Self Assessment Tool (SAT)

Energy saving (TOE/year)

Energy sources used to supply the production process:
- Electricity
- Natural gas
- Diesel
- LPG
- Heavy fuel oil
- Light fuel oil
- Gasoline
- Biomass (wood)
- Tallow
Overview

- Introduction
- Manual
  - System Requirements
  - Analysis
  - Results – Best Practices
Purpose of the ESS-SAT

Self-Assessment of the current status regarding energy saving potentials of a company

The tool assists companies to find answers to the following questions:
- Where does my company stand regarding energy management and what are the areas I can improve both in best practices and energy saving technology?
- What cost effective energy saving measures should I implement?
- What measures should I implement first?
- Some more information
Tools and resources available

The Energy Saving Scheme developed in the EU-project SESEC does provide you with the following tools:

• Overall SESEC Approach, described in presentation nr. 11
• EBMT+ (Energy Management and Benchmark Tool)
• EDST (Energy Distribution Support Tool), the latter two both described in presentation nr. 12
• SAT (Self Assessment Tool), based on Excel, described in this presentation
• Nine presentations on energy saving best practices:
  • 01 Supply Contracts and Load Shifting
  • 02 Utilization and Production machines
  • 03 Compressed Air
  • 04 Steam and Heat Production
  • 05 Renewable Energy and Co-generation
  • 06 Lighting
  • 07 Heating
  • 08 Ventilation and Air Conditioning
  • 09 Vacuum and Cleaning

For more information consider [1] and [2]
Preview: Results to expect

- High level Benchmarking of thermal and electrical consumption as well as energy costs for the clothing industry
- Detailed list of energy saving best practices, which your company can consider.
- Some estimates about expected energy savings for those best practices.
- Together with estimated cost the list of best practices is a good starting point to prioritise energy saving measures.
Energy sources used to supply the production process

Energy saving (TOE/year)

- Priority 7: 4.745175927
- Priority 6: 19.47740975
- Priority 5: 25.96887963
- Priority 4: 37.83219145
- Priority 3: 54.14534954
- Priority 2: 53.06175917
- Priority 1: 53.06175917

TOOL FOR ENERGY CONSUMPTION REDUCTION

- Consumption analysis
- Investment evaluation

To achieve a good analysis, you must type all the required data.
How do I use the Self Assessment Tool (SAT)?
Steps

1. Set the Scope
2. Setup the Excel
3. Perform the analysis (Input)
4. Interpret the results (Output)
5. Prioritise best practices – plan next steps
1. Set the scope

- What do you expect to get from the ESS-SAT-tool?
  E.g.:
  - Prepare for an energy audit
  - Identify energy and cost saving potentials
  - Starting point to learn more about energy efficiency in clothing companies

- Who in your company will work with the ESS-SAT-tool?
  - You will need information concerning the building, lighting, heating, boilers, ventilation, compressed air and vacuum, if you want to get the maximum value using the ESS-SAT

- What will be the next steps?
  - E.g. present some energy saving measure with quick pay-off times to the management.
2. Setup the Excel

- MS-Excel 2010 or later required
- The most current version is available on www.sesec-training.eu
- Macros have to be enabled
  The ESS-SAT was developed using macros. You need to enable macros in order to be able to use the ESS-SAT
2. Activate Macros

TOOL FOR ENERGY CONSUMPTIONS REDUCTION

Consumption analysis

Investment evaluation

Select the language

English

Select the manufacture

Clothing

Enter today’s date:

To achieve a good analysis, you must type all the required data.
3. Startscreen

Chose this one for the energy saving potential analysis.

The tool analogue to SAT is called ENCORE and was developed in the ARTISAN project. The Excel-File contains both tools, here you can select „Textile“ or „Clothing“.
Sheets: Navigation

You see the newly created sheet „Input_A“

- This will create a new sheet
- This will reset the current sheet, deleting all info already added
- Here you can navigate all the active sheets

Introduction – Manual (Preparation)
A) INPUT SHEET - Generalities

The information and figures are needed to calculate benchmarks for your company and to calculate estimated savings. These Inputs are not necessary for the qualitative saving-potential analysis.

