FINANCING AND IMPLEMENTATION OF COGENERATION PROJECT AT DISTRICT HEATING FACILITY

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Introduction

EETEK Energy Efficiency Technologies Ltd. Budapest is the Energy Service Company (ESCO) operating in Central and Eastern Europe. EETEK is focused on designing, financing and implementing of energy efficiency projects that can save costs for the clients. The client is not supposed to invest money “up front” in a project. The investment costs of the project is repaid (or partly repaid) from the energy savings.

EETEK is fully owned by the DEXIA – FondElec Energy Efficiency and Emission Reduction Fund. The Fund was established by the European Bank for Reconstruction and Development (EBRD) and DEXIA Project and Public Finance in 1999. The fund is capitalized with 71 million Euro dedicated for equity financing of the energy efficiency sector in Central and Eastern Europe, in particular the EU accession candidates. The Fund manager is FondElec Group Inc - a private equity investment company headquartered in Stamford, Connecticut, with USD 215 million of investment capital.

Project Description

The Municipal district heating company (DH company) supplies 2 500 households and related commercial clients from its boiler house by heat and

domestic hot water (DHW) according of agreements signed. The company is 100% owned by the municipality of the Dunakeszi city. The plant is in the whole year round operation except for 3 - 4 days stoppage for the overhaul during the Summer time. Summer heat consumption fluctuates depending on the DHW demand and needed heat capacity varies between 340 – 2 060 kW. During the heating season (15^{th} October – 15^{th} April) the needed heat capacity is between 3 -10 MW depending on the outside temperature. The annual gas consumption is approximately 139 000 GJ. The boilers and main systems were converted from steam to hot water recently. Due to the energy efficiency measures the annual energy consumption was reduced by 12-15%.

Because of the new opportunity to increase plant energy efficiency by cogeneration unit implementation, the management of DH company decided to benefit from the advantages of the cogeneration unit operating. The 1 pc of cogeneration unit capacity of 1,905 MW_e and 2.048 MW_{th} based on gas engine was designed and implemented at the area of the boiler house. The engine uses natural gas as a fuel, supplied on a low tariff base by a district heating company. The waste heat from cooling the engine and the heat recovered from the flue gas produce hot water for heating and domestic hot water requirements to DH company. The local electric utility buys the electricity generated by the cogeneration unit on a fixed price. Under the Hungarian Electricity Law it is compulsory for the electric utility to buy electricity from cogeneration systems on a fixed price (average € 63,- / MWh). This price is based on average cost of electricity production in Hungary excluding the nuclear power. The 100% heat produced can be sold at the heating season and an average of 56% can be sold during the out heating season.

Financing

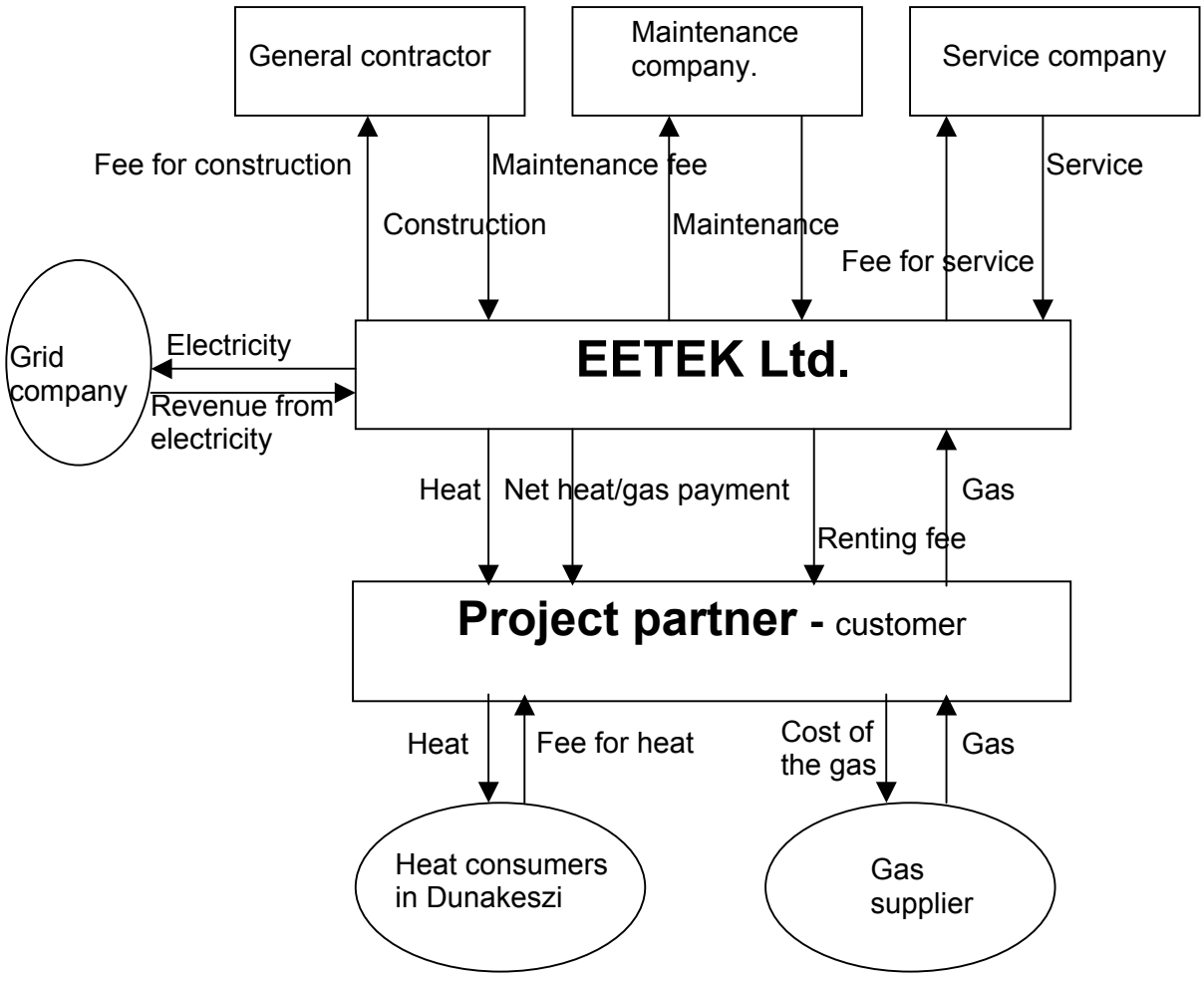
Total investment cost of the project was € 1,85 milion.The project simple payback period is 3,9 years. EETEK financed the project from its capital that has been increased by this amount from its parent - Dexia-FondElec Energy Efficiency and Emission Reduction Fund. EETEK financed the 100% of the investment and had to finance the VAT during the construction period and took bank loan when the project was in operation and the cash inflow started because banks to ensure good

