



CASE STUDY: ULEROM SA, Vaslui

Project Name	Installation of a sunflower peels based boiler
Sector	Food industry
Borrower	Private company, ULEROM SA, Vaslui
Lender	Romanian Energy Efficiency Fund
Financing Starting Date	April 2005
Project Size/Loan Amount	USD 560,000 / 448,000

Summary

The company has been established in 1974. Nowadays it produces oil for food industry using sunflower and soybeans. Besides these activities the company provides different types of services in the agricultural sector, commerce, transportation and steam distribution and animal breeding.

For the sunflower and soybeans processing the company operates 4 saturated steam boilers. 3 of them operate on natural gas while the 4th operates using sunflower peels. Presently, the company's capacity of sunflower processing is about 5,000 tons per month for a period of 5 months per year. This activity generates about 450 tons/month of sunflower peels.

The company intends in the near future to increase its processing capacity up to 8,000 tons/month. This will generate 1,200 tons/month of sunflower peels. More than that the capacity will be increased up to 9,000 tons/month, thus leading to 1,350 tons/month of sunflower peels.



The proposed project aims optimizing the energy consumption of the company by using sunflower peels for steam production. The project will lead to diminishing natural gas consumption. The Simple Payback Period is about 4.3 years. Besides fuel savings the project leads to diminishing environmental pollution, especially diminishing carbon dioxide emissions.

Description of the project

The project consists in installation of steam boiler that uses as fuel sunflower peels. The boiler will generate 10 t/h of saturated steam at a pressure of 15 bar. By installing the boiler the entire quantity of sunflower peels will be used for steam production. The old sunflower peels based boiler will be kept in a stand-by mode.

Some other much smaller energy efficiency projects will be also implemented such as: installation of steam and water meters, installation of pressure and temperature regulators, replacing of power factor compensation units and installation of a blower of 55 kW for sunflower peels transportation.

Aim of the project

The aim of the project is to diminish the energy costs of the company, especially by reducing natural gas consumption for steam generation. The main features of the project are as follows:

- **Reduction of natural gas consumption.** Increasing of the processing capacity will lead to increasing of sunflower peels quantity, which cannot be entirely used in the old boiler. Thus implementing the project all the quantity of the sunflower peels can be used for steam generation decreasing the natural gas consumption.
- **Pollutant emissions reduction.** The reduction of natural gas consumption will lead to diminishing of CO₂ emissions.

Economic evaluation of the project

The project will be implemented during the period of April-October 2005. The total cost of the project has been estimated at about USD 560,000. The investment is detailed in the Table 1.



Savings

After the project implementation the following savings are expected to be achieved:

- **Fuel.** The installation of the new boiler based on sunflower peels will lead to 557,000 Nm³ of savings of natural gas in the first year. In the following years the savings will reach 835,000 Nm³/year.
- **Maintenance, salaries, etc.** The new equipment has a reliability and are fully automated. The additional savings are generated due to a better sunflower peels management.

Financial evaluation

The cash flow analysis has been performed for the next 20 years based on the energy and fuel costs in 2004 and 2005. The project evaluation has been performed using the following criteria: Simple Payback Period, Internal Rate of Return and Net Present Value calculated for and actualization rate of 12%. The financial analysis and results are presented in Table 2. The analysis has also taken into consideration the 2 stages of capacity increase that company intends to perform.

Taking into account that the total investment is about USD 560,000 and considering the annual savings as presented in Table 2 the Simple Payback Period is about 4.3 years.

Financing

By implementing the project the company intends to use the whole quantity of available sunflower peels resulting from the technological process after the capacity increase.

Thus, the company's management decided to invest USD 560,000 for installation of a new sunflower peels boiler for steam



generation. Being an energy efficiency project the company applied for a FREE loan of about USD 448,000 (80%), the company



participation being of USD 112,000 (20%). The FREE loan is for 4 years, having a grace period of 12 months. The loan reimbursement will be made on a quarter rate basis.

Expected Impact

The natural gas savings have been estimated at 557,000 Nm³ in the first year (470 tep equivalent). In the next years the project will generate savings of natural gas of about 835,000 Nm³/year, 710 tep equivalent. The reduction of natural gas consumption will also lead to diminishing environmental impact. Thus, the CO₂ emissions will be reduced by approximately 1,000 tons in the first year and by 1,500 tons/year of CO₂ in the following years. The sulfur dioxide, NO_x and dust emissions will also be reduced significantly.

Table 1

Item	USD*
Feasibility study	3,228
Design	32,600
Equipment (boiler, meters, pressure and temperature regulators, power factor compensation equipment, blower of 55 kW)	464,000
Works	13,000
Assembling	45,800
Other	1,372
Total project	560,000

* - The figures include all import, customs taxes, etc, and do not include VAT.

Table 2

	Year										
	0	1	2	3	4	5	6	7	...	19	20
	kUSD	kUSD	kUSD	kUSD	kUSD	kUSD	kUSD	kUSD	kUSD	kUSD	kUSD
Initial investment	-560	-	-	-	-	-	-	-	-	-	-
Cash Flow	-560	93.7	141.5	141.5	141.5	141.5	141.5	141.5	...	141.5	141.5
Accumulated Cash Flow	-560	-466.3	-325.8	-185.3	-44.8	95.7	236.2	376.7	...	2,062.7	2,203.2
Discount Factor	1.00	0.89	0.80	0.71	0.64	0.57	0.51	0.45	...	0.10	0.09
Present Value of the Cash Flow	-560	-476	-364	-263	-173	-93	-21	43	...	440	454
Payback Period	4.3	years									
Discount Payback Period	6.4	years									
Net Present Value	454	kUSD									
Internal Rate of Return	23	%									

FREE financing advantages

Main advantages of the FREE financing are:

- FREE is a unique Romanian financier in energy efficiency field;
- FREE is actively supporting the companies during the energy efficiency project analysis;
- FREE offers flexible and attractive ways to guarantee the loans;
- FREE facilitates the access of the companies for financing feasibility studies, energy audits, etc.;
- FREE offers low cost financing for companies;
- FREE offers technical assistance..