



Solar energy: creation of a French Institute of Excellence

France will build a world-class research centre for photovoltaic energy

Paris, March 13, 2012 – EDF and TOTAL, the CNRS (the French National Centre for Scientific Research) and the Ecole Polytechnique, associated with AIR LIQUIDE, HORIBA JOBIN YVON and RIBER have announced the creation of the Institut Photovoltaïque d’Ile-de-France (IPVF), a project selected by France’s Commission for Future Investments as an Institute for Excellence in Carbon-free Energy.

The IPVF will be one of the five largest centres worldwide, conducting research into new-generation photovoltaic solar systems. It will be based at the Paris Saclay campus, a French centre of excellence in scientific research, and will eventually bring together almost 180 researchers, lecturers and students. The IPVF will be a driver for national and European policies on the development of renewable energies.

Within the IPVF, the partners will jointly pursue research and development activities aimed at improving the efficiency and competitiveness of existing photovoltaic cells and modules and developing new thin-layer technologies and advanced concepts.

The IPVF will be essential for the future of a high solar industry in France and at the same time will place an emphasis on the education and training of high-level specialists and on the development of extensive partnerships with other research centres sited at the Plateau de Saclay, with key global industrial players in the solar sector and with SMEs and SMIs in the Paris region.

A number of companies – equipment manufacturers, suppliers or integrated players in the photovoltaic sector – have already announced their intention of engaging with the IPVF by offering technical and human support for the institute’s research and teaching activities.

About EDF

The EDF Group, one of the leaders in the European energy market, is an integrated energy company active in all areas of the business: generation, transmission, distribution, energy supply and trading. The Group is the leading electricity producer in Europe. In France, it has mainly nuclear and hydraulic production facilities where 96.5% of the electricity output is CO₂-free.

EDF's transmission and distribution subsidiaries in France operate 1,285,000 km of low and medium voltage overhead and underground electricity lines and around 100,000 km of high and very high voltage networks. The Group is involved in supplying energy and services to approximately 27.9 million customers in France. The Group generated consolidated sales of € 65.3 billion in 2011, of which 43.1% was achieved outside of France. EDF is listed on the Paris Stock Exchange and is a member of the CAC 40 index.

In the field of renewable energies, the EDF Group is investing massively in R&D in order to identify technological gaps with significant competitive stakes and to contribute to developing the most promising industrial and commercial solutions. In particular, since 2005 EDF has invested with the CNRS and Chimie ParisTech in a Combined Research Unit: the IRDEP (Institute of Research and Development on Photovoltaic Energy), in order to create a centre of excellence dedicated to research on new-generation PV cells.

For more information, visit www.edf.com

About Total

Total is one of the largest integrated oil and gas companies in the world, with activities in more than 130 countries. The Group is also a first rank player in chemicals. Its 96,000 employees put their expertise to work in every part of the industry – exploration and production of oil and natural gas, refining and marketing, new energies, trading, and chemicals. Total is working to help satisfy the global demand for energy, both today and tomorrow.

Total is striving to diversify its supply to help meet growing energy demand in the long term. The Group, with SunPower and Tenesol, is a world leader in solar energy. Additionally, Total is actively engaged in many R&D projects focusing on renewable energies, in particular solar energy and biomass.

The goal of Total's Research & Development activities is the continuous advancement of all processes relating to energy. The Group currently runs 22 R&D centres worldwide and filed over 250 patents in 2010. Total pursues an active R&D policy, in particular through its international network of excellence, partnerships with laboratories and innovative start-up companies, in order to promote the development of new technologies that are both efficient and competitive.

For more information, visit www.total.com

About CNRS

The French National Centre for Scientific Research (CNRS) is a public scientific and technological establishment, placed under the auspices of the French Ministry of Higher Education and Research. It generates knowledge and places this knowledge at the service of society. As France's principle multi-disciplinary research body, the CNRS conducts research into every scientific, technological and societal field. Within its ten constituent institutes – two of them national – it covers the full spectrum of scientific fields: mathematics, physics, the information and communication sciences and technologies, nuclear physics and high energy, planetary and space science, chemistry, the life sciences and the human and social sciences, environmental science and engineering and systems sciences. The CNRS is active in all the major disciplines listed.

With over 34,000 people, an initial budget for 2011 of 3.204 billion Euros, of which 677 million Euros are drawn from own resources, and a presence right across French national territory, the CNRS conducts its activities in all areas of knowledge, relying on over 1,100 research and service units.

The CNRS attaches priority to developing collaborations between specialists of different disciplines, and particularly with the university, thus opening up new avenues of investigation which make a contribution to meeting the needs of the economy and of society. Of particular note are inter-disciplinary research activities conducted in the following fields: "The living being and its social challenges", "Information, communication and knowledge", "Environment, energy and sustainable development", "Nanoscience, nanotechnologies, materials", "Astroparticles: from particles to the Universe".

As part of the IPVF project, CNRS relies on two laboratories specialized in photovoltaic research: the Institut de Recherche et de Développement de l'Énergie Photovoltaïque (IRDEP, CNRS/EDF/ENSCP) and the Laboratoire de Physique des Interfaces et des Couches Minces (LIPCM, CNRS/Ecole Polytechnique). In addition, LIPCM is a partner of TOTAL within the "NanoPV Joint Research Team". IPVF also relies on the Fédération Photovoltaïque (FedPV), which gathers another five research laboratories.