<table>
<thead>
<tr>
<th>Section</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Identification of the enterprise</td>
<td>Name: Fashion Fans</td>
</tr>
<tr>
<td></td>
<td>Address:</td>
</tr>
<tr>
<td></td>
<td>Road/Street n°</td>
</tr>
<tr>
<td></td>
<td>Town Nation: Bulgaria</td>
</tr>
<tr>
<td>2. Features of the enterprise</td>
<td>Kind of production (NACE Rev. 2):</td>
</tr>
<tr>
<td></td>
<td>C14.3 Knitted and crocheted articles</td>
</tr>
<tr>
<td></td>
<td>C14.1 Wearing apparel and accessories</td>
</tr>
<tr>
<td></td>
<td>Enter rate for each selected production</td>
</tr>
<tr>
<td>3. Turnover of the last year</td>
<td>Year: 2012</td>
</tr>
<tr>
<td></td>
<td>Turnover [Euro]: 4,500,000,00</td>
</tr>
<tr>
<td></td>
<td>Amount of product: 8,400,000,00 pieces</td>
</tr>
</tbody>
</table>
A) INPUT SHEET- Generalities II

4 Working time:
This question addresses organisational best practices (like turning lighting off during lunch time)

5. Used energy:
If you have a cogeneration plant, renewable energy or different tariffs charged for electricity, than several measures how to align your demand of energy to its availability will be proposed.

And other things will be checked, e.g. the efficiency of your cogeneration plant.
A) Form: Enter data on used energy

<table>
<thead>
<tr>
<th>Energy Source</th>
<th>Price (VAT Included)</th>
<th>Consumption</th>
<th>Consumption Band</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td>0.13 Euro/kWh</td>
<td>2500000 kWh</td>
<td>Band IA: Consumption &lt; 20 MWh</td>
</tr>
<tr>
<td>Natural gas</td>
<td>0.045 Euro/m³</td>
<td>300000 m³</td>
<td>Band II: Consumption &lt; 1000 GJ</td>
</tr>
<tr>
<td>Diesel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LPG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy fuel oil</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light fuel oil</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gasoline</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biomass (wood)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teleheating</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
B) INPUT SHEET- Building I

The information will be used to identify saving potentials regarding lighting.
More detailed information on lighting is available in the dedicated lighting training module available on the SESEC website.
B) INPUT SHEET - Building II

The information will be used to identify saving potentials regarding heating, air-conditioning and ventilation.

More detailed information on HVAC is available in two dedicated training modules available on the SESEC website.
C) INPUT SHEET - Process I

The first questions are about the Process fluids:

- Compressed air
- Steam
- Hot Water
- Vacuum

### Process fluids

**What pressure is air compressed produced?**
- **4.50 bar**

**What pressure is air compressed consumed?**
- **3.20 bar**

How does your company produce heat (hot water, steam, etc.):
- ✔ Using electricity
- ✔ Recovering heat
- ☐ Using fossil combustibles
- ☐ Using solar collectors
- ☐ With the help of steam accumulation tanks
- ☐ Using Bio-combustibles

Are your water/steams pipe well insulated?
- ✔ yes
- ☐ no

Is your boiler and Feed-Water Tank well insulated?
- ✔ yes
- ☐ no
C) INPUT SHEET- Process II

The second part is not about the energy conversion infrastructure, but about the direct processing machinery.

