The SITECO Cost Efficiency Calculator „indoor“

In General

The Siteco Cost Efficiency Calculator “indoor” is a web application for evaluating the cost efficiency of up to two lighting installations in comparison with an already existing “old” installation.

The installations ('comparison facility, 'new facility 1', ‘new facility 2’) can be compared to each other over a variable service life in terms of investment costs and operating costs. For evaluating cost efficiency the amortisation of an investment over the service life is calculated both statically and dynamically and displayed in figures and tables.

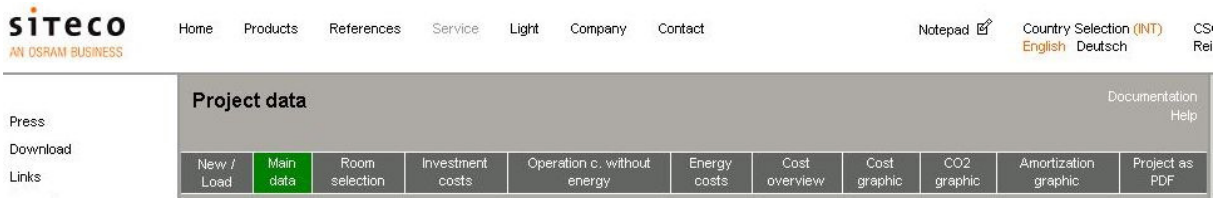
The Siteco Cost Efficiency Calculator “indoor” is

- available in the Customer Service Centre for registered users. The projects of the user are centrally saved on the Siteco server under his partner number and can subsequently be called up at any time or deleted, too.

- generally available on the Siteco internet page under 'Planning Tools'.
  Here the project will not be saved, but all other functions are available.

For each project, a comparison of two installations ('new facility 1 ' and ‘new facility 2’) with the ‘comparison facility’ is possible.

Note on Navigation



Via the navigation bar above you can change between the individual input and output pages of the application. You do not have to follow a specific sequence, but you must note that without corresponding entries, the output pages will show no results.
The current page is highlighted in green in the navigation bar.
Alternatively to using the navigation bar you jump backwards and forwards a page with 'Forward' or 'Back'.

The application is divided into input pages for inputting data, and output pages that concisely show you the results.

Input pages are:
- Main data
- Room selection
- Investment costs
- Operating costs without energy
- Energy costs

Output pages are:
- Cost overview
- Cost graphic

- CO_2 graphic
- Amortization graphic

Please note:

- ***Entered values are only saved when you move on to a new page!***

- ***Numerical values (e.g. percentage values) can be entered in the form of 'x.y' (with a dot) and 'x,y' (with a comma). In the latter case the value is converted to the first form when the field is completed.***

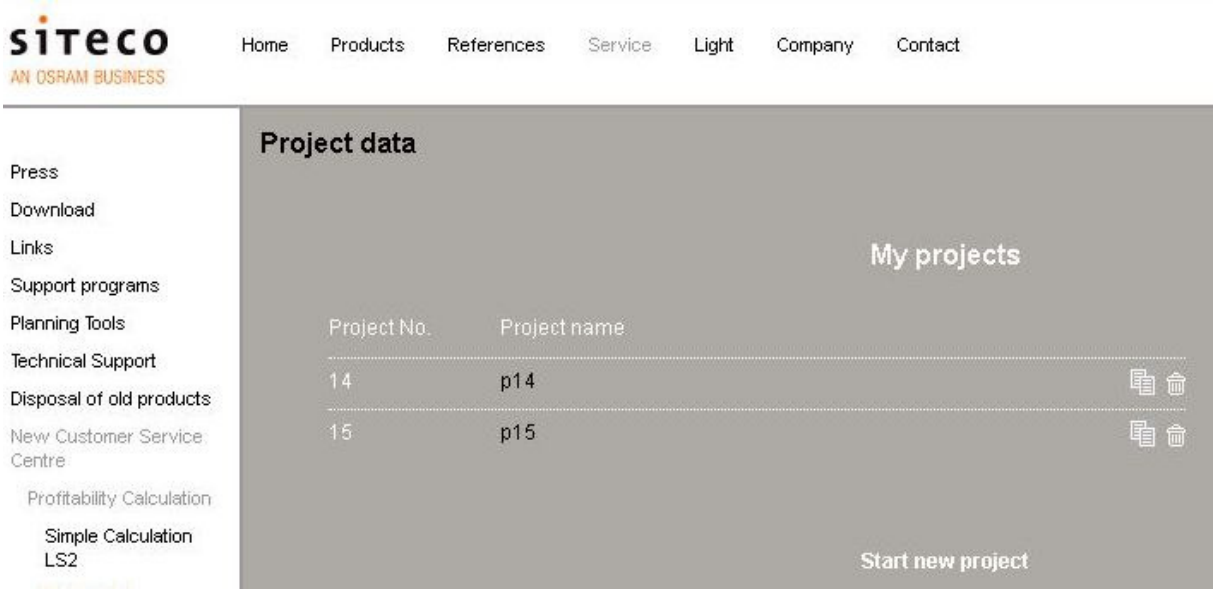
- ***Via the 'Help' link at top right you have a PDF document with suggestions for specific input fields.***

***Note*:**
With the project shown on the following pages, this does not concern a real project. The entered values (fictitious) are only for operating the program though.

1. New / load

1.1 My projects

Following the 'Cost Efficiency Calculation' menu selection you are shown a list of projects created by you (if these exist).[1]



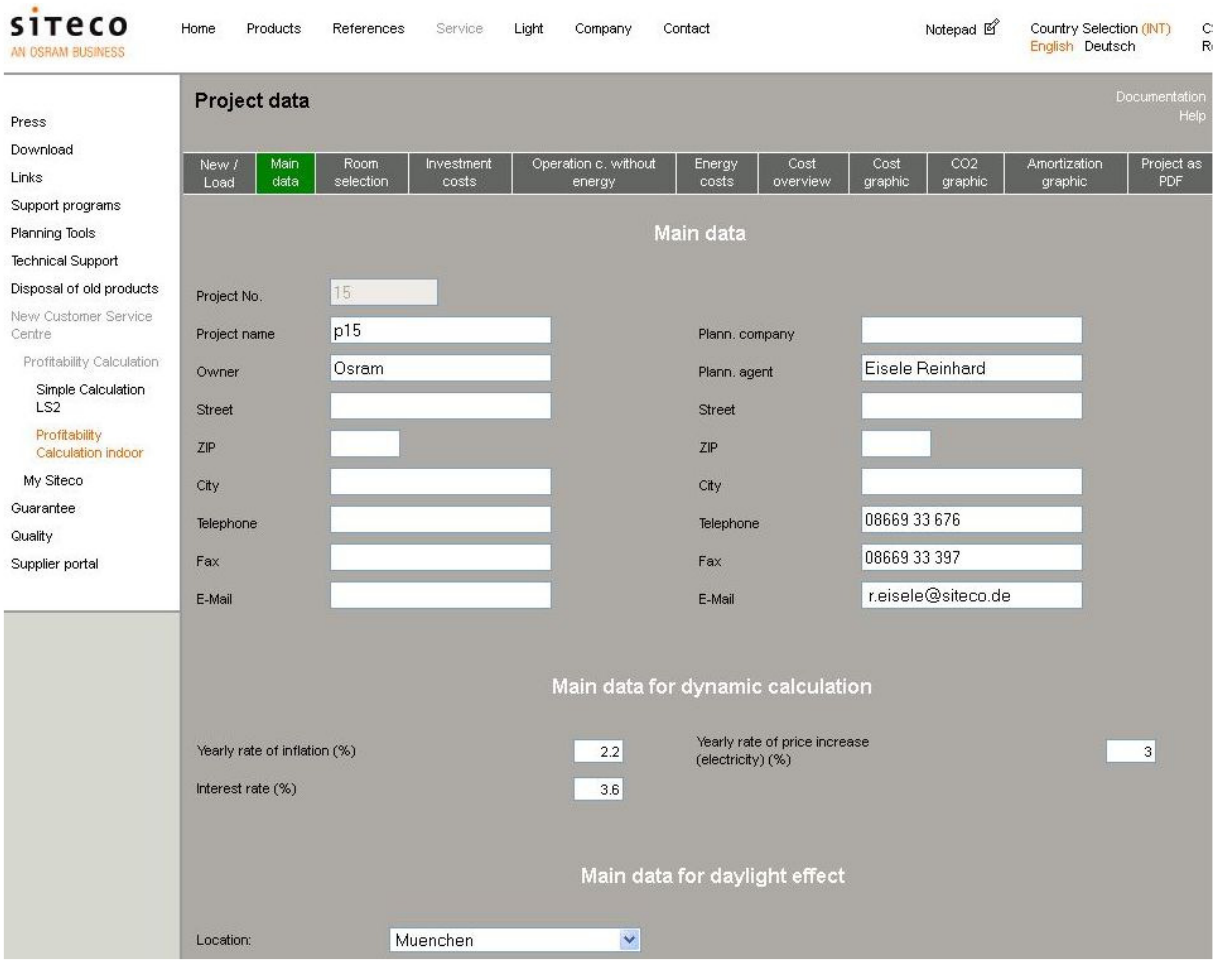
Here you can:

