

Process Improvement and Equipment Upgrade

Decrease in Energy Cost by 23.2%

In early 2006, a Bulgarian brewery asked EnCon Services for assistance with an energy efficiency project under the European Bank for Reconstruction and Development (EBRD) supported Bulgarian Energy Efficiency and Renewable Energy Credit Line (BEERECL). EBRD has recently initiated a similar credit line to continue and expand implementation of industrial energy efficiency projects such as this one - **European Union/EBRD Energy Efficiency Finance Facility (EU/EBRD EEFF)**. Loans are being provided by the partner banks under the Facility *UniCredit Bulbank* and the *United Bulgarian Bank*. Technical assistance is provided free of charge by EnCon Services.

APPROACH

An energy audit was completed that confirmed that the energy consumption in the brewery, and the high energy costs respectively, were due to the old, energy intense process equipment. EnCon Services helped the company identify a range of energy efficiency measures and energy saving process improvements. EnCon prepared a project business plan and the brewery was successful in securing a loan to implement the energy efficiency project.

PROBLEM IDENTIFICATION

EnCon identified old or inefficient process equipment and systems as follows:

- Inefficient steam traps and heat insulation
- Heat losses of steam-condensate system
- Inefficient heavy fuel oil combustion for steam generation in boiler station
- Inefficient heating in bottling workshop
- Obsolete brewery lighting
- Lack of energy monitoring and control
- Inefficient local energy systems of technological consumers

ENERGY EFFICIENCY IMPROVEMENTS

Steam condensate system improvement:

- ✓ Installation of 30 new, high efficiency steam traps, equipped with fuel injection, filters and drains

Improvement of boiler efficiency:

- ✓ Replacement of the inefficient heavy fuel oil fired burner with an automatically controlled rotary-type burner
- ✓ Installation of a new water pump-heating station and two feeding pumps
- ✓ A heavy fuel oil flow meter, a water flow meter, a water temperature sensor, and an automatic panel for measuring and control of the boiler operation process

Reconstruction of heating system:

- ✓ Installation of new hot water and a new channel ventilation system for convection heating
- ✓ Process control improvement through installation of automatic valves, sensors, and controllers

Reconstruction of lighting system:

- ✓ Installation of high efficiency lights, compact fluorescent lamps, and high pressure sodium lamps

Energy monitoring and control system:

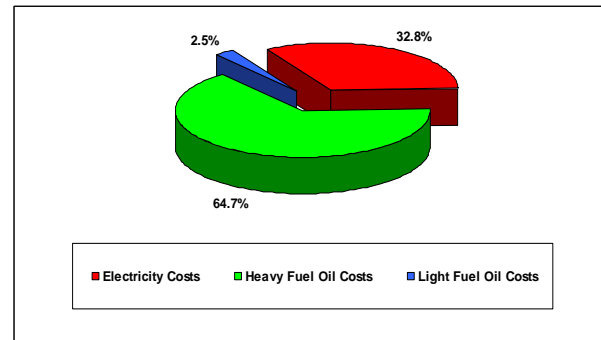
- ✓ Installation of new, computer controlled measuring devices for process flows.

Reconstruction of bottling workshop:

- ✓ Reconstruction of a washing machine, pasteurizer and heat water tank
- ✓ Replacement of inefficient reducing valves for steam, heat exchangers, controllers and heat insulation

ENERGY CONSUMPTION AND SAVINGS

The brewery uses electricity, heavy and light fuel oil for steam generation, heating, lighting, beer bottling and related production processes. The total energy cost in 2006 was EUR 277,586. The percentages of costs in 2006 are shown below.



The expected annual energy savings of the six proposed energy efficiency measures was 308 MWh of electricity and 218 tons of fuel oil; an average annual total cost of EUR 86,393. These savings provide an average decrease in energy cost of about 23.2%.

CO₂ EMISSIONS REDUCTION

In 2006 the CO₂ emissions were reduced by 582 tons as a result of the annual electric energy and heavy fuel oil savings. For the period 2006 – 2012, CO₂ emissions are expected to decrease by a total of 6,184 tons.

Loan Facility Available for Industrial Energy Efficiency Projects From the New European Union/EBRD Energy Efficiency Finance Facility (EU/EBRD EEFF)



With the launch of the European Union/European Bank for Reconstruction and Development's Energy Efficiency Finance Facility, loans are available, up to EUR 2.5 million, to private industrial companies to implement energy efficiency projects. Free technical assistance and incentive payments are also available. The Incentive Payment is calculated as 15 percent of the lower of:

- The total principal amount of the loan drawn down by the borrower
- The total investment cost of the project exclusive of VAT

The Incentive Grant is payable directly to the borrower after the completed project is verified by an independent energy expert. Projects can be "stand alone" or this fund can be used as a part of a larger corporate investment.

What Type Of Industrial Energy Efficiency (EE) Projects Qualify For EU/EEFF Loans:

- On-site co-generation of heat and electricity
- Rehabilitation and/or replacement of old boilers
- Rehabilitation of steam distribution systems, steam traps, etc.
- Rehabilitation of compressed air and power distribution systems
- Heat and steam recovery
- Installation of absorption chillers
- Installation of variable speed drives
- Process optimization, enhanced controls and automation systems
- Upgrade/replacement of utilities
- Fuel switching
- Implementation of energy management systems or building management systems

How Large Can An IEE Project Loan Be? The investment cost of an eligible investment is limited to EUR 2.5 million. Each Participating Bank will evaluate your creditworthiness and make a decision on your borrowing capacity.

ENERGY EFFICIENCY IS A SMART MOVE

Why Should I Take A EU/EEFF Loan? With the project savings, investments pay for themselves quickly. The following benefits can be realized:

- Reduced production costs
- Improved competitiveness and profitability
- Established credit history

Technical Assistance Is Available And It Is ABSOLUTELY FREE. EnCon Services provides:

- Determination of project eligibility and, if applicable, help to restructure the project to meet eligibility requirements
- An energy audit and project cash flow analysis
- Assessment of the project's technical and financial viability
- Preparation of Rational Energy Utilization Plan (REUP)
- Assistance with loan applications

Why Wait? Reduce Your Cost of Energy and Earn Incentive "Cash-In-Your-Pocket" Now!

Companies wishing to implement energy efficiency measures are invited to apply for financing by contacting one of the two participating banks under the program:

 **UniCredit Bulbank**



Or by contacting EBRD's technical support in Sofia – DAI/EnCon Services – for a consultation.

COME AND SEE US OR CALL US NOW FOR FREE TECHNICAL ASSISTANCE:

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