- Is your boiler and Feed-Water Tank well insulated?  
  - yes  
  - no  

- Do your compressors have on/off running?  
  - yes  
  - no  

- Do you have a central Vacuum system with vacuum piping?  
  - yes  
  - no  

- Do you treat sewages?  
  - yes  
  - no  

- What is the efficiency levels of your boilers and steam generators (%)?  
  76%  

2. Process machines

- Do you have:  
  - Flat-Belt and V-Belt for in mechanical transmission  
  - High efficiency electrical engines  
  - Engines with power greater than 0.75 kW  

- Do your machines:  
  - Run only at full load  
  - Run with frequent on/off
This was the last Input form, after clicking on „Process“, you will get the following results:

- **OUTPUT A**: Energy consumption and energy cost benchmarking
- **OUTPUT B**: Detailed overview of the different energy sources
- List of recommended Best Practices
- Best Practices Impact: Savings Estimation for the Best Practices
The „Output A“ provides you with different indices for your company. The reference values are based on national benchmarks for the two product categories:

- Knitted and crocheted articles
- Wearing apparel and accessories
OUTPUT A. Report on Energy Consumption II

There are benchmarks both
• for the energy consumption (in ToE) and
• the energy costs.
There are indices both
• for thermal and
• for electrical consumption.
The figure on the right hand side shows the energy cost for the thermal consumption for the two product categories.
OUTPUT B. Process Index I

Here some benchmarks on the energy consumption per production unit are shown. ToE are „Tons of Oil Equivalent“. The productions units are the same chosen in „Input A“, which may be

- pieces
- kg
- m
- m²

<table>
<thead>
<tr>
<th>Energy Carrier</th>
<th>TOE/pie</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical consumption</td>
<td>0,000009</td>
<td>63,82</td>
</tr>
<tr>
<td>Thermal consumption</td>
<td>0,000005</td>
<td>36,18</td>
</tr>
<tr>
<td>Tot.</td>
<td>0,000015</td>
<td>100,00</td>
</tr>
</tbody>
</table>

3. Turnover of the last year

Year: 2012

Turnover (Euro): 900.000,00

Amount of product: 2.000.000,00 pieces

Co-funded by the Intelligent Energy Europe Programme of the European Union
The second figure in Out B. does provide the shares of the different energy sources of your company.

Energy sources use to supply the production process

<table>
<thead>
<tr>
<th>Energy source</th>
<th>TOE/year</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td>18.70</td>
<td>63.82</td>
</tr>
<tr>
<td>Natural gas</td>
<td>9.05</td>
<td>30.89</td>
</tr>
<tr>
<td>Diesel</td>
<td>0.52</td>
<td>1.77</td>
</tr>
<tr>
<td>LPG</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Heavy fuel oil</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Light fuel oil</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Gasoline</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Biomass (wood)</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Teleheating</td>
<td>1.03</td>
<td>3.52</td>
</tr>
<tr>
<td>Tot.</td>
<td>29.30</td>
<td>100.00</td>
</tr>
</tbody>
</table>
**Recommended Best Practices - Examples**

**OUTPUT SHEET - Recommended Best Practices**

The analysis of input data suggests to evaluate the implementation of the following best practices.

In next sheet, you can also assess the energy saving target associated to these best practices:

<table>
<thead>
<tr>
<th>Category</th>
<th>Action</th>
<th>Cost</th>
<th>Involved uses</th>
<th>Effects on consumptions</th>
<th>Economic benefit</th>
<th>Consequences</th>
<th>Pay back time</th>
<th>Priority</th>
<th>Required enablers</th>
</tr>
</thead>
<tbody>
<tr>
<td>38 Service fluids</td>
<td>Replace steam traps with sensor controlled magnetic valves (Condensate output on demand with minimum loss of fresh steam.)</td>
<td>Medium</td>
<td>Thermal fluid distribution system</td>
<td>Reduction of combustible consumption for thermal use</td>
<td>Low-Medium</td>
<td>Cost reduction and emission reduction because of reduction in the use of combustibles</td>
<td>Medium</td>
<td>4</td>
<td>not required</td>
</tr>
<tr>
<td>39 Service fluids</td>
<td>Insert valves to isolate “periodic-use” items in system.</td>
<td>Low/Medium</td>
<td>Thermal fluid distribution system</td>
<td>Reduction of combustible consumption for thermal use</td>
<td>Medium</td>
<td>Cost reduction and emission reduction because of reduction in the use of combustibles</td>
<td>Medium</td>
<td>4</td>
<td>not required</td>
</tr>
</tbody>
</table>
Co-funded by the Intelligent Energy Europe Programme of the European Union

