

COGEN 3's Strategic Tool for You

Technical-Financial Analysis (TFA) Model for Cogeneration Projects

The TFA Model

Developed by COGEN 3 in 2002, the TFA model is used to provide assistance for feasibility studies. COGEN 3's TFA model performs technical, financial and environmental analysis of cogeneration projects. The model presents detailed calculation based on the assumptions provided. The outcome of the COGEN 3 analysis is a brief report summarising technical evaluation, financial viability and greenhouse gas mitigation potential for the cogeneration project.

It is distributed for free to interested cogeneration end-users and project developers. The previous version of the TFA model known as the Standard Techno-Economic Model (STEM) had been used widely in the past years. In 2003, COGEN 3 has disseminated the TFA model in ASEAN countries and provided training in the use of the model to cogeneration end-users, project developers and consultants.

Features

- Technical, financial and environmental analysis of cogeneration projects
- Modelling of energy streams and annual cash flows
- Flexible approach to cogeneration systems: the model covers all cogeneration technologies and fuels
- Simple database for guidance on cogeneration system efficiencies, fuel data, national economic data, etc.
- Excel standard spreadsheet: transparent and open model structure

Main Results

- Financial performance (Internal Rate of Return, Net Present Value and pay back period) of cogeneration project compared to the current (baseline) energy supply
- Sensitivity analysis for major parameters
- Green House Gas emission calculation (reduction of CO₂ equivalent emission)
- Consistency of energy uses in cogeneration project and current energy supply

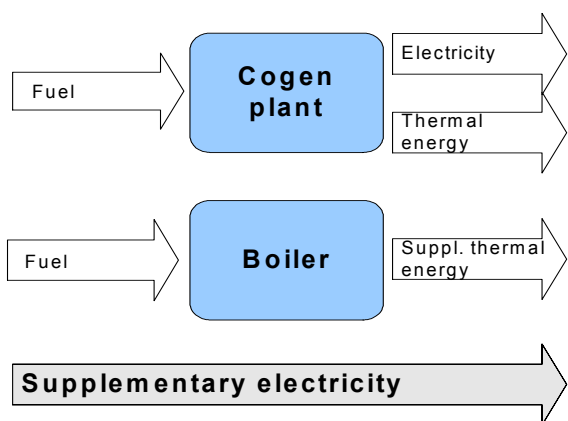
Free for You

The TFA model is also available free of charge for any potential user. The model (0.7 MB) can be sent to you by email, on a CD or a floppy disk. Please visit www.cogen3.net or call us. The COGEN 3 experts can also assist in the use of the TFA model.

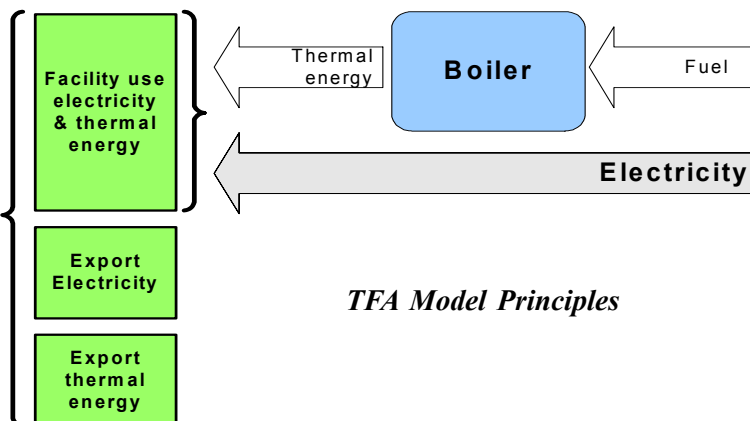
The TFA model is developed in Excel XP (2002), English version for Windows, but can be used in other versions of Excel. Use of the TFA requires knowledge of energy streams in energy plants, basic financing principles, and use of Excel (or a similar spreadsheet programme).



Cogeneration Project



Current energy supply (baseline)



TFA Model Principles

Successful Cogeneration Project Using TFA Model

The TFA model and its previous version (STEM) have been used to analyse more than one hundred cogeneration projects in ASEAN. Many of these projects have already been implemented and some of them have been operating for more than 40,000 hours.

One of these is located in Alor Setar (West Malaysia).

Ban Heng Bee rice mill, with an hourly capacity of 10 tonnes of paddy, produces about 2 tonnes of rice husk every hour.



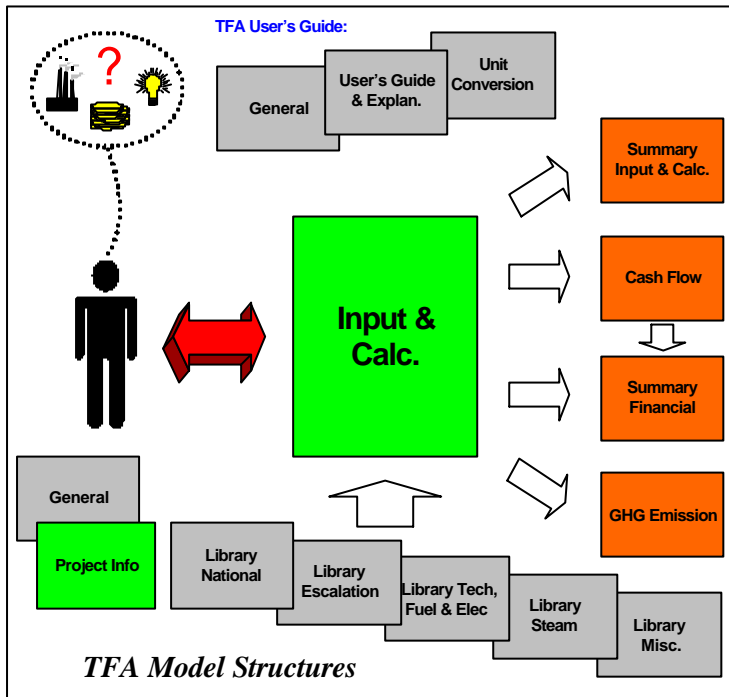
TECHNOLOGY EDGE

The rice husk fired cogeneration plant, which was commissioned in October 1997, consists of:

- a steam boiler with a capacity of 8.0 tph of saturated steam at 32 bar g
- a 450 kW back pressure turbine
- a 3,000,000 kcal/hr heat exchange system for paddy drying
- a multicyclone dust collector

BUSINESS ECONOMICS

Excluding civil and structural works, the total investment cost for the equipment was Euro 1,055,000 (USD 1,150,000). Based on the consumption and price of fuel oil, the annual savings in fuel oil purchases were estimated to be Euro 229,000 (USD 250,000). Moreover, annual savings from the disposal of residues was estimated at Euro 12,000 (USD 13,000). An additional income to the company came from the sales of ash, which was estimated to generate a yearly profit of Euro 164,000 (USD 179,000). The payback period of the plant was around 3 years after commissioning.



COGEN 3 Services

COGEN 3 offers the following services free of charge:

- Support to Cogeneration Project Development: technology selection and Business Facilitation Feasibility studies (TFA model); tools for development, assessment and implementation of cogeneration projects; Full Scale Demonstration Projects; financial packaging and supplier matchmaking
- Technical, Business & Market Information: directories on European equipment suppliers and service providers; report on cogeneration technologies; Cogeneration Project Development Guide; sectoral report on energy intensive industries and national cogeneration policy reports
- Trainings, Seminars, Workshops and Study Tours focused on technical, financial and policy issues

COGEN 3

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.

COGEN 3: Facilitating Business Partnerships Between EU Suppliers and ASEAN Industries

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