- select an existing project by clicking on the project number or on the project name and process this
- start a new project
- copy a project
- delete a project.

After selection, you automatically reach the 'General Data' page.

[1] this page does not exist with the generally available version of the Cost Efficiency Calculator.

2. Main data



2.1 General project data

Here you can:

- Assign a project name
- Fill in the ‚Owner‘, 'Planning company', and 'Planning agent' and the corresponding contact fields.

The entries in the right-hand column are read out from your customer data (if these exist) and are automatically displayed. You can however overwrite the fields at any time; the modified entries are then saved in this project.

The project number is automatically assigned by the system.

2.2 Main data for dynamic calculation

Enter the data here that are needed for dynamic amortisation:

- Yearly rate of inflation (%)
- Rate of price increases for electricity (%)
- General interest rate (%)

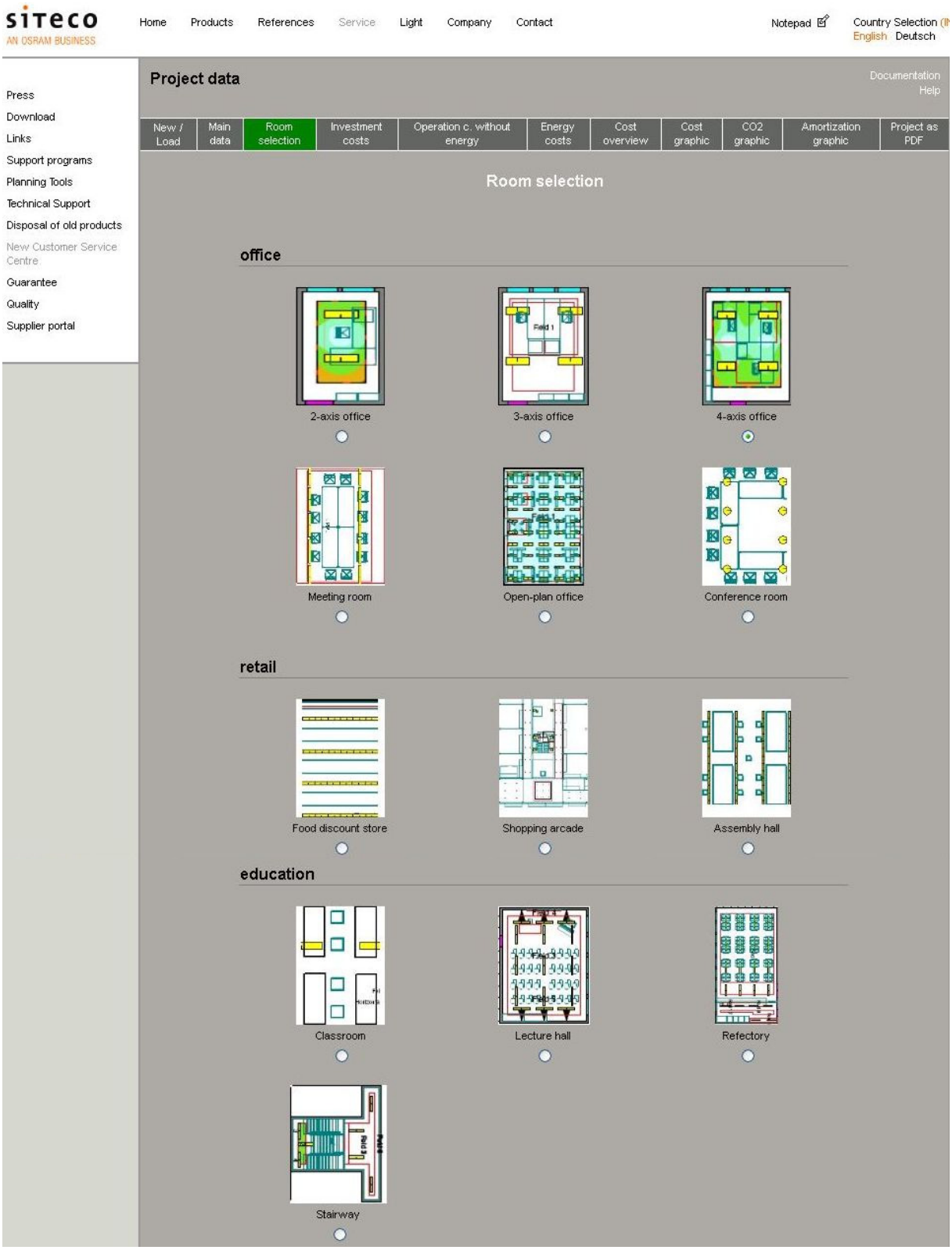
2.3 Location

The Efficiency Calculator “indoor” provides a possible energy saving by the use of a daylight control system to be considered in calculation.
The amount of saved energy depends on location and room selection.

The department “Lichtberatung” has calculated various rooms using the software “RELUX” to get possible rates of saved energy in consideration of realistic boundary conditions (e.g. working time). These rates are stored in the calculator.