# Best Practice Impact I

Here you can find the typical energy savings of this Action

Define the targeted energy saving for your company

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Removal of covering / impediments from heating appliances and air conditioners.</td>
<td>1</td>
<td>from 0 to 1% of thermal consumption and 0 to 1% of electrical consumption</td>
<td>0,6</td>
<td>7,12</td>
<td>402,72</td>
</tr>
<tr>
<td>4 Reduction of compressed air production pressure.</td>
<td>1</td>
<td>from 0 to 1% of electrical consumption if the compressed air is used improperly for cleaning reasons from 0 to 0.1% in other cases</td>
<td>0,00</td>
<td>0,00</td>
<td>0,00</td>
</tr>
<tr>
<td>5 Reduction of steam production pressure.</td>
<td>1</td>
<td>up to 2% of thermal consumption</td>
<td>1</td>
<td>11,86</td>
<td>671,20</td>
</tr>
</tbody>
</table>

This is a advanced feature, the targeted energy savings will be deleted as soon as the sheet is updated (e.g. the data will be lost as soon as you switch to another sheet). So the best way is to Screenshot the reports generated from this information.

Introduction – Manual (Output)
Best Practice Impact II

You access the reports by scrolling to the bottom of the "Best Practice Impact" sheet. The figure shows the sum of the actions for each priority/step. It suggests that you start with the higher priority actions, which typically have a better cost/benefit characteristics.
Best Practice Impact III

The second figure does show the economic savings. Here the average costs for different thermal energy sources are applied.

### Economic saving (€/year)

<table>
<thead>
<tr>
<th>Step</th>
<th>Priority 7</th>
<th>Priority 6</th>
<th>Priority 5</th>
<th>Priority 4</th>
<th>Priority 3</th>
<th>Priority 2</th>
<th>Priority 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>672</td>
<td>5239,36</td>
<td>5239,36</td>
<td>1919,2</td>
<td>1919,2</td>
<td>1919,2</td>
<td>1919,2</td>
</tr>
<tr>
<td>Step 2</td>
<td>3742,4</td>
<td>4893,6</td>
<td>4893,6</td>
<td>4893,6</td>
<td>4893,6</td>
<td>4893,6</td>
<td>4893,6</td>
</tr>
<tr>
<td>Step 3</td>
<td>5373,6</td>
<td>5373,6</td>
<td>5373,6</td>
<td>5373,6</td>
<td>5373,6</td>
<td>5373,6</td>
<td>5373,6</td>
</tr>
<tr>
<td>Step 4</td>
<td>6524,8</td>
<td>6524,8</td>
<td>6524,8</td>
<td>6524,8</td>
<td>6524,8</td>
<td>6524,8</td>
<td>6524,8</td>
</tr>
<tr>
<td>Step 5</td>
<td>6524,8</td>
<td>6524,8</td>
<td>6524,8</td>
<td>6524,8</td>
<td>6524,8</td>
<td>6524,8</td>
<td>6524,8</td>
</tr>
<tr>
<td>Step 6</td>
<td>6524,8</td>
<td>6524,8</td>
<td>6524,8</td>
<td>6524,8</td>
<td>6524,8</td>
<td>6524,8</td>
<td>6524,8</td>
</tr>
<tr>
<td>Step 7</td>
<td>6524,8</td>
<td>6524,8</td>
<td>6524,8</td>
<td>6524,8</td>
<td>6524,8</td>
<td>6524,8</td>
<td>6524,8</td>
</tr>
</tbody>
</table>
Your Evaluation

In order to improve this tool, please send us your feedback. You can send the data to. This will be used to improve the industry indexes and to analyse the energy consumption situation of the industry. Your data will not be disclosed to third parties. Only aggregated indexes, based on several companies might be.

