

Clean & efficient way of converting bagasse to useful energy: How Dan Chang Bio-Energy Co. Ltd. will do it.

DAN CHANG BIO-ENERGY PROJECT BACKGROUND

Dan Chang Bio-Energy is one of the subsidiaries of the Mitr Phol Sugar Group in Thailand.

For the last 50 years, Mitr Phol Sugar Group has gained a lot of experience in the sugar business. It has built up a team that is competent not only in sugar production but also in product development. These factors have made Mitr Phol Sugar Group the leader of the South East Asian sugar industry.

By 2004, the total daily crushing capacity of the Group stands at 109,000 tonnes which results in 12,000 tonnes of sugar. It generates a total of 32,000 tonnes of bagasse, which is the major by-product of sugarcane crushing. In the near future, the Group plans to increase its crushing capacity to 120,000 tonnes of cane per day.

One of the Group's "Value-driven excellence" goals is to care about the environment. Thus, they chose to invest in high quality and pollution-free systems to safeguard the environment. This has inspired them to develop a "clean and efficient" biomass power business in the sugar industry.

The 41 MWe cogeneration project is designed to cover all the steam and electricity requirements of the sugar mill. Excess electricity production of 25 MWe will be exported to the national grid through a firm contract for 21 years. Electricity will be purchased from the grid to supply the needs for maintenance and office facilities when the cogeneration plant is not operating.

LOCATION

Dan Chang Bio-Energy is located in Dan Chang, Suphanburi Province (Central Thailand).

ECONOMICS

The total investment cost is Euro 35.5 million excluding civil works, building foundations and financing costs. The expected pay back period is about 5 years after commissioning.

TECHNOLOGY

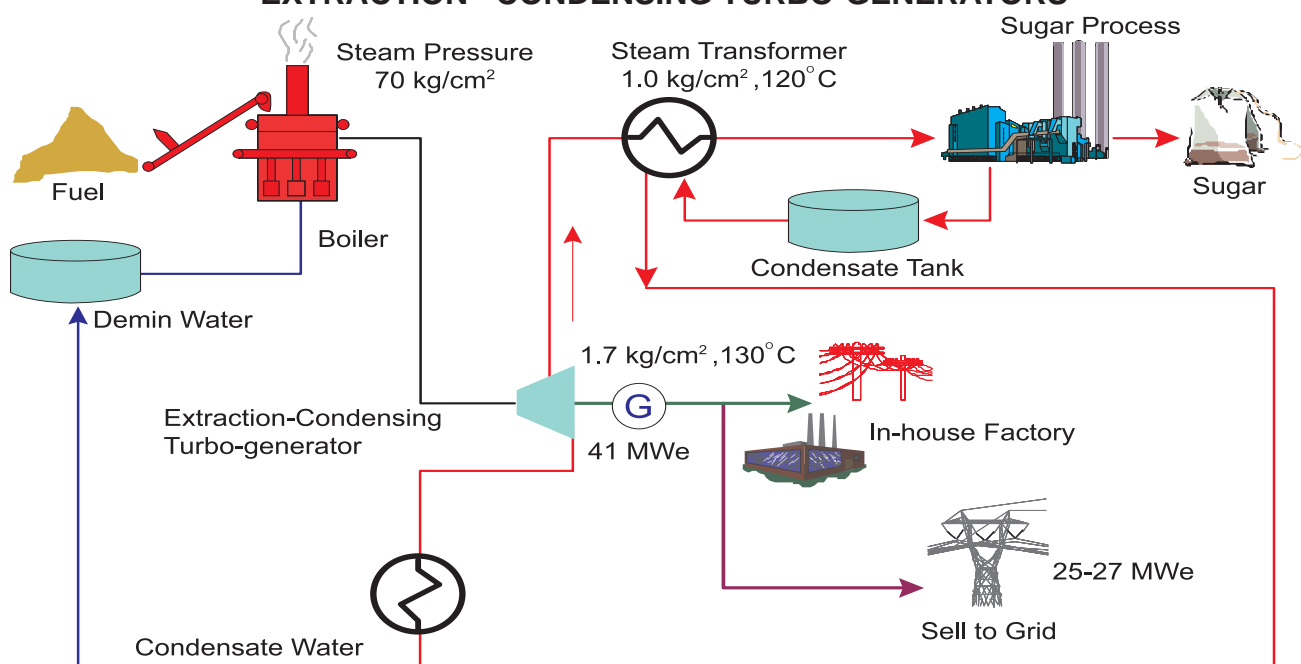
The power plant consists of:

- a 41 MWe extraction-condensing steam turbo-generator;
- two vibrating grate boilers with an hourly capacity of 120 tonnes of steam at 68 bar (a) and 510°C each.



During erection of the cogeneration plant

STEAM AND ELECTRICITY SUPPLIED BY HIGH PRESSURE BOILERS AND EXTRACTION - CONDENSING TURBO-GENERATORS



CUSTOMER VIEWPOINT



*Mr. Sirisak Tatong,
Acting Vice-President
(Technical Development and Project),
Mitr Phol Sugar Corp. Ltd.*

In an interview with Mr. Sirisak Tatong, the Acting Vice-President for Technical Development and Project of Mitr Phol Sugar Corp. Ltd., he said: "With the expertise of our employees and the new technology in today's business, bagasse remaining from sugar production is brought back to be used as fuel for production of steam and electricity. The energy obtained during this process is partially utilised in the sugar production process. The rest is supplied to the Electricity Generating Authority of Thailand (EGAT) for further distribution to local communities. This natural source of energy is clean and friendly to all people. It also helps improve the quality of life for people living in the communities.

Apart from using bagasse, Mitr Phol Sugar Group also purchases other kinds of fuel such as sugarcane leaves and rice husks from farmers. The purchase not only supports our farmers to improve their incomes but also prevents natural resource destruction caused by cane burning. Further, by investing in biomass technology and using indigenous resources in Thailand, the group can help reduce national dependence on foreign imports for fuels."

Mr. Sirisak underlines that this cogeneration project is providing high technology transfer to his organisation. The high efficiency of the cogeneration system will reduce the cost of electricity. He also commented that he is satisfied with the European supplier's performance. In addition, he commented that COGEN 3 team always give him and his company good advice and provides excellent cooperation in the entire project.



*The 41 MWe
bagasse-fired
cogeneration
plant*

Dan Chang Bio-Energy Co. Ltd.

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SUPPLIER VIEWPOINT

From an interview with ALSTOM Power management of Bangkok office, COGEN 3 found out that, ALSTOM Power was awarded the contract to supply the biomass cogeneration power plant on a turnkey basis. The plant, is being fast tracked and is expected to be operational by mid 2004. ALSTOM Power expects that the plant configuration will establish a standard for such high efficiency bagasse-fired plant in the region.

Biomass comprising bagasse (sugarcane waste) and rice husks will fuel two boilers specifically designed for this duty. The boilers will deliver steam to an ALSTOM advanced steam turbo-generator rated at 41 MWe. Process steam will be extracted from the turbine for sugar milling and refining.

This order is another success for the Industrial Boilers & Plants Business recently created within ALSTOM. "The synergies created by this new business were a significant contributor to our ability to win this order against international competition," says Mr. Graham Salter, Managing Director of the Business.

The development and construction of biomass-fuelled green energy power plants is currently one of the Thai Government's highest priorities and the Dan Chang plant will be among the largest power plants of this type in Thailand.



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Intelligent Solutions

COGEN3

The objective of COGEN 3 is to promote the use of cogeneration using biomass, coal or gas as fuel. This is achieved through partnerships between ASEAN industries and European suppliers.

The EC-ASEAN COGEN Programme Phase III is financed by the European Commission. It is co-ordinated in ASEAN by the Asian Institute of Technology (AIT), Bangkok, Thailand and in Europe by Carl Bro International, Sweden. COGEN 3 started its operation in January 2002 and will continue until December 2004. Besides Thailand and Sweden, COGEN 3 has offices in Cambodia, Indonesia, Malaysia, Philippines, Singapore and Vietnam.