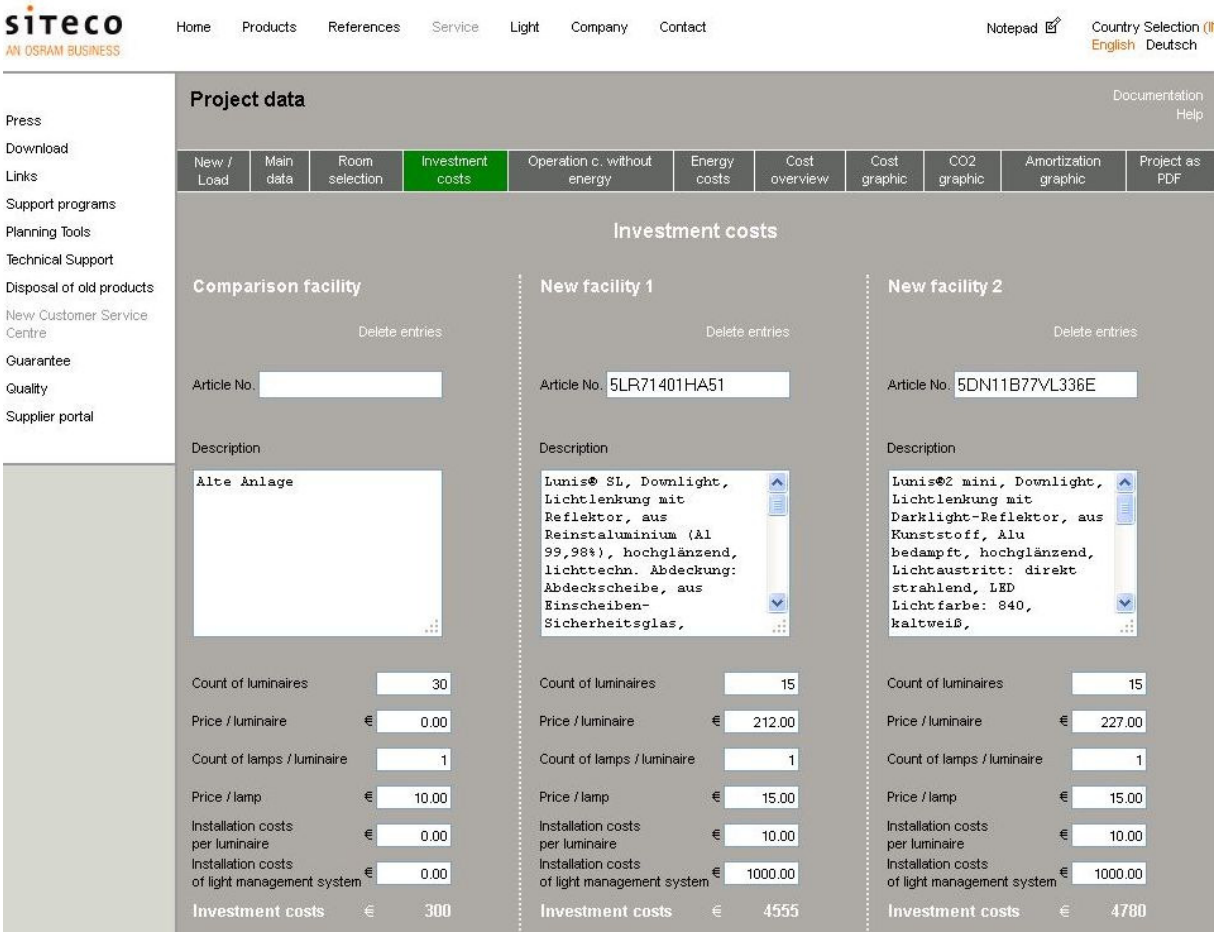
You can switch on / off the consideration of a daylight system on the page “Energy costs”.

3. Room selection



Select a room which ist suitable for your project.
As mentioned before, “location” is only important for the calculation of projects with daylight control systems.

4. Investment costs



Enter the investment costs here for the 'comparison facility' (i.e. the old installation) and the new facilities.

If when the 'Article No.' field is left the entered article number is found in the electronic catalogue, corresponding data (e.g. designation, no. of lamps/luminaires, price/luminaire) are determined from the luminaire data and entered into the corresponding fields on this page and the following pages.[2]
The values can be manually modified and saved afterwards at any time.
The investment costs of the installations are automatically calculated again if a field entry is changed.
In the above example the modernisation of an existing installation with new luminaires is assessed, the price/luminaire on the left therefore remains at 0.00 EUR.
In order to be able to economically compare the old installation over many years with the new installation, new lamps are fitted in the old installation.

Important when using LED luminaires:

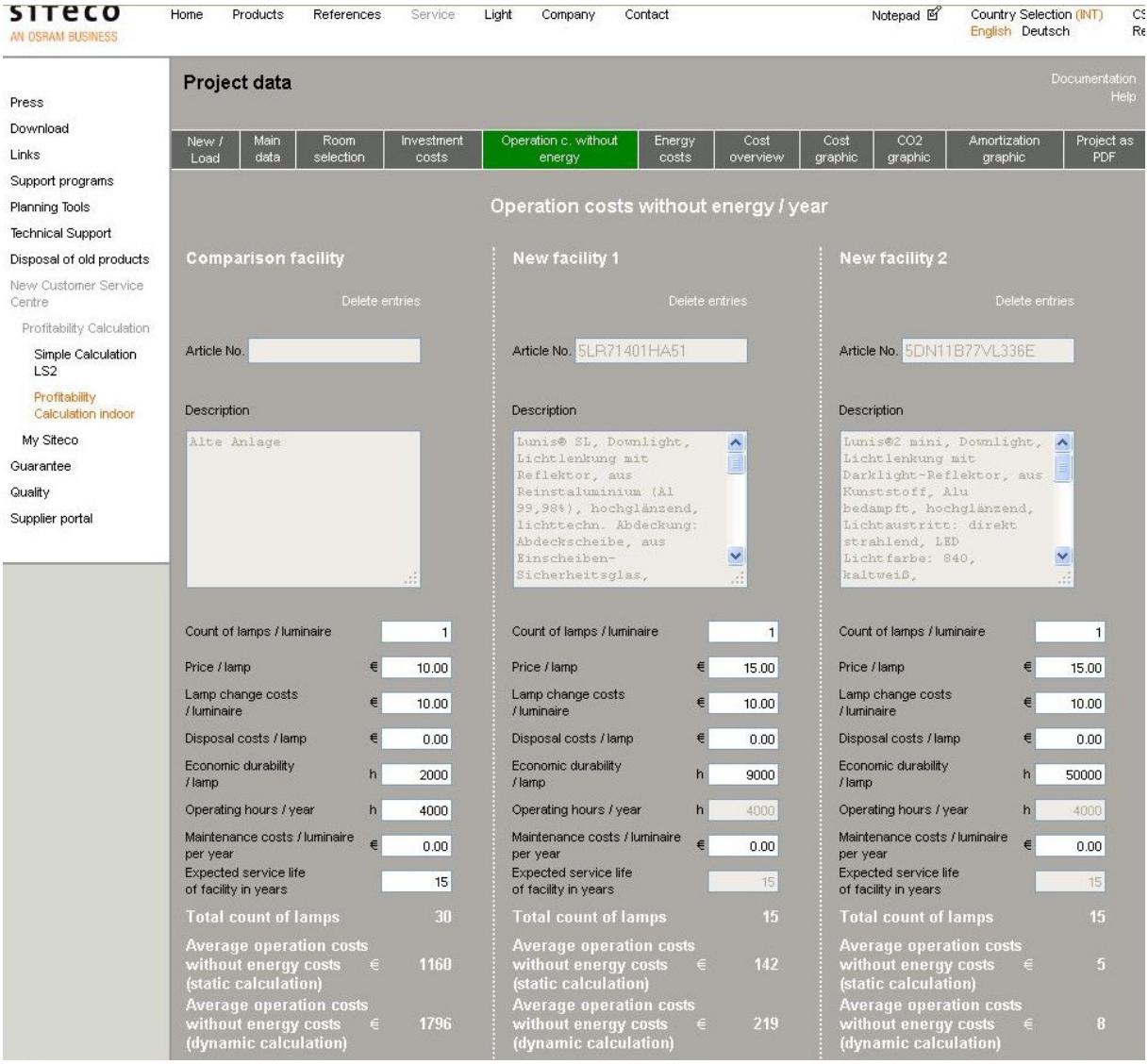
LED luminaires nomally consist of both housing and „lamp" (LED module) within one unit. Therefore, you should enter the price of one single LED module into "price /lamp" and decrease the "price / luminaire" by this value.

[2] only empty fields are automatically filled. Click on ‚Delete entries' to delete all field entries in the input mask.

The first set of lamps belongs to the investment costs, further sets during service life of the facility belong to “operation costs without energy”.

Save all your entries by navigating to another page with 'Forward' or 'Back' or via the navigation bar above.