EVALUATION SHEET

Please, answer to following questions:

Is the structure of this tool understandable and easy to follow?
- yes
- no

Is the sequence of data input self-explanatory, i.e. do you understand what is asked?
- yes
- no

Is the output information up to your expectations regarding company’s needs?
- yes
- no

Do you think you will continue to use the tool?
- yes

Which data do you want to send us?
- All data
- Only resulting indexes
- Nothing, only questionnaire

Send data
Investment Evaluation

The SAT-Tool does provide an Investment Evaluation, too. This calculator will support you assessing the financials of investments in energy savings.

![Investment Evaluation Tool](image)

Chose this one for the Investment evaluation

To achieve a good analysis, you must type all the required data.
The Investment Evaluation Tool can calculate the saved energy costs as well as the return on investment for investments that reduce the energy consumption. You can calculate those values for one Action, or you can compare to different alternative implementations for one Action.

The tool does provide the discounted cashflow calculation, taking many parameters into account.

<table>
<thead>
<tr>
<th>Investment</th>
<th>Action A</th>
<th>Action B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial investment cost (to start cash flows): sum of initial costs, minus return value in case of a present plant and minus the earning value of the new plant at end of life.</td>
<td>(lo) 20,000,00</td>
<td>10,000,00</td>
</tr>
<tr>
<td>Useful life of the investment</td>
<td>(n) 10</td>
<td>10</td>
</tr>
</tbody>
</table>
**Investment Evaluation II**

<table>
<thead>
<tr>
<th>Investment</th>
<th>Action A</th>
<th>Action B</th>
<th>Unit of Measure</th>
<th>Note:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial investment cost (to start cash flows): sum of initial costs, minus return value in case of a present plant and minus the earning value of the new plant at end of life.</td>
<td>20.000,00</td>
<td>10.000,00</td>
<td>Euro</td>
<td>List of costs to be evaluate: 1) net price of equipment 2) transportation costs and tax 3) costs for designing, assembling, etc. 4) costs for installing and starting 5) other initial costs</td>
</tr>
<tr>
<td>Useful life of the investment</td>
<td>10</td>
<td>10</td>
<td>years</td>
<td>Max 50 years</td>
</tr>
<tr>
<td>Effective net annual interest rate</td>
<td>5,00%</td>
<td>5,00%</td>
<td>%</td>
<td>The most high interest rate of the company credit line or, alternatively, the most low interest rate between the financial assets of company that can be used to pay the investment.</td>
</tr>
<tr>
<td>Inflation rate</td>
<td>2,00%</td>
<td>2,00%</td>
<td>%</td>
<td>In case of investment that give cash flows with a different dynamics compared to inflation dynamics, but measurable as &quot;drift&quot; compared to inflation, then you could take in account this factor.</td>
</tr>
<tr>
<td>Drift of asset price in time compared to inflation</td>
<td>%</td>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real interest rate for the company (opportunity cost)</td>
<td>2,94%</td>
<td>2,94%</td>
<td>%</td>
<td>( Ti = (Te-Tf-TF')/(1+Tf+TF') \approx Te-Tf-TF' )</td>
</tr>
</tbody>
</table>

*Co-funded by the Intelligent Energy Europe Programme of the European Union*
The energy cost savings are calculated, based on the energy savings anticipated, to be entered as the hourly consumption and the duration in working days in a year and working hours a day for this facility/device.