conditions of a loan (without construction risk for the bank). EETEK financed the 25% VAT for several months.

EETEK is going to operate the project until the expected return will be reached. The engine remains the property of EETEK until the end of the pay-back period. Expected pay back period after financing is 6,5 years with an extension option up to 15 years. 86% of the revenue goes from the electricity selling and 18% from the heat. 80% of the operation profit goes for covering the costs of financing: principal and 8% notional interest rate.

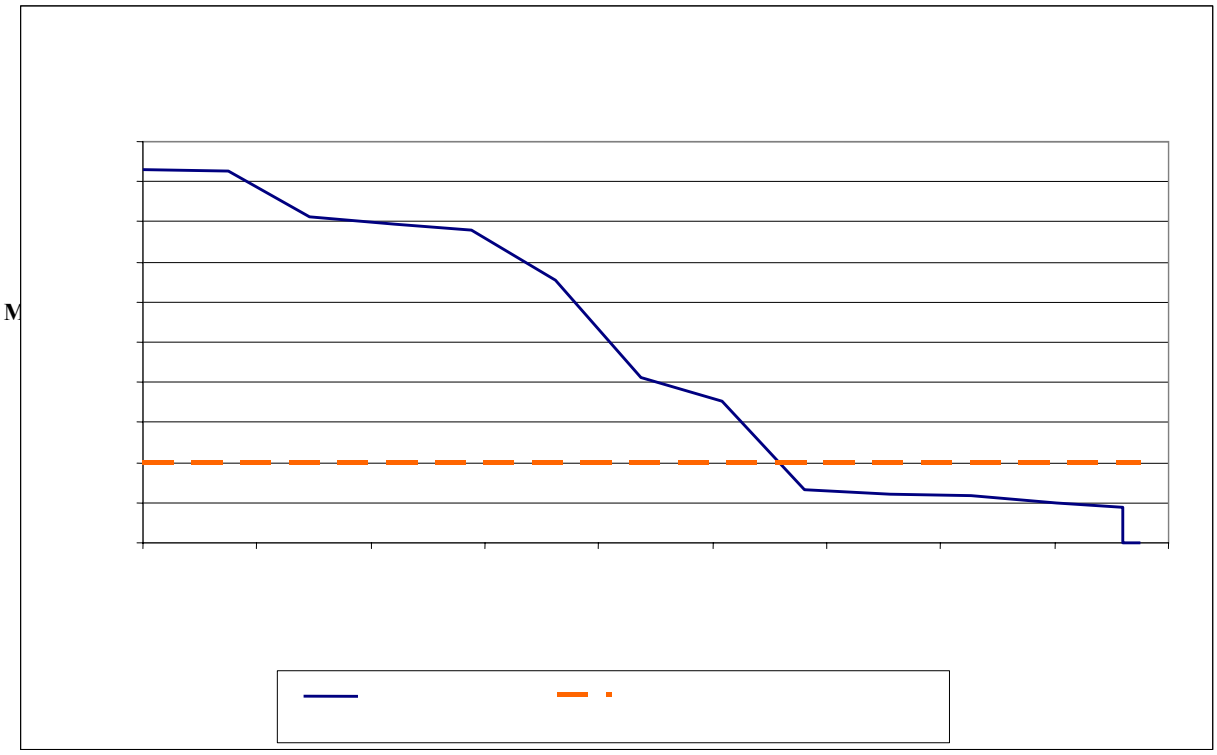
Contracts related to the deal

Following diagram shows all parties concerned to the project and their mutual position during both implementation and operation period. Financial flows among individual parties guarantee the positive cash flow of the project.



Yearly operating diagram

As can be seen below the full capacity of the cogeneration unit (yellow line) can be utilized of three quarters of the year (more than 5 500 hours), when the heat demand (blue line) is higher than 2 MW. The rest of the year only half of cogeneration unit heat capacity can be utilized.



Conclusion

Except CHP projects EETEK is ready to develop, finance and implement also energy efficiency projects based on Energy Performance Contract to guarantee savings achieved and investment costs is repaid from the savings. Scope of energy efficiency projects: renewables, especially biomass, reconstruction and upgrading of energy systems (district heating, spa, buildings, schools, hospitals, industry, street lighting etc.) Another opportunity is an outsourcing of energy systems.

EETEK is going to set up its subsidiary in Slovakia to expand energy efficiency activities and promote energy saving program in this country.