5. Operating costs without energy



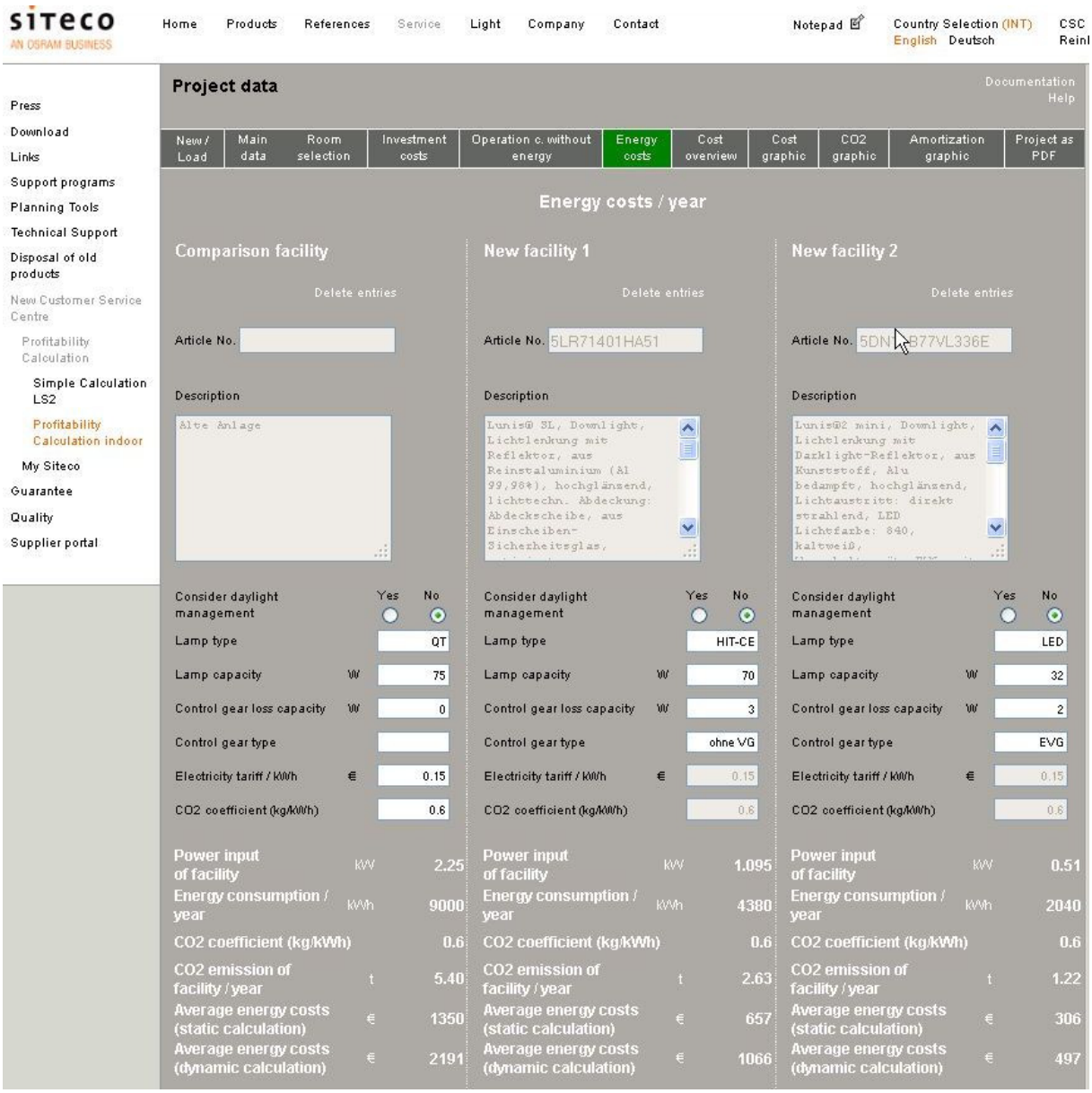
Article number and designation are displayed on this page for information purposes; these cannot be modified.

Enter the operating costs for the 'comparison facility' (i.e. the old installation) on the left and for the 'New facility 1‘ / 'New facility 2‘ on the right.

Values that are automatically calculated
- total count of lamps
- operation costs without energy costs on average (static calculation)
- operation costs without energy costs on average (dynamic calculation)

The values „operating hours / year“and „expected service life“ must be entered for the comparison facility only.
They will be assumed for the new facilities, too.

6. Energy costs



Article number and description are displayed on this page for information purposes; these cannot be modified.
Enter the required data for the 'comparison facility' (i.e. the old installation) on the left and for the 'New facility 1' / 'New facility 2' on the right.

If “Consider daylight management” is activated, a possible energy saving is taken into account, depending on location and room you selected before.

Please don´t forget to enter the costs of the daylight management system under „Investment costs“, otherwise the results will be falsified!

Note:
Lamp capacity and loss capacity of the control gear are added to the lamp system capacity.

Suggestions for the electricity price and the location-dependent C02 factor can be called up via the 'Help' link at top right.

Factors to be calculated:
- Power input of facilities
- Energy consumption / year
- CO2 emission of facilities / year
- Energy costs per year on average (static and dynamic)

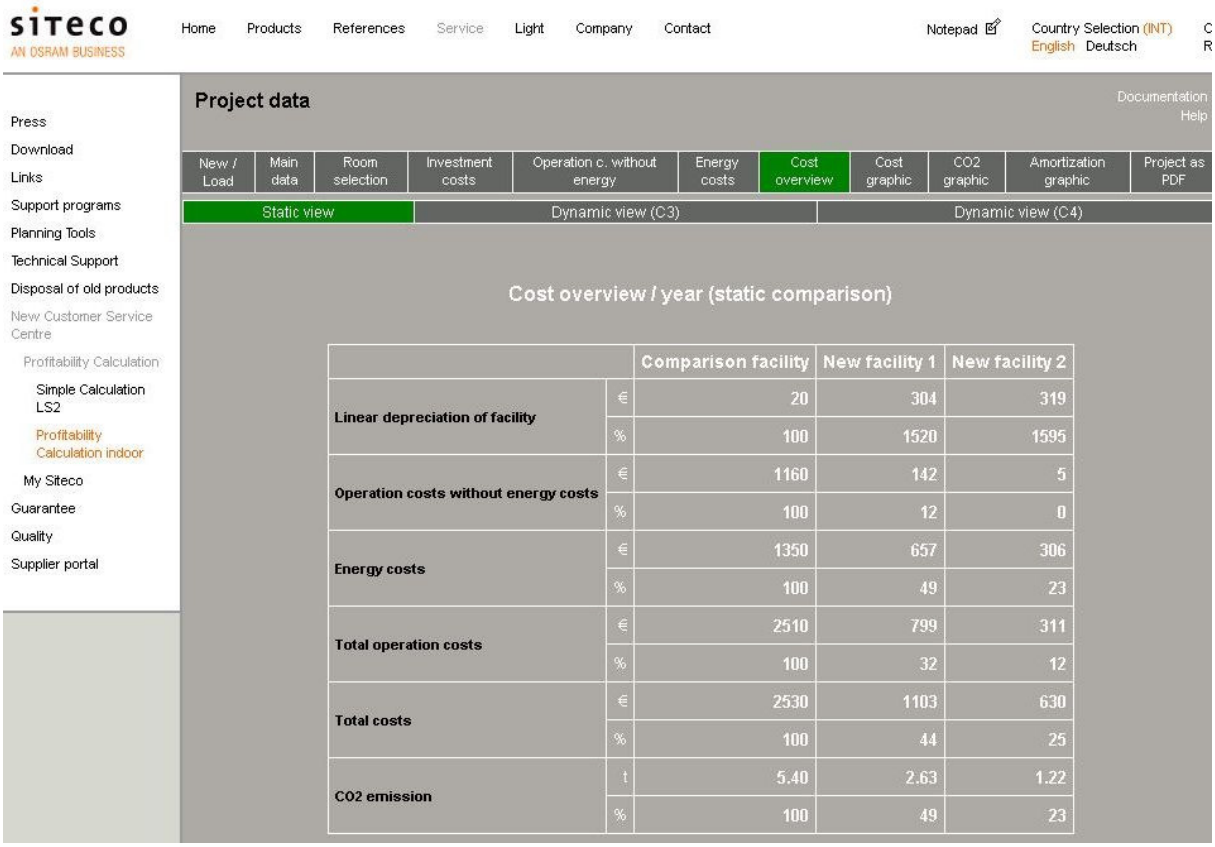
The values are calculated under consideration of possible use of a daylight system.

The values „electricity tariff / kWh“and „CO2 coefficient“ must be entered for the comparison facility only.
They will be assumed for the new facilities, too.

7. Cost overview

On the 'Cost overview' output page you can switch between static and dynamic view (C3/C4 method) in the expanded navigation bar.

