engineering Needs
- Telephone: 434.832.3722

**Fire Protection Engineering**

- Detection/Suppression/Water Supply System Design
- Fire Barrier Testing and Qualification
- Fire Safe Shutdown Analysis
- NFPA 805 Post-Transition Support
- Plant Fire Protection Program Support

**Mechanical Engineering**

- 10 CFR 50.71(e) USAR Updating
- ALWR Design
- BWR Hydrogen Water Chemistry Design
- Design Basis Upgrades
- Engineering Studies/Cost-Benefit Analysis
- Flow Modeling & Hydraulic Analysis
- HVAC Design & Analysis
- Mechanical Component Engineering
- Mechanical Systems Engineering
- Plant Modifications and Plant Design Modification Packages
- Raw Water Intake Solutions
- Suction Strainer/Containment Sump Hydraulic Analysis
- System Assessments
- System Monitoring/EPRI
- System Water Hammer Evaluation
- Thermal-Hydraulic Analysis including CFD Modeling
- USAR Program Development/Evaluation/Enhancement

**Structural & Engineering Mechanics**

- Continuing Operation of Equipment
- Crane Assessments
- Equipment & Component Qualification
- Finite Element Analysis
- Flaw Handbooks for Vessel Internals
- Fluid Transient Load Evaluations
- High Energy Line Break (HELB)
- Materials, Fracture Mechanics & Specifications Analysis
- Piping & Suspended Systems
- Seismic/Dynamic Evaluation
- Structural Analysis & Design
- Vibration Analysis
Electrical /I&C Engineering

- AC/DC System Design & Analysis
- Calculation Conversions
- Control Room Design
- Cyber Security
- Design Studies
  - Conceptual Design
  - Cost/Benefit Analysis
  - Feasibility Studies
  - Planning
- Diesel Generator Engineering
- Digital I&C System Analyses: Setpoint, Failure Modes and Effects Analysis (FMEA), Reliability, and Response Time Uncertainty
- Digital Upgrades
- Electrical Calculations
  - Cable Ampacity
  - Power Systems
  - Setpoint
- Electrical Load Management
- Environmental Qualification
- Human Factors Engineering
- I&C Calculations
  - Instrument Loop Analysis
  - Instrument Setpoint Analysis
- I&C System Design
- Interface Management
- Licensing Support
- Modification Package Development
  - 10 CFR 50.59 Evaluations
  - Drawings & Database Inputs
  - Installation Instructions
  - Installation & Startup Support
  - Implementation & Testing Support
  - Procedure Support
- Plant Process Computer Replacements
- Power Systems Modeling (ETAP, etc.)
- Requirements Specification Development
- Security Replacements & Upgrades

- Specifications
- Single Point Vulnerability
- Software Verification and Validation (V&V)
- Software Quality Assurance (SQA) Plans and Procedures
- Voltage Regulation

Hardware Modernizations

- After Sales Support
- Digital Control Rod Drive Control System (DCRDCS)
- Digital I&C System Installation, Commissioning and Testing
- Field Testing Installation and Commissioning
- Electronic Equipment Restoration (EER)
- Emergency Feedwater Initiation and Control System
- Human System Interface (I)
- Humidity Leak Detection System (FLUS)
- Integrated Control System
- Monitoring Systems and Miscellaneous
  - Loose Parts Monitoring
  - Leakage Monitoring
- Post Accident Monitoring System/RG1.97 Indication
- Reactivity Measurement and Analysis System (RMAS)
- Rod Drop Testing System
- Safety Features Actuation System
- Safety and Reactor I&C Systems
  - Diesel Controls
  - Reactor Protection
  - Neutron Flux Monitoring
  - NSSS – Reactor Controls and Limitation
  - Control Rod Position Indication
- TELEPERM™ XS Safety Related Digital Control Platform
- Training
- Traversing In-Core Probe System and Detectors (TIP)
**Structural & Engineering Mechanics**

- Crane Assessments
- Continuing Operation of Equipment
- Equipment & Component Qualification
- Finite Element Analysis
- Flaw Handbooks for Vessel Internals
- Fluid Transient Load Evaluations
- High Energy Line Break (HELB)
- Materials, Fracture Mechanics & Specifications Analysis
- Piping & Suspended Systems
- Seismic/Dynamic Evaluation
- Structural Analysis & Design
- Vibration Analysis

**U.S. Technical Center & Commercial Grade Dedication**

- Accelerated Aging Chambers
- CGD Engineering and Test Plan Development
- CGD Testing