For more information, visit <http://www.cnrs.fr/>

About the Ecole Polytechnique

Widely internationalized (30% of the student body, 20% of faculty members), École Polytechnique combines research, education and innovation at the highest scientific and technological level. Its three degree programs – ingénieur polytechnicien, Master's and PhD – are highly selective and promote a culture of excellence with a strong emphasis on science, combined with humanist traditions.

École Polytechnique educates responsible men and women who are prepared to lead complex and innovative activities which respond to the challenges of 21st century society. With its 22 laboratories, all joint research facilities with the National Center for Scientific Research (CNRS), the École Polytechnique Research Center works to expand the frontiers of knowledge in the major interdisciplinary issues facing science, technology and society.

Innovation and technological development are closely linked to both the research and the educational programs. Business relationships are escalating rapidly, in terms of the development of research contracts, partnerships creating joint research teams (such as with Total), and the installation of research facilities on campus (Danone, Thalès, Horiba, etc.). A business incubator program facilitates the maturation of projects emanating from either the laboratories or start-ups in need of the Research Center's expertise.

As a ParisTech member institute, École Polytechnique is also one of the driving forces behind the Paris Saclay Campus project, along with its 22 academic and scientific partners.

For more information, visit www.polytechnique.edu

About Air Liquide

Air Liquide is the world leader in gases for industry, health and the environment, and is present in 80 countries with 46,200 employees. Oxygen, nitrogen, hydrogen and rare gases have been at the core of Air Liquide's activities since its creation in 1902. Air Liquide continuously reinvents its business, anticipating the needs of current and future markets using innovative technologies that curb polluting emissions, lower industry's energy use, recover and reuse natural resources or develop the energies of tomorrow, such as hydrogen, biofuels or photovoltaic energy...

Air Liquide provides gases and liquid precursors required for photovoltaic cells' production (carrier, specialty and dopants gases, nitrogen, hydrogen, silane) to over 150 clients, including 8 of the top 10 world-class customers. The Group develops highly sophisticated processes to meet their expectations. Air Liquide has invested in a photovoltaic cell manufacturing pilot line, located at its major R&D center (Claude-Delorme Research Center, Saclay, France) to demonstrate the relevance of its innovative solutions.

In collaboration with all the business lines of the Group, Research and Development focuses on a main objective: to improve the Group's competitiveness and to contribute to its growth. 1,000 researchers, spread over 3 continents, explore new processes, gas applications, and develop innovative technologies in the 4 technological growth drivers: High-Tech, Health, Energy, and Environment.

For more information, visit www.airliquide.com

About HORIBA Jobin Yvon

Jobin Yvon is an heritage company of french optics, having been founded in 1819 to manufacture the first mirrors of Augustin Fresnel. Today an internationalized SME with 100 MEUR and 600 persons (including 300 in France) it holds worldwide leadership positions on niche markets, diffraction gratings, Raman and Fluorescence spectroscopy.

Since 1997, it is part of the Japanese group HORIBA (1 MdeUR and 5000 persons, including 1700 in Europe), based in Kyoto, active in test systems for the automotive industry, environmental monitoring, medical diagnostic, equipment for the semiconductor industry and scientific instrumentation.

HORIBA Jobin Yvon is presently building on Ecole Polytechnique campus, as part of the Paris Saclay initiative, a new 6,500m² facility (with potential to go to 18,000m²) to accomodate its research and development centre and the european headquarter of HORIBA.

For more information : www.horiba.com

About RIBER

Riber designs and produces molecular beam epitaxy (MBE) systems as well as evaporation sources and cells for the semiconductor industry. Thess high-tech equipments are essential for the manufacturing of compound semiconductor materials and new materials that are used in numerous consumer applications, from new information technologies to OLED flat screens and new generation thin layer solar cells.

Implementing its expertise in the field of ultra-thin layers deposit, RIBER has created a range of high capacity cells (25 and 40 kg) allowing its industrial customers to lay down accurately large quantities of complex and corrosive materials such as selenium, necessary to manufacture new generations of CIGS technology thin layer solar cells.

Riber is listed on Euronext Paris Compartment "C" and is part of the CAC Small, CAC Mid & Small and CAC IT indexes.

SIN: FR0000075954 Reuters code: RIBE.PA Bloomberg code: RIB: FP

Riber has been innovation certified by OSEO, the dedicated French innovation agency, enabling it to qualify for French innovation mutual funds (FCPI).

Press contacts:

EDF – Laure LIMOUSIN – + 33 (0) 1 40 42 33 90 – laure.limousin@edf.fr

Total – Frederic TEXIER – + 33 (0) 1 47 44 38 16 – frederic.texier@total.com

CNRS – Nuno MARCELINO – + 33 (0) 1 44 96 43 90 – nuno.marcelino@cnrs-dir.fr

Ecole Polytechnique – Jean DESCHARD – + 33 (0) 1 69 33 38 90 – jean.deschard@polytechnique.edu

Air Liquide – Nathalie SIMON de KERGUNIC - +33 (0) 1 39 07 64 11 – nathalie.simon_de_kergunic@airliquide.com

HORIBA Jobin Yvon – Michèle MARCINHES – + 33 (0)1 64 54 13 00 - michele.marcinhes@horiba.com

RIBER – Cyril COMBE – + 33 (0) 1 53 65 68 68 – riber@calyptus.net