7.1 Static view



		Comparison facility	New facility 1	New facility 2
Linear depreciation of facility	€	20	304	319
	%	100	1520	1595
Operation costs without energy costs	€	1160	142	5
	%	100	12	0
Energy costs	€	1350	657	306
	%	100	49	23
Total operation costs	€	2510	799	311
	%	100	32	12
Total costs	€	2530	1103	630
	%	100	44	25
CO2 emission	t	5.40	2.63	1.22
	%	100	49	23

In the cost overview, the individual cost positions and CO2 emission are compared in absolute and percentage terms.

With static analysis the 'linear depreciation of the facility' is defined from the costs for luminaires added to the mounting costs and this is spread across the years of service life.

In the comparison facility example, no new luminaires were installed, only their lamps were renewed

To remember:
The first set of lamps belongs to the investment costs, further sets during service life of the facility belong to “operation costs without energy”.

7.2 Dynamic view (C3 method)

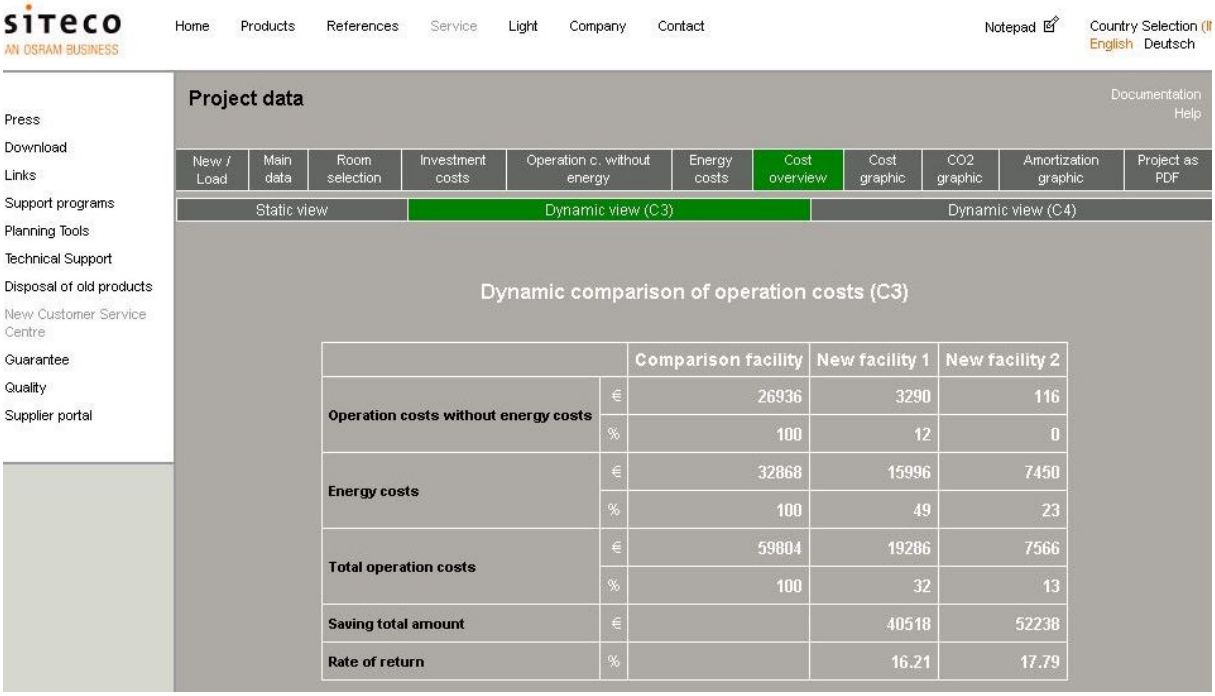
Note on C3 method

The saved operating costs over the service life are calculated.

- The end value is used for calculating, i.e. it is specified which value has been achieved per year via the added investment (for the new installation).

- The end value is defined from the sum of the saved operating costs; these are accumulated as rates of an exponentially increasing benefit with the calculation interest rate to the final point of time.

- The profitability rate of return is the dissolution of the general compound interest according to the rate of interest.



		Comparison facility	New facility 1	New facility 2
Operation costs without energy costs	€	26936	3290	116
	%	100	12	0
Energy costs	€	32868	15996	7450
	%	100	49	23
Total operation costs	€	59804	19286	7566
	%	100	32	13
Saving total amount	€		40518	52238
Rate of return	%		16.21	17.79

7.3 Dynamic view (C4 method)

Note on C4 method

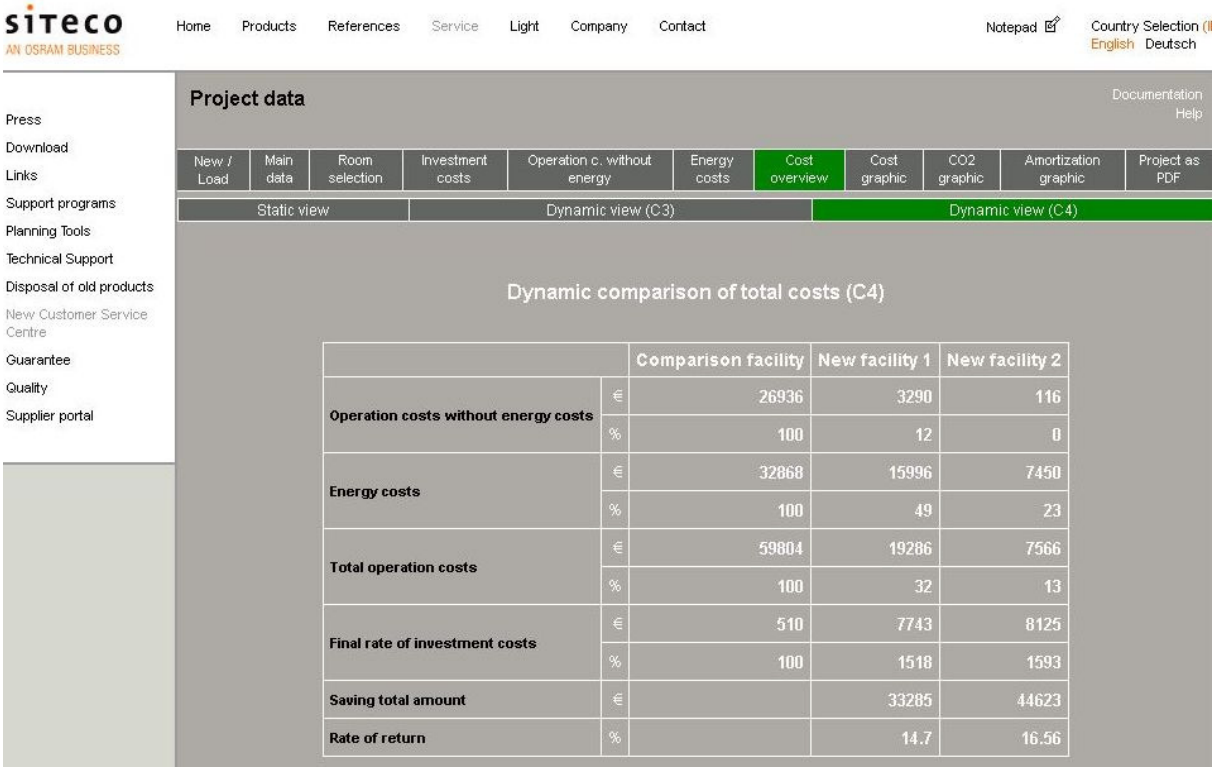
The saved operating costs, less the accumulated investment costs, represent the surplus amount compared to general capital interest.

- The end value is used for calculating, i.e. it is specified which value has been achieved per year via the added investment (for the new installation).

- The end value is defined from the sum of the saved operating costs; these are accumulated as rates of an exponentially increasing pension with the calculation interest rate to the final point of time.

- Finally the end value is reduced by the use of the required added investments under consideration of the interest rate to be applied.

