

Workshop Financial calculations and calculation of pay-back times

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Boundary conditions

- Inflation
- Development of energy prices
- Budget
- Subsidy
- Taxes
- Acceptable pay back period:
 - Structural facilities: 10 yr
 - Building installations: 5 yr
 - Process installations: 3 yr

Costs and returns

- Investment
- Subsidy
- Maintenance
- Energy costs (electricity, natural gas, cold, heat, oil)
- Costs for removal after technical life span

Beware:

- Positive returns could be subject to profit taxes

Simple pay back period

- (extra) Investment divide by yearly returns
- Advantage: Simple calculation, can be used for pay back periods ≤ 5 yr
- Disadvantage: No interest, inflation or increase in energy costs. Optimistic results
- Example:
 - Invest: 10.000 EUR, Returns 2500 EUR/yr
 - SPBP: 4 years

Net Present Value

- Cash Flow over of years
- Involves interest, inflation, energy costs
- When Net present value is positive, project is feasible

Example:

- Invest: 10.000 EUR, returns 2500 (energy savings)
- Internal rate: 15%, inflation 3%, energy cost +5%
- NPV (10 years): € 4.934

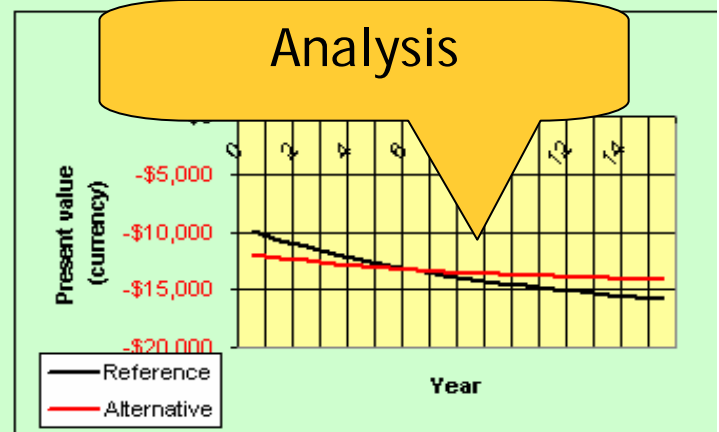
Financial calculations on energy saving measures

Simple Pay Back Period	4.1 Years	Results
Net Present Value	\$706 project is feasible	

Discription of energy saving measures	Description	In between results

Fill in the yellow fields	General	General information		
Energy tariff electricity		\$0.12		
Energy tariff oil		\$0.31		
Inflation rate		3.0%	per year	
Increase energy prices		5.0%	per year	
Internal rate		15%	per year	
Economic life span		10	years	
Reference situation				
Investment		\$10,000		
Annual costs*		\$200	per year	
Electricity consumption	5000	kWh		
Oil consumption	0	ltr		
Alternative situation				
Investment	\$12,000			
Annual costs*	\$250	per year		
Electricity consumption	500	kWh		
Oil consumption	0	ltr		

Calculation	
Extra investment	\$10,000.00
Difference anual energy costs	\$540.00
Difference other anual costs	-\$50.00



The point of crossing lines is the break even point

Spreadsheet Tool

Fill in the yellow fields

General information

Energy tariff electricity	\$0.12	
Energy tariff oil	\$0.31	
Inflation rate	3.0%	per year
Increase energy prices	5.0%	per year
Internal rate	15%	per year
Economic life span	10	years

Reference situation

Investment	\$10,000	
Annual costs*	\$200	per year
Electricity consumption	5000	kWh
Oil consumption	0	ltr

Alternative situation

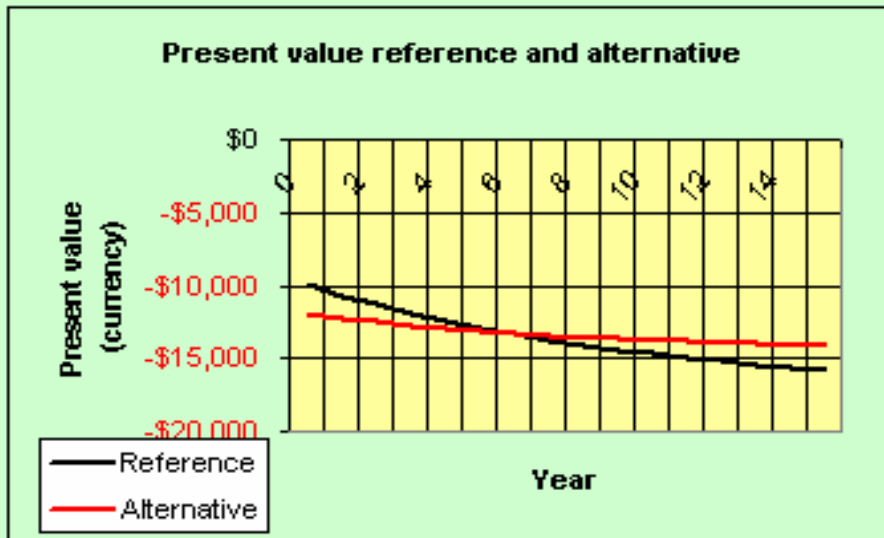
Investment	\$12,000	
Annual costs*	\$250	per year
Electricity consumption	500	kWh
Oil consumption	0	ltr

Spreadsheet Tool

Simple Pay Back Period	4.1 Years
Net Present Value	\$706 project is feasible

Calculation

Extra investment	\$2,000.00
Difference annual energy costs	\$540.00
Difference other annual costs	-\$50.00



The point of crossing lines is the break even point

Exercise with spreadsheet

Pilot projects:

- Calculate simple pay back time
- Calculate Nett Present Value

To be included in your summary presentation