- Chemistry Lab w/Scanning Electron Microscope
- Chemistry and Materials Center
- Environmental Test Chamber (-15° to 150° C, 0 to 95% humidity)
- Materials Lab
  - Hardness Testing
  - Corrosion Testing – 3 Autoclaves
  - Metallography – Cutting, Mounting, Grinding, Polishing, Etching, Microscopic Examination
  - Two Universal Testing Machines – Tension & Compression – 135,000 lbs. max.
  - Water Testing & Moisture Analysis
  - Metallographic Analysis Using the Innovex Alloy Analyzer
- Metallurgical Laboratory
- Seismic and Environmental Testing
- Seismic Shake Table (tri-axial, 5 ton payload, 7g, 100 Hz Supplier/Vendor Surveillance)
- Testing for Research and Development
- QA Data Package
### Nuclear Parts Center

- ASCO™ Solenoid Valves
- ASCO™ Hydramotor® Actuators and Parts
- ASCO™ Pressure/Temperature Switches
- BiRNS® Lighting
- Cartridge Filters
- Disposable Media Filters
- Electrical Spares
- EMPATH™ (Motor Diagnostics)
- Limitorque Actuators, Parts, and Motors
- Meggitt Containment Atmosphere Monitoring Systems (CAMS) Spare Parts
- Nuclear Grade Air Traps™
- NSSS Parts and ASME Code Components
- Pentair (Yarway) Valves
- Powell Valves
- Pressurizer Heaters
- RC Pump, Seal, and Motor Parts
- Specialty Cable Assemblies
- Stearns Roger® Fuel Handling Equipment
- UltraCheck® Valve Diagnostics Valve Enhancement Program
- Velan Valves

### Fuels

- Crud Sampling
- Fuel Assembly Re-Channeling
- Fuel Channel Bow Measurements and Characterization
- Fuel Fabrication
- Fuel Inspection (UT and ET)
- Fuel Repair
- Fuel Sipping (mast, hood and vacuum)
- Post Irradiated Examination
- Visual Control Component Inspections
- Ultrasonic Fuel Cleaning
Unique BWR Capabilities

- Access Hole Cover Repair
- Control Rod Drive Housing Repair
- Core Shroud Repair/Replacement
- Core Spray Pipe Repair/Replacement
- Feedwater Sparger End Pin Repair
- Jet Pump Analysis & Repairs
- LPRM Flow Hole Modifications
- Nozzle Overlays/Repairs
- Reactor Head and Vessel Flange Repair
- Reactor Vessel Internal Repairs
- Steam Dryer Repairs/Modifications
- Stub Tube Repair

Component Repair & Replacement

- Alloy 600 Support
- Contingency Plans & Procedures
- Equipment Recovery Plans
- Hardware Design and Qualification
- Metrology including Underwater Laser Scanning
- Reactor Vessel Head Repairs
- Safe End Welding
- Tooling Design and Qualification

NDE

- Core Shroud UT
- Core Spray Pipe UT
- ISI and FAC Inspections
- Jet Pump Beam UT
- Jet Pump Diffuser UT
- Non Destructive Examination (NDE) Training & Certification
- Phased Array Inspections
- Reactor Head Inspections
- Reactor Vessel UT
- Reactor Vessel Nozzle and Safe End UT
- Section XI

Steam Generator Services

- Eddy Current Testing
- Foreign Object Search and Retrieval (FOSAR)
- Secondary Side Inspections
• Sludge Analysis
• Steam Generator Engineering Support
• Tube Integrity Engineering
• Tube Plugging and Repair
• Tube Slewing
• Upper Bundle Flush
• Water Lance

**Refueling & Outage**
• AOV/MOV Capability Evaluation Software
• AOV/MOV/Check Valve Programs
• Feedwater Heater Services and Tube Slewing/Repairs
• Fuel Movement
• Heat Exchanger Services
• In-Vessel Maintenance
  - Control Rod Blade Exchange
  - Fuel Cell Maintenance
  - LPRM Exchange
• In-Vessel Visual Inspection (IVVI)
• Liner Leak Detection and Repairs
• Outage Equipment
• Outage Optimization
• Outage Risk Assessment
• PWR & BWR Refueling Services
• Planning & Scheduling
• Pool-to-Pad Services
• RPV Disassembly/Reassembly
• Refuel Equipment Replacements, Upgrades, and Preventative Maintenance
• Refueling SRO and Personnel Training
• Steam Dryer Remote Visual Inspections (ID & OD)

**License Renewal & Regulatory Projects**
• Assessment of Plant CLB, DB, Programs & Technology
• Design Basis Documentation (DBD)
• Initial Plant Life Extension Analyses
• Improved Technical Specification (ITS)
• License Renewal Application Support
• Licensing Support for Plant Modifications