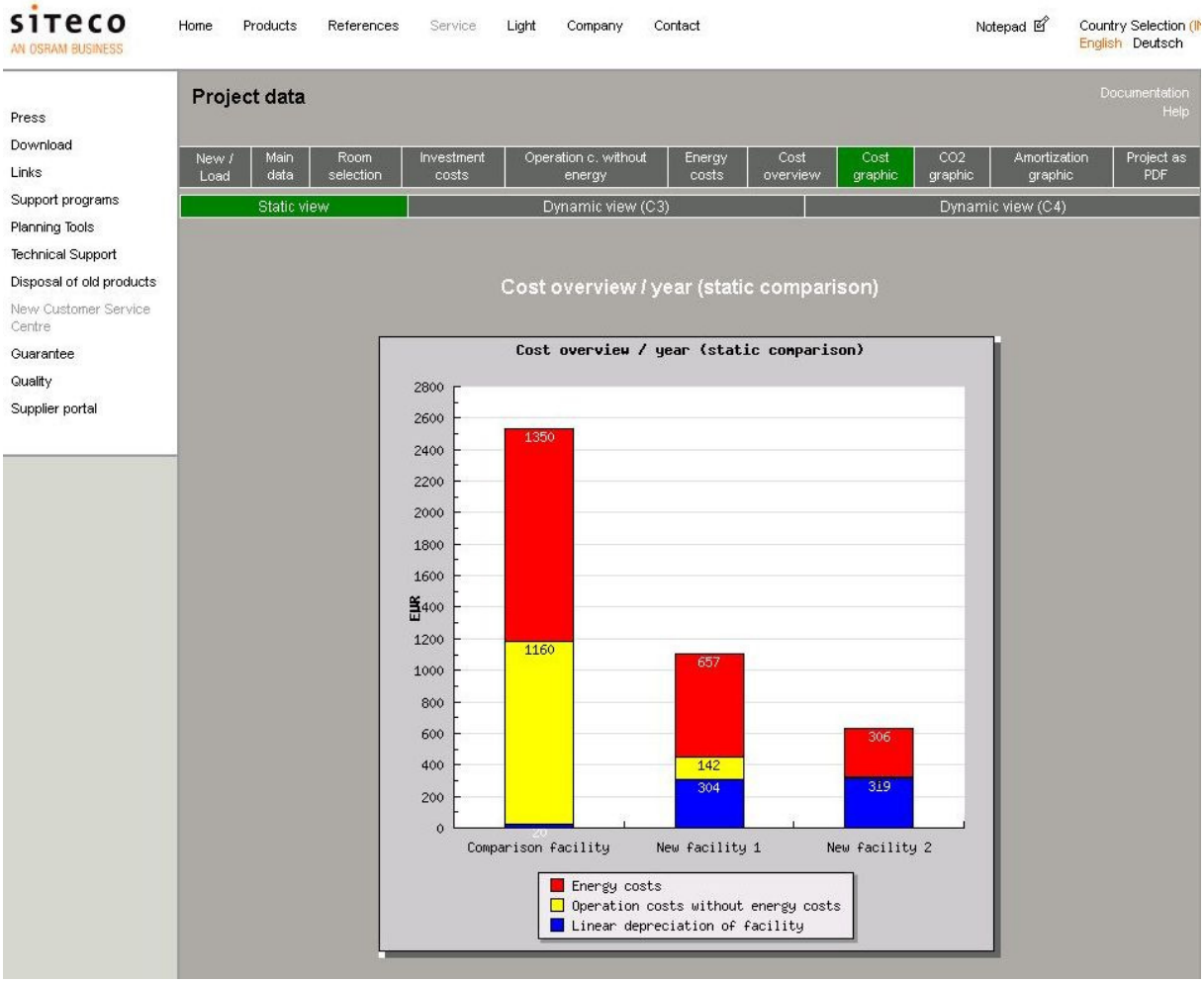
- The profitability rate of interest is the dissolution of the general compound interest according to the rate of interest.



		Comparison facility	New facility 1	New facility 2
Operation costs without energy costs	€	26936	3290	116
	%	100	12	0
Energy costs	€	32868	15996	7450
	%	100	49	23
Total operation costs	€	59804	19286	7566
	%	100	32	13
Final rate of investment costs	€	510	7743	8125
	%	100	1518	1593
Saving total amount	€		33285	44623
Rate of return	%		14.7	16.56

