

AREVA's prospects in the U.S. market

The environment for nuclear power is improving

- At the end of the nineties, the U.S. government began to reevaluate its views on nuclear power as a number of issues came to the forefront, including global warming and the need to ensure security of supply. In the past few years, new scientific studies have confirmed the magnitude of global warming, while the situation in the Middle East continued to remain highly unstable. On the demand side, countries such as China, India and Brazil finally emerged as major users of energy. With this as a backdrop, the U.S. government has stepped up its efforts to re-examine its nuclear power policy.
- America has significant domestic reserves of coal, but this source of energy raises a number of environmental issues. In fact, most of the country's new generating capacity has been provided by natural gas combined-cycle plants. With fossil fuel prices out of control, nuclear power appears more and more like an attractive option.
- The performance of nuclear power plants has improved significantly over the past fifteen years. Today, nuclear power is one of the most efficient components of the U.S. energy mix, while safety remains at the highest level. This explains the number of programs implemented since 1995 to extend reactors operating licenses and expand their capacity.
- Utilities consider support for new reactor construction by the U.S. administration and the U.S. Congress as essential to initiating the process, which will eventually become self sustainable. An Energy Bill was passed in July 2005 in this regard; it includes a federal support program that could provide up to 2 billion dollars in government subsidies for the first six reactors to be built. These six reactors will also be insured against licensing risk during the construction phase. Progress was also made regarding standardization of the licensing process for the new reactors. In addition, the Energy Bill includes a subsidized loan program for new power generating facilities that use innovative, CO₂-free technologies. Advanced nuclear technologies are eligible for this program, which would finance up to 80% of the facilities' design and construction costs. Although no formal investment has been approved yet, the largest utilities have begun preliminary studies on building new nuclear reactors. The U.S. Department of Energy (DOE) supports this program.
- The DOE has also started new research and development programs in nuclear power, in particular in the fields of used fuel treatment and waste management (Advanced Fuel Cycle Initiative), advanced high temperature reactor design, and site decommissioning and cleanup.

The largest nuclear market in the world

- The United States represents approximately one third of the world's accessible market, far more than France and Japan, each of which have approximately 17%. A total of 104 reactors are connected to the U.S. grid, representing 98,230 MWe in generating capacity, i.e. 20% of the country's electricity production.
- In the nineties, deregulation of the U.S. electric market led to concentration in nuclear power generation. Utilities interested in developing their nuclear generating capacity acquired several existing plants. Large nuclear power generators emerged as a result, with significant economies of scale and large capital spending programs leading to significant progress in areas such as safety, plant availability and standardization. In particular, these programs contributed to an increase in plant availability, which rose from 60% at the time to more than 85% today. This gain in productivity is equivalent to the power generated by twenty new reactors. Upgraded reactors are both highly profitable and very competitive on the market.
- Encouraged by the renewed competitiveness of nuclear power, utilities decided to invest in extending the service life of their reactors.
 - In the years 2000 and on, utilities launched major plant upgrade programs to extend the service life of their reactors, and applications were submitted to the Nuclear Regulatory Commission (NRC) to extend reactor licenses from 40 years to 60 years. A total of 23 license extensions have already been approved, while 14 additional applications are still under review. Approximately 60 reactors should benefit from these programs in the coming years.
 - In the next 10 years, AREVA and other companies with sufficient resources and technology will contribute to the revival of the U.S. nuclear program and benefit from its growth.

AREVA has strong positions in North America and is a leader in nuclear power in the United States

AREVA as a whole has very strong positions in North America, including the Transmission and Distribution market. The group's sales revenue in the region is close to 1.9 billion euros, representing 17% of AREVA's consolidated sales. Sales jumped 110% from 2001 to 2004. AREVA has over 6,000 employees in the United States, representing 11% of the group's total personnel.

Together with France and Germany, the United States is one of the three pillars of AREVA's production platform.

Combined, the U.S. and French markets represent 50% of the world market. This statistic is a key to understanding AREVA's growth strategy.

With more than 4,500 employees in the United States, AREVA is the largest employer in the sector, ahead of Westinghouse (4,000 employees), USEC (3,500 employees) and General Electric (2,000 employees).

AREVA is also the largest supplier to the U.S. market, with 1.83 billion dollars in sales revenue (1.4 billion euros), ahead of British-American company Westinghouse (approximately 950 million dollars*), USEC (approximately 900 million dollars*) and General Electric (less than 900 million dollars*).

Sales in the United States have been increasing steadily since the creation of the AREVA group, from 1.1 billion euros in 2002 to 1.3 billion euros in 2003.

The group has sales in the Front End (609 million euros in enrichment and fuel, including fuel for boiling water reactors, reflecting AREVA's acquisition of Siemens' nuclear division), in Reactors & Services (599 million euros) and in the Back End (137 million euros). The group's growth is due in part to acquisitions such as Canberra in 2001 (the world leader in nuclear measurements) and Duke Engineering & Services in 2002.

Since 2000, AREVA has acquired significant positions in the U.S. plant upgrades market. The group is the market leader for heavy component replacements, with almost 350 million euros in sales revenue, including a 40% market share for steam generators and a 50% market share for reactor vessel heads. The Chalon plant, which built the components of all of France's reactors, exported 60% of its production to the United States in 2003. In addition to the components themselves, the market for installation services is very significant. AREVA's sales for this particular segment represented close to 1 billion euros over the period 2001-2003 (including installation of components manufactured by competitors).