<table>
<thead>
<tr>
<th>Energy amount</th>
<th>Present situation</th>
<th>Ameliorative situation A</th>
<th>Ameliorative situation B</th>
<th>Unit of Measure</th>
<th>Conversion factor</th>
<th>Average Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hourly consumption of purchased electricity</td>
<td>5,8</td>
<td>4,3</td>
<td>4,6</td>
<td>kWh/h</td>
<td>3,60</td>
<td>€/KWh</td>
</tr>
<tr>
<td>Hourly consumption of natural gas</td>
<td>34,53</td>
<td>0,36</td>
<td></td>
<td>m3/h</td>
<td></td>
<td>€/m3</td>
</tr>
<tr>
<td>Hourly consumption of diesel</td>
<td>37,78</td>
<td></td>
<td></td>
<td>L/h</td>
<td></td>
<td>€/L</td>
</tr>
<tr>
<td>Hourly consumption from renewable sources</td>
<td>1,00</td>
<td></td>
<td></td>
<td>MJ/h</td>
<td></td>
<td>€/MJ</td>
</tr>
<tr>
<td>Energy per hour</td>
<td>200,27</td>
<td>148,48</td>
<td>158,84</td>
<td>MJ/h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working day in a year</td>
<td>300</td>
<td></td>
<td></td>
<td>days/year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working hour in a day</td>
<td>16</td>
<td></td>
<td></td>
<td>hours/day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global saving [TOE/year]</td>
<td>5,94</td>
<td>4,75</td>
<td></td>
<td>TOE/year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economic savings</td>
<td>(Re)</td>
<td>2592,00</td>
<td>2073,60</td>
<td>€/year</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Investment Evaluation IV

The following indexes are calculated for the two alternatives

<table>
<thead>
<tr>
<th>Economic index</th>
<th>Ameliorative situation A</th>
<th>Ameliorative situation B</th>
<th>Unit of Measure</th>
<th>Note:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash Flow</td>
<td>(CF)</td>
<td>2.592,00</td>
<td>2.073,60</td>
<td>€/year</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CF = Re + E1 - C1 - C2 - C3</td>
</tr>
<tr>
<td>Net Present Value</td>
<td>(NPV)</td>
<td>2.176,81</td>
<td>7.741,45</td>
<td>€</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Compute the difference between the present value of estimated cash flows and the initial investment: the action is advantageous if NPV is more then zero.</td>
</tr>
<tr>
<td>Internal Rate of Return</td>
<td>(IRR)</td>
<td>5,02%</td>
<td>16,06%</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Compute the profitability for each year life of investment: the action is advantageous if IRR is more than the real interest rate (Ti).</td>
</tr>
<tr>
<td>Discounted Payback Period</td>
<td>(DPB)</td>
<td>8,88</td>
<td>5,28</td>
<td>years</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Compute the time needed to return from the initial investment: the action is advantageous (NPV&gt;0) if DPB is less than useful life of the investment (n).</td>
</tr>
<tr>
<td>Profitability Index</td>
<td>(PI)</td>
<td>0,11</td>
<td>0,77</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Select the action more advantageous that uses a lesser initial investment, at same profitability (NPV). PI = NPV / 10</td>
</tr>
</tbody>
</table>
Investment Evaluation V

In the next sheet the results are visualized in several figures:

<table>
<thead>
<tr>
<th></th>
<th>A situation</th>
<th>B situation</th>
<th>Unit of Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Present Value</td>
<td>2.176,81</td>
<td>7.741,45</td>
<td>Euro</td>
</tr>
<tr>
<td>Profitability Index</td>
<td>0,11</td>
<td>0,77</td>
<td>-</td>
</tr>
<tr>
<td>Real interest rate</td>
<td>2,94%</td>
<td>2,94%</td>
<td>%</td>
</tr>
<tr>
<td>Internal Rate of Return</td>
<td>5,02%</td>
<td>16,06%</td>
<td>%</td>
</tr>
<tr>
<td>Useful life of the investment</td>
<td>10,00</td>
<td>10,00</td>
<td>years</td>
</tr>
<tr>
<td>Discounted Payback Period</td>
<td>8,88</td>
<td>5,28</td>
<td>years</td>
</tr>
</tbody>
</table>

**Internal Rate of Return**

**Net Present Value**

**Profitability Index**

**Discounted Payback Period**
Investment Evaluation VI

The next sheet does provide sensitivity analysis for the two alternatives.
Readings

Pictures

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- **Slide 9** – Carissa Rogers: kid to do list, list, Be happy and go home – URI:
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