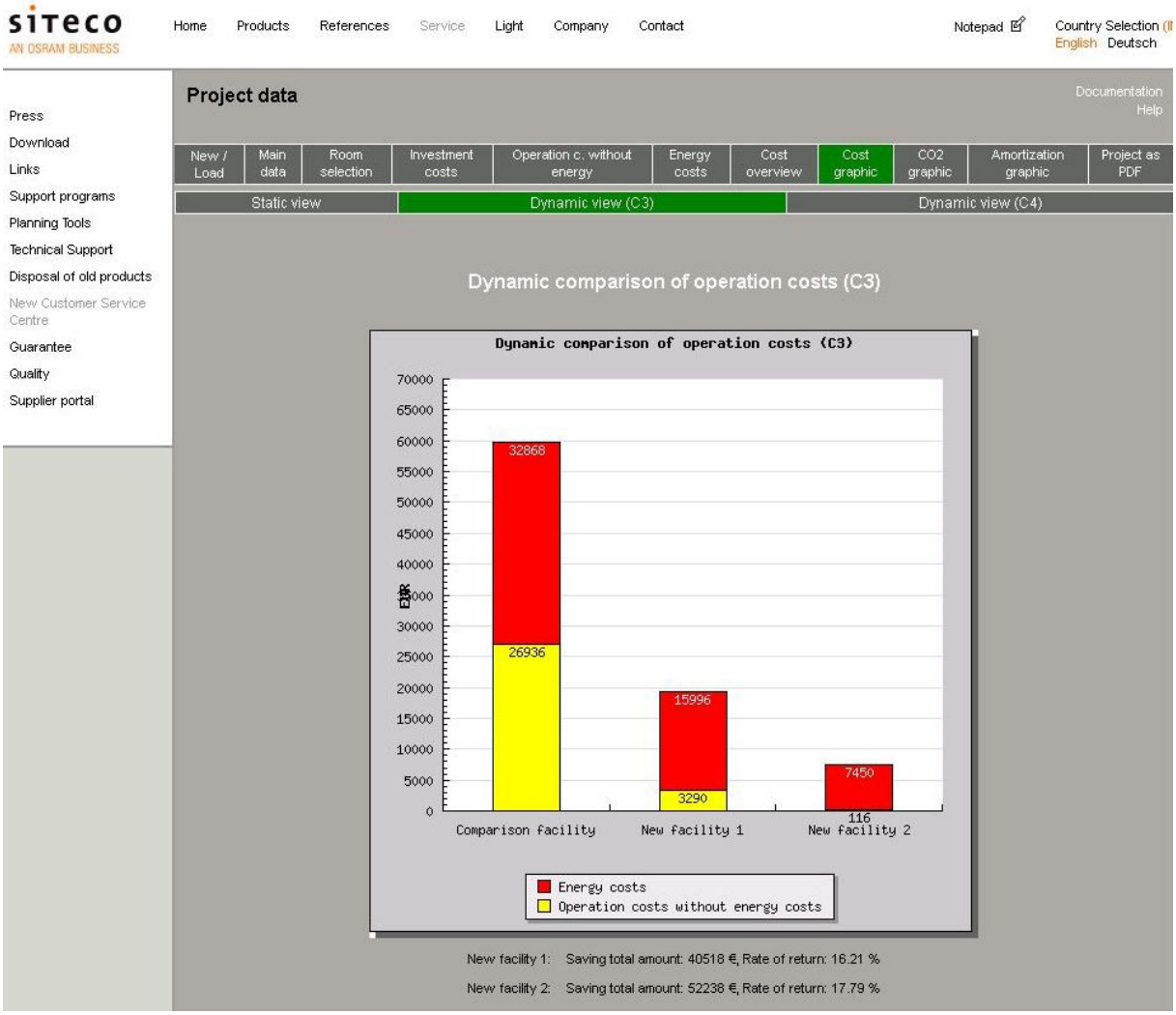
8. Cost graphic

8.1 Static view



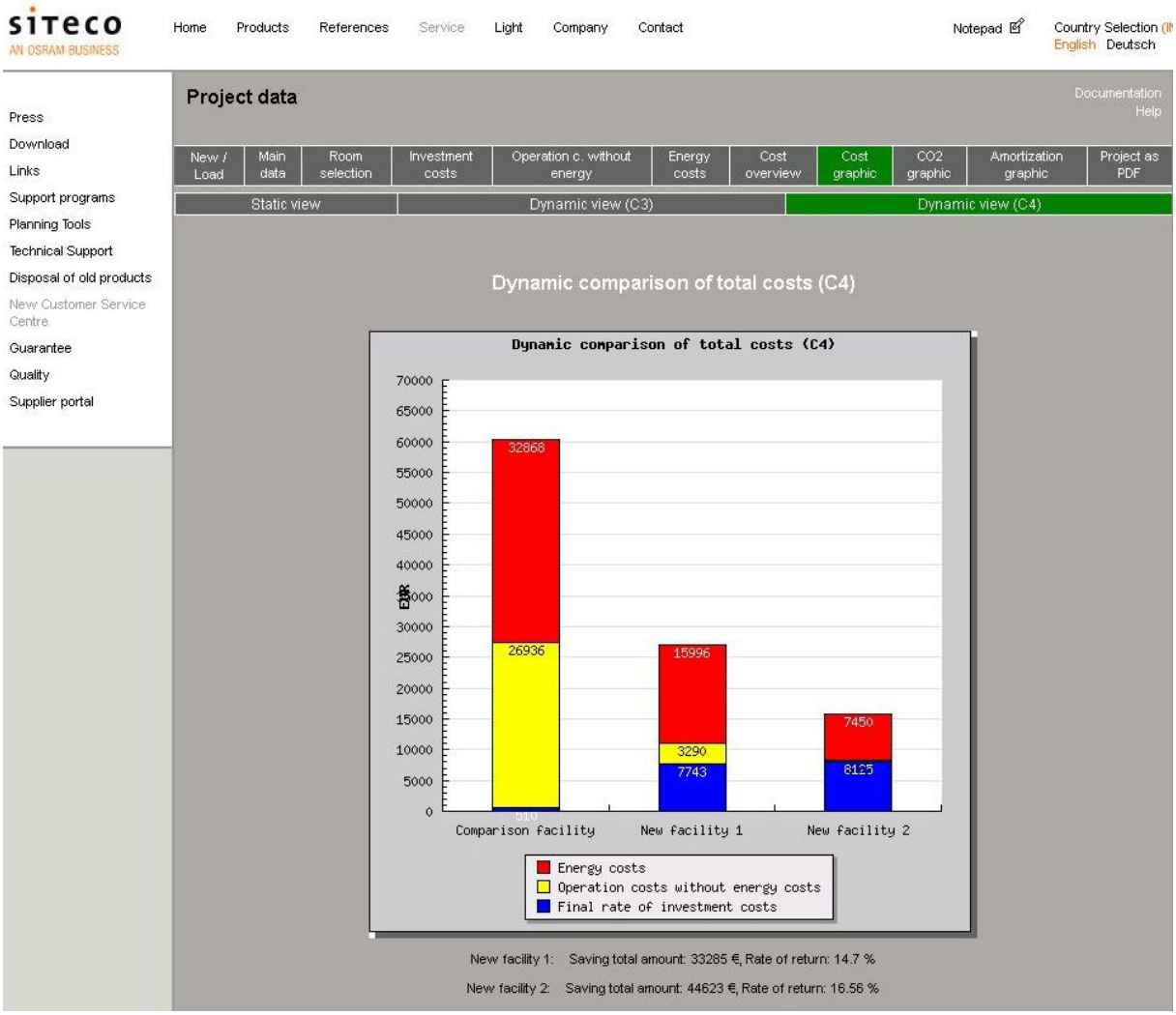
The figure represents total annual costs with its components of 'linear depreciation of the facility, 'operation costs without energy costs' and 'energy costs'.

8.2 Dynamic view (C3)



The figure shows pure operating costs accumulating during the complete service life.

8.3 Dynamic view (C4)



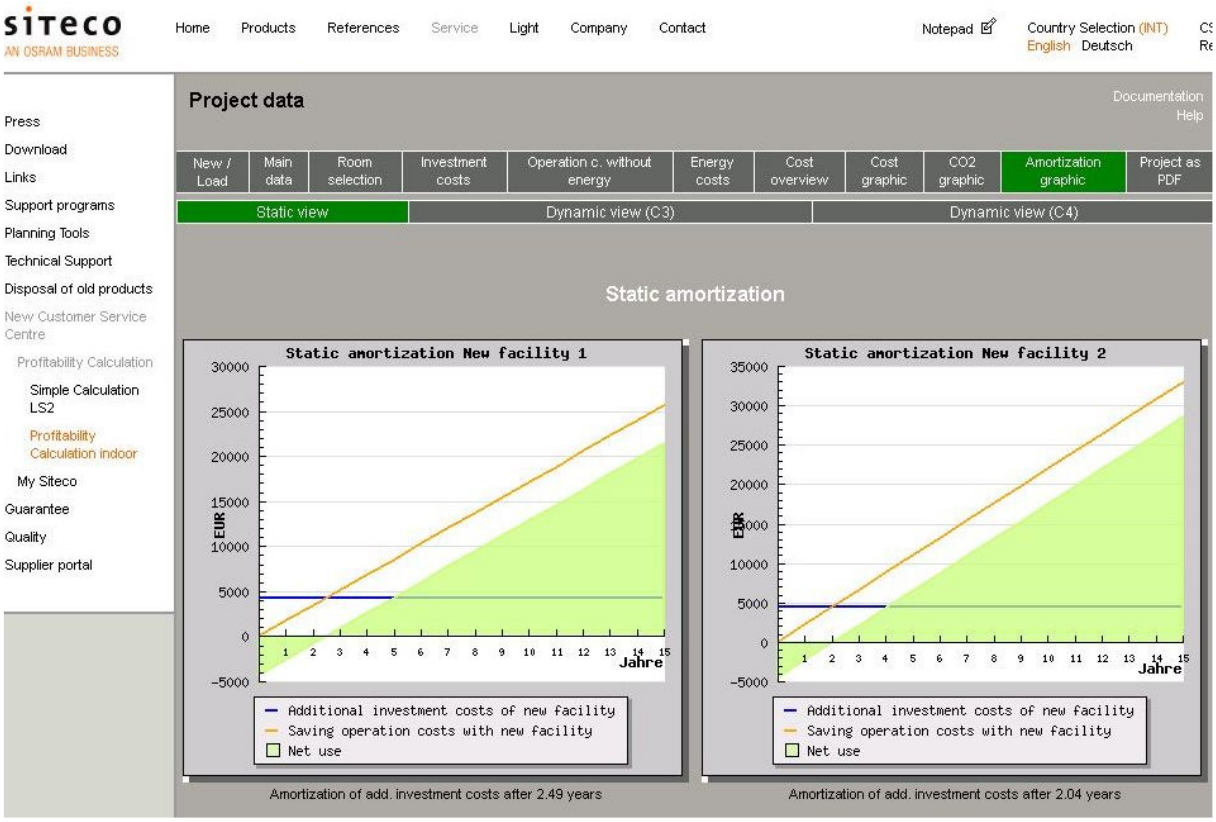
The figure shows operating costs and the accumulated investment costs that have come about during the complete service life.

9. CO2

The CO2 figure shows yearly CO2 emissions caused by operation of the facilities.

