Power Uprates

AREVA Puts More Power at Your Fingertips

As many utilities in the nuclear industry are looking for ways to economically and safely expand power generation capacity, AREVA’s global resources can help ensure a successful journey. AREVA is uniquely positioned to offer utilities many power uprate options to increase the maximum reactor licensed power level at which a commercial nuclear power plant may operate.

There is an industry-wide initiative to set the world on a path toward low-carbon growth and development. With reduction goals for global emissions in place, AREVA is prepared to provide the support needed to ensure that the U.S. nuclear fleet is poised to help achieve these goals. Diverse supplies and resources, as well as enhanced energy efficiency are the surest route to energy security. The modernization of existing infrastructures will further help to achieve enhanced global energy security. AREVA is prepared and committed to putting you on the certain path toward achieving higher power generation capability.
Measurement Uncertainty Recapture (MUR)  
(also referred to as “Appendix K”)

- Increase is less than 2% of current thermal power.
- Install a state-of-the-art feedwater flow measurement device which allows for a more precise measurement of flow (typically an ultrasonic device).
- This allows normal operating capacity (100% power) to increase while staying within the already analyzed 102%.

Stretch Power Uprate (SPU)

- Approximately 8% of current thermal power.
- Actual value for percentage increase is plant-specific and depends on the operating margins included in the design of a particular plant.
- Usually involves changes to instrumentation set points, does not involve major plant modifications.

Extended Power Uprate (EPU)

- Typical increase is up to 20% of current thermal power.
- These uprates typically require significant modifications to major balance-of-plant (BOP) equipment, such as turbines and main generators.

Get 100+ MWe with the following payback period
Analytical & Licensing Capabilities

• Maximize the margin to PCT limits by implementing our NRC-approved Realistic Large Break LOCA methodology – a proven record at every plant we have modeled.

• Experience and lessons-learned from ongoing EPU projects allow AREVA to immediately bring relevant and practical engineering and licensing solutions.

• We have vast experience with major modifications on all the various designed plants in the U.S. and globally.

• We will leverage our proven experience to provide the most cost-effective power uprate, while maintaining the highest quality and safety consciousness.

• Customers will benefit from the experience of our on-site as well as home office technical experts who will ensure a seamless transfer of knowledge.

• AREVA works cooperatively with OEMs, contractors and vendors to the benefit of customers.
Robust Fuel Design

• AREVA’s Advanced HTP fuel design supplies the thermal margin and demonstrated fuel reliability necessary to meet the initial Stretch Power Uprate requirements.

• Our cutting edge design, GAIA, will begin irradiation in 2012 and will meet the demanding performance requirements of Extended Power Uprate operation.

• AREVA’s transition capabilities from 15x15 and 17x17 fuel designs to our HTP fuel product line have been successfully demonstrated.

• Our Zero Tolerance for Failure program creates a culture which drives us toward our 2010 zero failures performance goal.
AREVA’s Ready to Put its Experience at Your Fingertips by Delivering:

- Dedication to a safety conscious work culture.
- A single point of contact and accountability for all aspects of life cycle management and power uprate projects.
- Licensing and permitting expertise with real-time lessons learned from on-going EPU projects.
- System impact evaluations and margin identification.
- Risk sharing and performance-based incentives.
- BOP system upgrades.
- Plant operational assessments and impact determination.
- An experienced team that has a proven global nuclear track record.
- The commitment to mobilize the resources to deliver world-class NSSS and EPC project execution.
- Plant modification package development.
AREVA’s Structured Approach to Each Uprate Type includes:

1. **Comprehensive Scoping Study**
   Determine “target” power level from cost/benefit perspective, and determine budgetary scope, cost and schedule. A Comprehensive Phase 1 Scoping Study is a vital first step to predictably define the business case for a power uprate.

2. **Detailed Engineering and License Amendment Request (LAR) Preparation**
   Perform detailed engineering System Evaluation Reports to identify equipment changes and modifications, set point adjustments and supporting analysis required to attain the “target” power level. Develop LAR for NRC approval.

3. **Modification Implementation and LAR Approval**
   Implement required modifications and obtain NRC approval of LAR Safety Evaluation Report (SER).

   Look to AREVA for proven expertise in cost/benefit analysis and project management. With U.S. market leadership and global resources, we are focused on delivering integrated solutions to improve your plant’s performance.

   We deliver a collaborative approach to project management ensuring the utility’s participation in all aspects of the project while providing a single point of contact for all NSSS engineering, BOP, and fuel issues. Through partnership, planning and a commitment to shared values, AREVA delivers integrated plant (NSSS though BOP) solutions. AREVA will maximize personnel and plant safety and achieve the highest level of project excellence, from project inception to final operation. “Let us put “More Power at Your Fingertips.”

**Why AREVA?**

AREVA is uniquely positioned to perform and integrate the NSSS and BOP Extended Power Uprate engineering and modifications. Our experienced Project Management team is focused on delivering your maximum Uprate while also maximizing margin retention and providing certainty on your project cost and schedule.

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As the leading U.S. nuclear vendor and a key player in the renewable energy and electricity transmission and distribution sectors, AREVA Inc.’s 6,000 U.S. energy employees are committed to serving the nation and paving the way for the future of the electricity market. With 45 locations across the nation and nearly $2 billion in energy revenues in 2008, AREVA Inc., through its subsidiaries, combines U.S. leadership, access to worldwide expertise and a proven track record of performance. In the U.S. and in more than 100 countries around the world, AREVA is engaged in the 21st century’s greatest challenges: making energy available to all, protecting the planet, and acting responsibly toward future generations. AREVA Inc. is headquartered in Bethesda, Maryland. Visit us at http://us.areva.com or follow us at Twitter.