STEAM UP

FACTSHEET

Steam Efficiency: Economic and Business Case Development

Economic and Business Case Development

Every time an investment decision has to be taken, one form or another of comparing costs against benefits is involved. The objective of a costs-benefits analysis is to provide the information needed to make a decision. The most complete analysis of an investment in an energy efficiency project or technology requires the analysis of each year of the life of the investment, considering direct costs, indirect and overhead costs, taxes, etc…

In some cases, it is possible to use a short way that reduce the amount of detail needed and permit use of averages rather than detailed year-by-year calculations. Very gross analytical approaches may be suitable for instances in which the results are clear or the validity of detailed studies is questionable. For example, periodically cleaning the heat transfer surfaces in a boiler burning solid fuels doesn't need a cost-benefit appraisal because energy and economic benefits are higher than costs to be incurred in for implementing the measure.

In any case, investment appraisal techniques will be: appropriate for any type of investment; valid in any political background; providing sensitive indicators to make capital investment decision; more reliable as reliable are the input data.

Investment

Increase the return of the money

Maximize the profit

Proper use of resources

Savings

Avoid non cost-effective projects implementation

Other benefits

Comparison of different alternatives

Check the consistency of decision-making

The Techniques

Monitoring and Targeting

Get the best from existing technology by the use of the best management techniques.

Investigate which **technologie**s are available and applicable to get TOTAL cost reduction (Never miss an opportunity to consider energy efficiency to any project).

All the identified proposals **must undergo a technical and financial evaluation**.

Techniques for Financial Appraisal

- Appropriate for any type of investment.
- Valid in any political background.
- Providing sensitive indicators to make capital investment decision.
- More reliable as reliable are the input data

Several indicators for evaluate economic

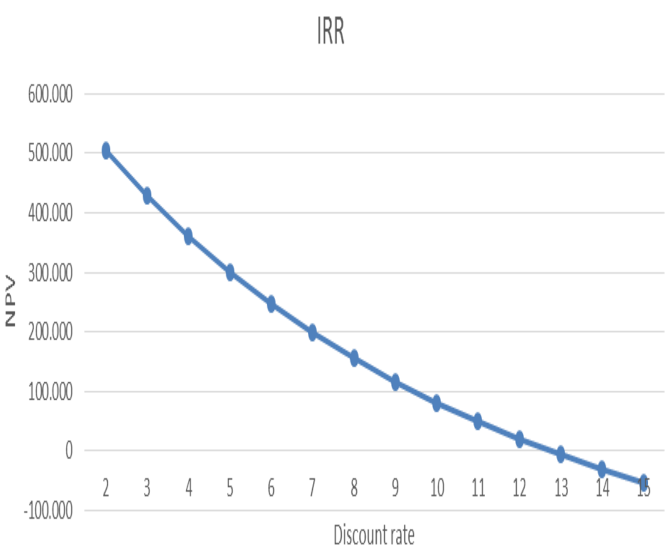
- NPV – Net Present Value
- WACC - Weighted Average Cost Capital
- IRR – Internal Rate of Return Payback
- Discount Payback Period
- Sensitive Analysis

FACTSHEET

Steam Efficiency: Economic and Business Case Development

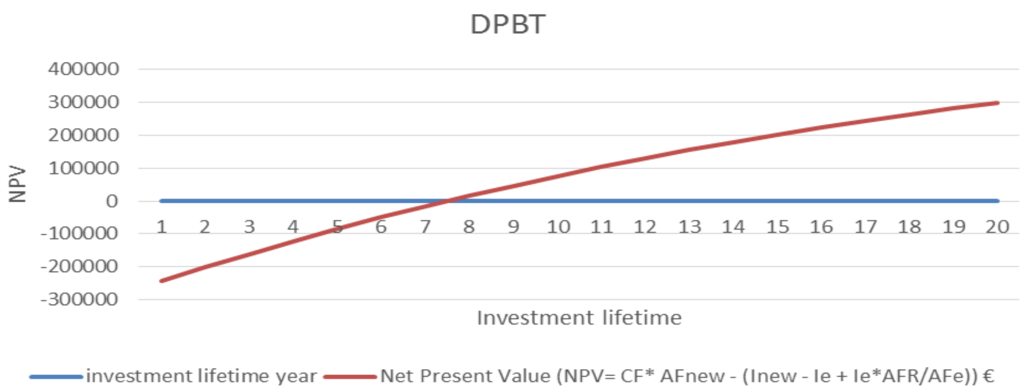
Example: Replacement of conventional burners, with a residual lifetime of 7 years, by high efficiency Low NOx burners.

Current Situation		Units
Number of burner	4	n
Total power	19,7	MW
Boiler efficiency	91	%
Fuel		Natural gas
Fuel cost	0,4	€/Sm^3
Yearly consumption	5.500.000	Sm^3/y
Yearly energy costs	2.200.000	€/y
Discount rate (r)	5	%
Initial lifetime (N)	20	y
Annuity Factor: (AF(N,r)e = (1 - (1 + r)-N) / r)	12,46	y
Residual lifetime (R)	7	y
Annuity Factor: (AF(R,r)R = (1 - (1 + r)-R) / r)	5,79	y
Initial investment (Ie)	300.000	€



Proposal		Units
Boiler efficiency	93	%
Fuel		Natural gas
Fuel cost	0,4	€/Sm^3
Yearly consumption	5.381.720	Sm^3/y
Yearly energy costs	2.152.688	€/y
Discount rate (r)	5	%
Investment lifetime (n)	20	y
Annuity Factor: (AF(n,r)new = (1 - (1 + r)-n) / r)	12,46	y
Investment (I)	450.000	€

Annual Cash Flow (CF)	47.312	€
Net Present Value (NPV= CF* AF$_{new}$ - (Inew - Ie + Ie*AF$_R$/AFe))	300.316	€
IRR	12,5	%
DPBT	7,3	y



Co-funded by the Horizon 2020 Programme of the European Union