In the Back End of the nuclear cycle, AREVA is the leader in on-site storage systems for used fuel, with a market share of about 50%. AREVA was awarded a contract by Bechtel/SAIC for the design of a fuel unloading facility for DOE's Yucca Mountain site. This facility will be generally similar to the one at La Hague. At the end of 2004 and at the beginning of 2005, AREVA fabricated four MOX fuel demonstration assemblies for a DOE project implementing the surplus defense plutonium disposition program under an agreement between Russia and the United States. These assemblies will be loaded in Duke Power's Catawba nuclear plant in 2005.

In addition, the power transmission and distribution business is present in the United States in the "Medium Voltage Business" market and the "Services Business" market (equipment for power distribution systems).

AREVA is organizing to meet future challenges in the U.S. market

- *The U.S. EPR*

In a letter dated May 4, 2005, U.S. utility Constellation Energy formally notified the Nuclear Regulatory Commission (NRC) of its interest in an EPR and requested that the reactor be included in the agency's licensing program.

Constellation's decision shows that the EPR meets the requirements of U.S. utilities. In addition to Constellation, several other utilities, including Duke Power and Entergy, have indicated their interest in this reactor. Utilities have a clear preference for evolutionary models that are safer, more reliable and cheaper to operate while relying on proven technologies that can be implemented immediately.

AREVA has earmarked 200 million dollars for its EPR licensing program.

The U.S. licensing program includes:

- A preliminary phase, which began in 2005. During this phase, the NRC will familiarize itself with the EPR's main technical features, identify the key aspects to be examined, and establish a schedule for licensing, including a cost schedule.

- The licensing phase itself will follow. AREVA is planning to submit a formal license application by the end of 2007. The final NRC review is expected to last two to three years. The EPR's evolutionary concept and the technical evaluations performed in the meantime in Finland and in France should help streamline NRC's evaluation.

- In parallel, a utility would choose a type of reactor and a site before submitting an application for a Construction and Operating License (COL), to be examined by NRC over a period of approximately three years.

- U.S. utilities have indicated that new high-capacity reactors will be required by 2014-2016. AREVA's market analyses confirm this forecast. The EPR's certification schedule and construction period (5 years) will make it possible to connect an EPR to the grid by 2015, thus positioning AREVA to meet market demand. To achieve this goal, AREVA has set up a team specially dedicated to the EPR project in the United States.

- High temperature reactor

AREVA has indicated that it intends to submit a bid in response to the Department of Energy's request for proposals for a high temperature demonstration reactor capable of producing hydrogen.

- Used fuel treatment and recycling

The United States' current policy is to dispose of used fuel at the Yucca Mountain site now under development in Nevada, without prior fuel treatment.

AREVA is preparing for a significant used fuel transportation market between existing at-reactor storage sites and the centralized disposal site at Yucca Mountain.

At the same time, the U.S. government has shown renewed interest in the used fuel treatment-recycling option and initiated a research program called the Advanced Fuel Cycle Initiative. One goal would be to increase the disposal capacity at Yucca Mountain. Treatment-recycling would quadruple this capacity.

AREVA could contribute to these programs and capitalize on its know-how by calling on its experience at La Hague. Former Energy Secretary Spencer Abraham visited the La Hague plant on June 17, 2003.

- The "Mox for Peace" program

The United States and Russia have decided to dispose of 34 metric tons each of plutonium deemed in excess of their defense program requirements. It was decided that the plutonium would be recycled in reactors in the form of Mox fuel and that the U.S. and Russian programs would be implemented simultaneously. The DOE has asked the DCS consortium, including AREVA, to design, build and operate the U.S. Mox Fuel Fabrication Facility based on technology developed in France for the Melox plant. Recently, a first step was successfully completed when four demonstration fuel assemblies were loaded in a Duke Power reactor. These assemblies will serve to validate safety analyses concerning the use of the assemblies to be produced at a later stage in the United States. Plant construction is scheduled to begin in 2006.

Discussions are under way for the Russian program, which could also call on French technology.

- A potential market for Transmission & Distribution

AREVA has also become an important player in electricity transmission and distribution.

The group is deeply involved with the most critical infrastructures of the US electricity sector, with robust and secure solutions in high voltage (dead tank circuit breakers from our factory in Charleroi) and automation, where we are the number one leader in Energy Management Systems, Distribution Managements and Market management systems

AREVA T&D's dispatching systems control 40% of the energy that flows in the country, and 65% of the country's top utilities have one or more of our products. In Louisiana and Florida, our solutions enabled our customers, Southern, Entergy, Florida Power and Light to limit the impact of blackouts even during the recent hurricanes. AREVA T&D works closely with federal regulatory energies such as the Department of Energy and the Department of Homeland Security , which have given us high marks for the reliability and security of our systems.

The US is also the worldwide industrial base for our software products and systems, with a center of excellence in Seattle, and a partnership with Microsoft that enables us to develop ever-more innovative, reliable and cost-effective solutions.

AREVA T&D has great ambitions for the future. The United States' power transmission and distribution networks need to be modernized, as evidenced by recent blackouts. While announced grid revamping programs have not yet materialized, the market offers significant prospects for our business.