

□ Nuclear energy

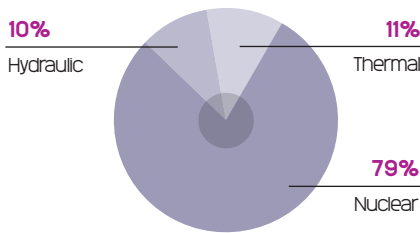


Flamanville nuclear power plant.

# A field with a future

**Being seen as one of the effective ways of reducing global warming, nuclear energy is on the threshold of a new era of development. SPIE Nucléaire occupies a good position in this market and intends to further increase its competencies and widen its field of action.**

**Total gross electricity production**  
(% share of production)



Source: Energy production report for France, 2005

How can the growing world energy needs be met while reducing greenhouse gas emissions which cause global warming? Mainly by "responsible use of nuclear energy" which does not release carbon dioxide into the atmosphere and solves the problem of declining fossil fuel reserves, according to the scientists, industrialists and politicians who met in Kyoto in 2005. "Clearly, the turnabout in public opinion and the opinion of decision-makers regarding nuclear energy has occurred as a result of environmental problems," explains Francis Butel, CEO of SPIE Nucléaire. "After a break of about 20 years, this market is preparing for a new

phase of strong, lasting growth worldwide, and most major players want to be well placed in that market."

**The ageing of nuclear power plants in service worldwide**

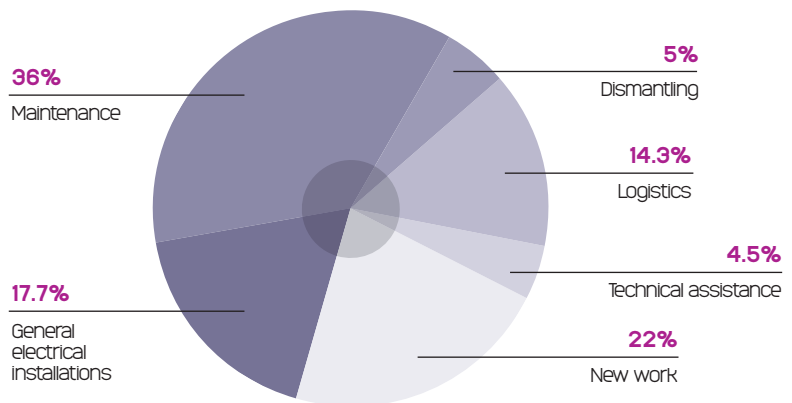
The power plants in service throughout the world were developed as from the mid-1970s and are growing old. This range of power plants, consisting of about a hundred in the United States, around 50 in Japan and the 58 in France which account for 80% of the country's total electric power production, will therefore have to be renovated, to a great extent, in the coming

20 years in spite of extensions to their service lives. At the same time, emerging countries like China and India (see box on page 12) as well as South Africa, the United Kingdom, Italy and Poland have construction plans for the years ahead.

In France, EDF - the national operator - is pursuing a two-pronged strategy: on the one hand, extending the lives of existing power plants to beyond 40 years by modernising them and implementing major maintenance programmes and, on the other hand, building new nuclear power plants of the EPR (European Pressurised

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**SPIE Nucléaire today**  
Distribution by activity



**Interview**

**Dominique Declercq,**  
SPIE Nucléaire sales development and marketing manager

"Covering the entire nuclear fuel cycle"

**What is SPIE's commercial strategy in the nuclear energy market?**

We have two essential clients in this market: EDF for all aspects of energy production and AREVA for activities concerning the fuel cycle. It is our aim to cover the whole of the actual nuclear fuel cycle from engineering to dismantling, including construction, maintenance, clean-up of fuel enrichment and reprocessing units and not forgetting the power plants themselves which consume the fuel. Our strategic choice has always been to maintain our close relationship with these two principal

customers. Wherever they operate power plants or units and whenever they decentralise or create research activities or engineering or production centres, we endeavour to follow them, which explains why we are now based on about 30 sites all over France.