10. Amortization graphic

10.1 Static view

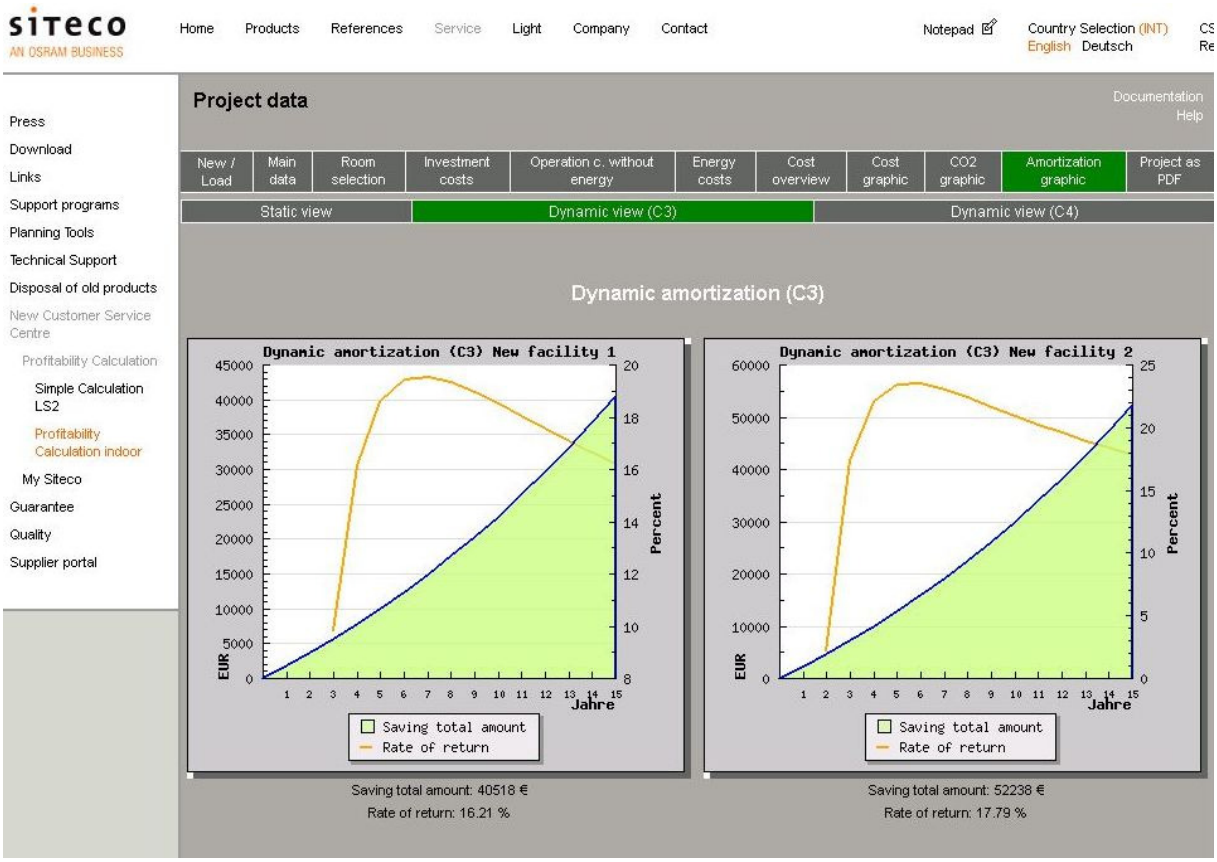


This figure shows the time point for static amortisation.

In the example the added investment costs of the 'new facility 1' are balanced by the lower operating costs after 2.49 years, the investment costs of the 'new facility 2' are balanced after 2.04 years.

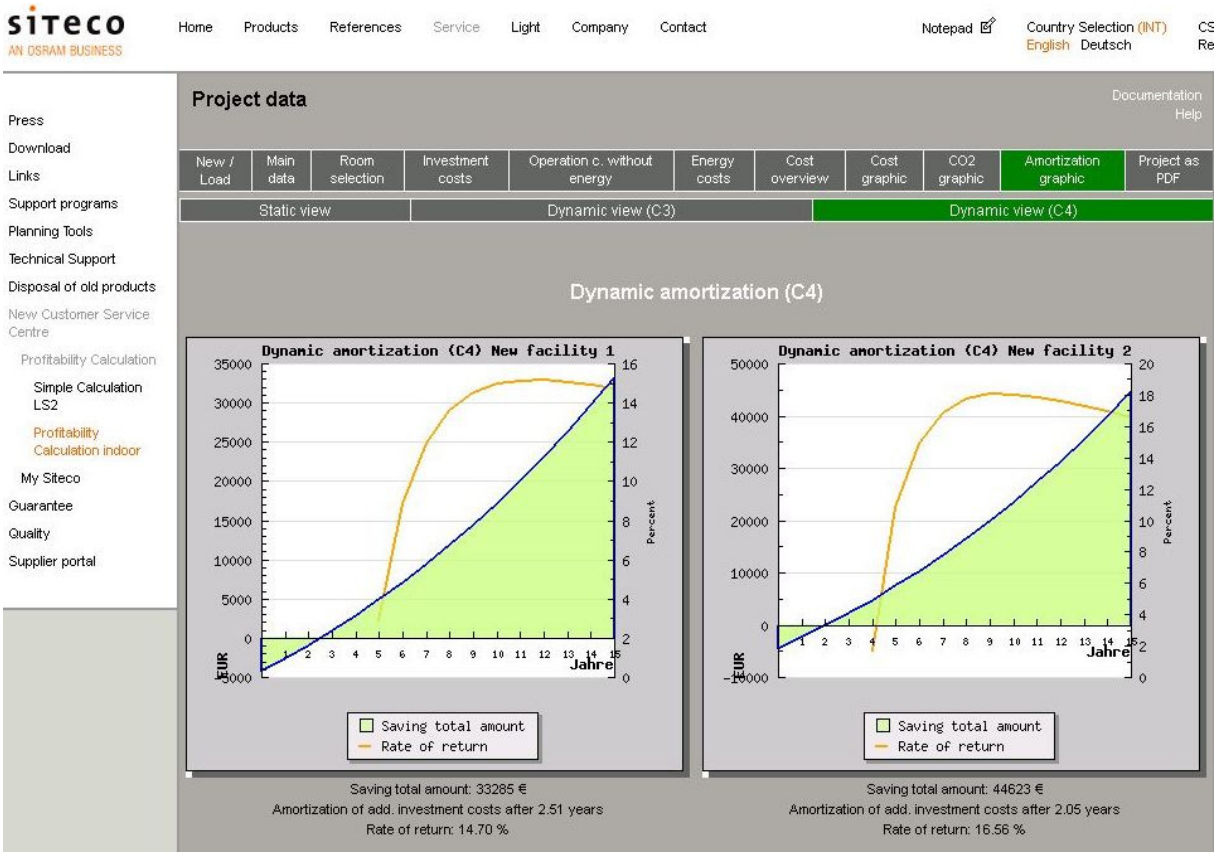
From then onwards the 'net use' is positive.

10.2 Dynamic view (C3 method)



This figure represents the course of operating cost savings and monetary return over the service life.

10.3 Dynamic view (C4 method)



This figure represents the course of amortisation and monetary return over the service life.

With this dynamic analysis, amortisation of the ‘New facility 1’ is achieved already after 2.51 years, amortisation of the ‘New facility 2’ already after 2.05 years.

11. Project as PDF

By clicking on 'Project as PDF' a PDF file is generated containing all data and results of the project.

Here is the first page:

siteco

Indoor Rentability Calculation

Project: p15

Main data

Project No.	15		
Project name	p15	Plann. company	
Owner	Osram	Plann. agent	Elsele Reinhard
Street		Street	
ZIP		ZIP	
City		City	
Telephone		Telephone	08669 33 676
Fax		Fax	08669 33 397
E-Mail		E-Mail	r.elsele@siteco.de

Main data for dynamic calculation

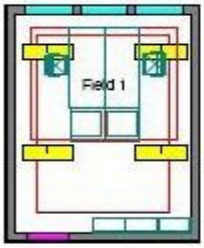
Yearly rate of inflation:	2.2 %	Yearly rate of price increase (electricity):	3.0 %
Interest rate:	3.6 %		

Main data for daylight effect

Location: Muenchen

Room selection

office
4-axis office



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