

Power plant
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Mankind owes much to twigs and branches. It was from them that the first fire was likely created to keep ancient people warm and cook their food. Civilization has now come full circle as people again turn to twigs and branches, this time to generate electricity.

The development of China's first twig-fired power plant will begin in May 2008, China Business Weekly has learned from its builder, the Blue Bird Environmental Development Ltd.

Phase I is expected to be completed in early 2009, with the entire project scheduled to be finished in 2011. What makes the project stand out among the few others that exist worldwide is that it can use dry branches and twigs as well as straw and stalks.

The power plant will be located in Liquan County of Northwest China's Shaanxi Province, an area famous for its orchards and large piles of twigs and branches - the result of trimming of fruit trees - as well as straw and stalks from farming operations.

Blue Bird is a wholly owned subsidiary of the Shanghai Blue Bird Mechanical & Electrical Co active in various environmental projects in China.

The total investment in the Liquan power plant is estimated at 1 billion yuan, according to the contractor, and will consist of four 180-megawatt (MW) units, all based on Chinese designs.

"As a whole, the 720 MW power plant will require 800,000 tons of fuel a year, including both twigs and straw," says Qian Jianzhong, general manager of Shanghai Blue Bird.

The privately held company was founded in 1998 to specialize in environmentally friendly solutions for solid waste - both residential and industrial - and sewage sludge. It has built waste treatment facilities in Beijing, Ningbo and Shanghai.

As the nation focuses on the development of renewable energy, Qian says "there is a great necessity to broaden resources and find more ways to develop biomass power".

The Shanghai Blue Bird solution, he points out, is "a revolutionary technology" that puts twigs and larger branches, once thought difficult to recycle, to a good use.

According to the Liquan county government, China's annual yield of twigs and straw is around 650 million tons. Liquan alone can produce 20 million tons per year.

The county government has been enthusiastic about the idea of recycling twigs and branches for energy purposes, Qian explains, noting the advantage of Shanghai Blue Bird's solution is that can use two types of materials simultaneously.

Each unit's cutting system and boilers feature separate chambers for twigs and straw, with the heat produced from burning in both chambers driving the same turbine to generate electricity.

Every 100,000 kilowatt-hour of electricity generated will demand a total of 130 tons of twigs and straw, Qian says. The Liquan power plant will also be the first in the world to feature the simultaneous use of twigs and straw.

The project is supported by the county government as a way to generate jobs and income for local farmers, Qian says.

The future power plant will purchase its materials from local collecting agencies at a price of 200 yuan a ton, with a total of 160 million yuan projected to be spent yearly to meet demand for 800,000 tons of material.

Using twigs and branches for power generation also help locals limit burning off tree trimmings, cutting the amount of carbon dioxide sent into the atmosphere, Qian explains.

Using a filter system for emission and dust control, the plant will cut as much as 400,000 tons of carbon dioxide each year, he says, equivalent to the exhaust of more than 100,000 cars.

When it sells electricity, the future plant will be able to enjoy an environmental premium, according to Chen Jianzhong, an executive of Liquan County's electricity bureau.

It will earn 0.8 yuan per unit by selling its electricity output to the national grid, some 0.25 yuan, or 45 percent, more than that earned by coal-fired power plants, Chen says.

Local officials can also expect to use the ash byproduct from the plants as fertilizer, he says.

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