**What are your fields of operation?**

In fact, most of SPIE Nucléaire's activity is focused on maintenance, new work and general electrical installations

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▷ Continued from p. 09

“ We are one of the few players who propose technical services in the three segments of this market, from construction to dismantling as well as maintenance. ”

plus, to a lesser extent, logistics and dismantling. General electrical installation work is our traditional speciality in the nuclear industry and we are the leading provider in this field in France. It consists in designing and installing electrical equipment required for the operation of power plants. SPIE Nucléaire currently achieves annual sales of €135 million, employs 1,650 people and offers the nuclear industry all the Group's traditional multitechnical skills in electrical

contracting, mechanical engineering, HVAC, instrumentation, boiler-making, piping and valves. We also provide comprehensive work site assistance services for unit shutdowns.

#### What are SPIE's main strengths in this market?

Firstly, there are the experience and expertise SPIE has acquired in more than 30 years in the nuclear sector, enabling us to offer our customers extremely sophisticated technical prowess and competencies.

We are also one of the few players able to offer technical services in the three segments of this market, from construction to dismantling as well as maintenance, and offering expertise in practically all the professional skills required on nuclear installations. In addition, our decentralised organisation allows us to ensure our presence on practically all the French nuclear sites requiring maintenance and to work in close collaboration with our customer on all new projects.



Aerial view of the AREVA fuel reprocessing plant at La Hague.

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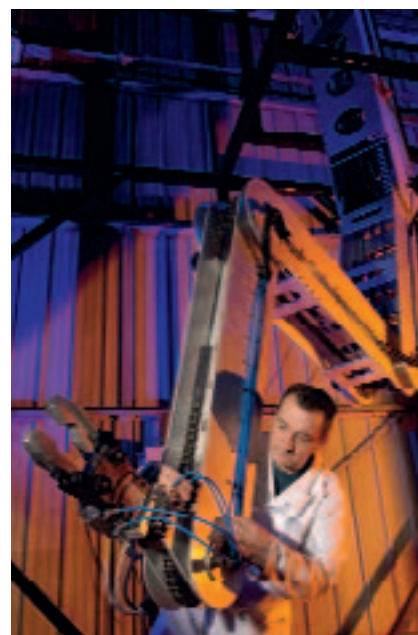
Water Reactor) type, thermal power plants with combined cycles and wind farms. “As far as the energy production cycle is concerned, the market is made up of three segments, which are the building of power plants and dismantling operations, as well as operation and maintenance,” explains Francis Butel. “This set-up is reflected in activities related to the fuel cycle, with the extraction and enrichment of fuel, the recycling of spent fuel and the treatment of

waste before storage. Naturally, we wish to take up a position covering the whole of this cycle, as an electrical contractor through our general electrical installation activities and also as a mechanical equipment installer following our take-over of the business of the GAME Group.”

#### Strengthening our position

SPIE achieved its excellent reputation in the nuclear energy market quite naturally through the experience it has acquired (via Thermatome) by contributing to the construction of power plants, fuel enrichment and reprocessing units over a period spanning 30 years. SPIE then developed its maintenance and dismantling activities and has recently scored a success in the market for latest-generation power plants by signing a contract for general electrical installation work for the construction of the new EPR plant unit at Flamanville (see below). “As a result of the repositioning we began a few years ago, we now have established quite a good lead on our competitors in France,” says Francis Butel. “The

challenge is to forge ahead in pursuit of this market, which implies a strategy of acquisition with the aim of reinforcing our expertise in electromechanical engineering and dismantling”. ■



Articulated arm designed and built by the teams at La Hague.

## □ Customer interview

# EPR, a major industrial challenge

Sébastien Sanchez, building and electrical systems manager for the EPR project at the EDF national centre for nuclear equipment, describes EPR and the challenges it represents for EDF.



### What are the specific features and advantages of EPR?

EPR is the European Pressurized Water Reactor developed since the beginning of the 1990s by EDF and AREVA in partnership with German electrical engineering firms. The design of this third-generation nuclear reactor is based on experience acquired in more than 20 years operating French and German nuclear power plants and on innovations developed by CEA and German research organisations.

