



Bioenergy
Naturally renewable

Bioenergy

The way forward

In the face of global warming, increasing energy needs and the rarefaction and fluctuating prices of fossil fuels, bioenergy constitutes an excellent industrial solution for generating heat and green electricity.

AREVA offers its customers integrated solutions for the turnkey design and construction of carbon-neutral bioenergy power plants.





The wise energy mix choice

Whether you are an energy producer, an industrialist or a local authority, transforming plant and animal residues provides you with a sustainable, environmentally-friendly solution within the energy mix.

Producing clean, sustainable energy

Today, everyone is keen to protect the earth's natural resources. This is particularly true in the industrial sector where sustainable development has become the watchword. Burning biomass is a carbon-neutral way of producing energy, since the CO₂ released during combustion is the same CO₂ that the plants captured as they were growing.

Eliminating and recycling residues

Every year, between 20,000 and 500,000 metric tons of organic matter are recycled by AREVA's bioenergy plants, which can burn all types of residues: wood, sugarcane bagasse, industrial effluents, straw, etc.

Investing without risk

The use of uncollected natural residues to produce renewable energy opens up a host of possibilities for generating electricity. This industrial process creates new sources of income for customers, allowing them to either generate electricity on their local grid, or to sell the carbon credits obtained for their bioenergy project.

Over
3 million
metric tons of CO₂-equivalent emissions are avoided each year by AREVA bioenergy projects

World's
2nd
largest source of renewable energy



The key partner to develop large-scale projects

AREVA responds to market demand by offering its customers innovative financial schemes for large-scale projects and can consider investing in project development.

Support: from A to Z

From the analysis of energy resources at the design stage, through construction and commissioning of a turnkey power plant, and subsequent training, we are on hand to guide our customers throughout the project life cycle.

Because fuel supply, constraints and envisaged profitability are specific to each project, AREVA's design architects and construction engineers explore all the alternatives in the search for technical solutions.

As experts, they opt for the most appropriate technology, whether this is available locally or further afield:

combustion, anaerobic digestion or heat recovery.

As providers of integrated services, they select the most advanced components and services from around the world, taking charge of purchasing, optimization, and assembly.



Global Offer

Project development

- Site selection
- Equity participation
- Project financing
- Support to obtain and sell carbon credits
- Project design and development support

Engineering

- Technical and economic feasibility studies
- Engineering, Procurement, Construction (EPC)
- Operating support



Innovation: a source of expertise

AREVA is firmly established as an engineering expert on the high-potential bioenergy market. The group places innovation at the very heart of its industrial policy.

Today, it is focusing its R&D activities on state-of-the-art issues such as the use of biofuels that are difficult to burn (straw, chicken litter, etc.), and the potential of combined plants capable of burning several types of biomass.



Project financing: customized and innovative

A project cannot succeed without a solid financial package.

AREVA carries out technical feasibility studies and proposes innovative financial solutions.

In the United States, AREVA has joined forces with the Duke Energy utility in the joint venture ADAGE™ to create a project development and financing structure dedicated to the roll-out of biomass energy solutions for the US market.

AREVA's involvement from the very earliest stages of the production phase gives the project a solid foundation. AREVA helps its customers to obtain carbon credits.

Carbon credits offer

Under the Kyoto protocol, biopower plants are eligible for carbon credits. AREVA is one of the few industrial groups to offer its customers help in obtaining them. The group provides a comprehensive package for the development of carbon assets throughout the life of the project, from the feasibility study to the acquisition and sale of credits. AREVA offers these services principally to its customers in Asia and Latin America.



The relevant technological expertise

AREVA uses a range of competitively-priced alternative technologies that come with the group's performance guarantee.

Biomass power plant

Biofuel: wood chips/bark, bagasse, rice and cotton husks, chilly stalks, sunflower oil cake, soya oil cake, coconut husks, olive pits, sawmill residue, liquid animal manure, etc.

Required volume: 50,000 metric tons per year minimum.

Technology: combustion of biomass in a high-pressure boiler. Steam expansion in a power generator turbine.

Output: 5 MWe - 50 MWe

Good to know

Combustion is the industrial process used to recover the energy contained in ligneous products.

Biogas power plant

Substrates: wastewater, industrial and agricultural waste.

Required volume: 20 - 30,000 metric tons of biomass or Chemical Oxygen Demand (COD).

Technology: hold-up or concentration of biomass for liquid effluents and wet or dry anaerobic digestion for solid residues.

Output: 500 kWe - 10 MWe

Good to know

Anaerobic digestion, an entirely organic process, ensures the highest yield when converting wet organic matter into energy.

Cogeneration plant

Applications: distilleries, cement works, glassworks, furniture manufacturers, sugar mills and the paper, pharmaceutical, forestry, agriculture and textile industries, etc.

AREVA optimizes recovery of the heat released when electricity and steam are produced.

This heat can be re-used and the surplus electricity sold on the grid.

Output: 5 MW_{th} - 200 MW_{th}

Good to know

Increases energy efficiency by generating heat and electricity.



Present worldwide: local expertise

With a presence in Europe, North and South America and Asia, AREVA teams use competency and engineering centers with a worldwide dimension, in order to offer the most advanced, reliable and competitive technologies available.

AREVA works closely with local industry for all its projects.

More than
100
bioenergy plants built by AREVA around the world

Representing more than
3000
MWe
installed capacity

Heat recovery plant

Energy source: heat.

Technology: residual heat from industrial processes used to generate electricity.

Output: 10 MWe

Good to know

Heat-recovery plants help reduce the energy demand of industrial facilities. The cost price is very competitive for an energy that has no impact on the environment.

AREVA supplies solutions for carbon-free power generation. Its expertise and know-how in this field are setting the standard, and its responsible development is anchored in a process of continuous improvement.

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. The group is also expanding considerably in renewable energies – wind, solar, bioenergies, hydrogen and storage – to be one of the top three in this sector worldwide in 2012.

Every day, AREVA's 48,000 employees cultivate the synergies between these two major carbon-free offers, helping to supply safer, cleaner and more economical energy to the greatest number of people.

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