• LR Site Implementation Plan
• NRC Inspection Review Support
• Modifications Outage Support
• Plant Condition Assessments
• Plant Financial Modeling/Analyses
• SSC Scoping, Screens and Aging Management
• Time Limited License Aging Analysis

**Chemistry and Materials**
• BWR & PWR Advisement & Consultation for Primary, Secondary and Auxillary Systems including Makeup Water Quality, Dose Reduction and Radwaste
• Chemistry & Materials Analysis & Testing for Clean and/or Radiological Contaminated Samples/Processes including:
  - Gamma Spectroscopy & Liquid Scintillation Analyses
  - Root Cause and Failure Analysis
  - SEM/EDS Analysis
  - ICP-MS Analysis
  - Total Organic
  - IC Analysis
  - AA Spectroscopy (Flame & Furnace)
  - Corrosion Testing (Static & Recirculating Autoclaves)
  - Resin Testing & Analysis
  - XRD & XRF Analysis
  - FTIR Analysis
• Chemical Cleaning and Decontamination Services
• Chemistry/Corrosion Modeling Using Industry and AREVA Specialty Tools
• Chemistry Training on PWR and/or BWR Chemistry and/or Dose Reduction
• Consumable Material Control, including Analyses and Testing
• Fuel Chemistry Reliability, including Crud/Corrosion Risk Assessments and/or Evaluations and Fuel Crud Characterization
• Process Development/Qualification for First-of-a-Kind Chemistry Treatments/Applications
• Steam Generator Reliability Optimization including Sludge Sample Characterization/Evaluations, Maintenance and Chemistry Optimization
Nuclear Analysis & Fuel Management
- Alternative Source Term
- Containment & High Energy Line Break Analysis
- Control Room Habitability
- Criticality Analysis
- Dose Assessment
- Fluid Transient – Hydrodynamic Pipe Loads
- Fuel Fabrication Process Inspection
- Fuel Mechanical Design Reviews
- Fuel Performance & Reliability Evaluations
- Fuel Management & Economic Analysis
- GOTHIC Analysis
- MCNP, DORT, SCALE, Heating Analysis
- Meteorological & Atmospheric Dispersion Analysis
- PSA Support Services
- Radiation Accident & Safety Analysis
- Radiation Effluents & Waste Management
- Radiation Environmental Monitoring Program Support
- Radiation Shielding & Equipment Qualification
- Risk Based Technical Specifications Optimization
- Risk Informed In-Service Inspection
- Risk Informed Procurement
- Spent Fuel Characterization
- Spent Fuel Pool Thermal-Hydraulic Analysis
- Transient /LOCA Safety Analysis

Reliability Improvement
- Corrective Action Program
- Equipment Reliability Studies (INPO AP-913)
- Flow-Accelerated Corrosion (FAC)
- Human Performance Trending
- ISI/IST
- Life Cycle Management
- MOV/Equipment Testing
- MOV/AOV Programs
- Operating Experience Program
- Plant Maintenance Living Program (PMLP)

Safety Analysis
- Accident Analysis
- Bridge Equipment Reliability Studies
- Containment Analysis
- Equipment Out of Service (EOOS) Evaluations
- Justification for Continued Operation (JCOs)
- Licensing Support
- Lost Parts Analysis
- Probabilistic Risk Analysis (PRA) – including Fire and Seismic
- Radiation Shielding
- Radiological and Environmental Analysis
- Refueling Bridge Engineering
- Security Modifications
- Site Dose Models
- Transient Analysis

Contingency Planning Services
- Emergency Preparedness Planning
- Radiology Drill & Exercise Planning
- Contingency Plan Drill & Exercises

Undervessel
- Control Rod Drive Exchange
- Control Rod Drive Rebuilds

Pumps and Motors
- Condensate Pump Refurbishment
- HPCS Auxiliary Motor Services
- Reactor Recirculation Pump Motor Refurbishment
- SW Motor Refurbishment
- On-site RRP Motor Modifications
AREVA in North America (AREVA Inc.) combines U.S. and Canadian leadership to supply high added-value products and services to support the operation of the commercial nuclear fleet. Globally, AREVA is present throughout the entire nuclear cycle, from uranium mining to used fuel recycling, including nuclear reactor primary circuit design and fabrication, and operating fleet engineering and services. AREVA is recognized by utilities around the world for its expertise, its skills in cutting-edge technologies, and its dedication to the highest level of safety. AREVA Inc.’s 4,100 employees are helping build tomorrow’s energy model: supplying ever safer, cleaner and more economical energy to the greatest number of people.

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