The benefit offered by EPR is that it is safer and more efficient, and produces less

waste. Its very high level of protection relies on four separate safety systems which can shut down the nuclear reaction and cool the reactor in any necessary circumstances. As EPR offers greater operating flexibility along with lower operating costs, it should be possible to achieve an availability

of 90% compared with 83% for existing nuclear power plants. The Flamanville EPR will also be the world's most powerful reactor, with improved efficiency and a service life of 60 years, which is 20 years longer than for previous generations. While ensuring constant electric power generation, it should also consume 17% less fuel, release less radioactive liquid and gaseous effluent and cut down on waste production by 30%.

### What are the challenges of EPR for EDF?

The first French nuclear power plants which were placed in service at the end of the 1970s will be 40 years old as from 2020 and will then have to be gradually renewed. To prepare for the necessary renewal of its nuclear power plants in service, EDF has chosen to adopt EPR technology which integrates all recent advances, in order to offer safe, competitive electricity production that does not emit greenhouse gases. Commissioning of the first-off EPR reactor at Flamanville 3 is scheduled for 2012 and this should be followed by other projects based on the same technology.

In parallel, EDF is carrying out engineering and maintenance work to optimise the service life of its installations under the supervision of the nuclear safety authority.

### How did SPIE outshine its competitors for the EPR project?

In responding to the European invitation for tenders launched for the general electrical installations contract for the Flamanville

## Flamanville EPR in figures

2<sup>nd</sup> EPR constructed in Europe after the one at Oikiluoto in Finland

Power of **1,650 MW**

Service life of **60 years**

**54 months** of construction work

Commissioning date: **2012**

Investment of **€3.3 billion**

## Key EDF figures

**40 million** customers

sales of **€51 billion** (€58.9 billion in 2006)

**58 nuclear reactors** representing an output power of 63.1 GW

**1,246,000 km** of power lines operated

EPR reactor, SPIE put forward its application as did other companies. When the technical and commercial bids were examined, SPIE's proposal was found to be fitting and of high technical quality, and it was also economically attractive. In addition to those objective criteria, SPIE's experience in the general electrical installations market, in the fields of both power plant construction and maintenance, strengthened our candidacy. Our local presence, near or actually on French nuclear power plant sites, especially in Flamanville, also acted in our favour. ■

## □ General electrical installations/EPR

# A vital contract

After more than a year of studies and negotiations, SPIE Nucléaire and EDF signed a contract for general electrical installations for the Flamanville EPR plant unit. Let's take another look at the characteristics and stakes of this contract.

In January this year, SPIE Nucléaire, leader of a consortium with Cegelec, was officially awarded the general electrical installations contract for the construction of the third-generation EPR nuclear reactor at Flamanville.

*"In the face of tough competition pitting us against the biggest players in the market,*

**“ SPIE Nucléaire was chosen for the quality of the technical file it submitted and the efficiency of its economic solution. ”**

*SPIE Nucléaire was chosen for the quality of the technical file it submitted and the efficiency of its economic solution,”* points out Yves Benoît, general electrical installations manager at SPIE Nucléaire. The engi-

neering teams, which have been working on this project since October 2005, will continue general studies on equipment layout and cable routings until the end of 2008. This will be followed by the start of procurements in parallel with the erection phase, which will begin in 2009 and be completed in 2012. SPIE Nucléaire's share of this 68-month contract is worth €38.6 million, mobilising 50 engineers and technicians for design studies and requiring up to 300 persons during the peak period of the installation phase.

### First-off plant unit

The work schedule for this vast, complex site includes 1,500 km of cables to be installed in 90 km of cableways, more than 400,000 connections to be made and nearly 3,500 electric



**Yves Benoît, general electrical installations manager at SPIE Nucléaire**

switchboards and boxes to be installed. *"For SPIE Nucléaire, this contract marks a return to our origins as it entails performing general electrical installation work for a new power plant, and those were the services originally provided when the nuclear branch was started up at SPIE,"* explains Yves Benoît. *"It is also vital in terms of our competitive edge and development potential as it means taking part in the construction of a first-off EPR which will lead to further development between 2015 and 2050."*

In the light of the future renewal of French nuclear power plants and international projects, this order will allow SPIE Nucléaire to reinforce its expertise in the general electrical installations market. ■

