The SITECO Cost Efficiency Calculator

In General

The Siteco Cost Efficiency Calculator is a web application for evaluating the cost efficiency of two outdoor lighting installations.

The installations ('comparison facility and 'new facility') 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.

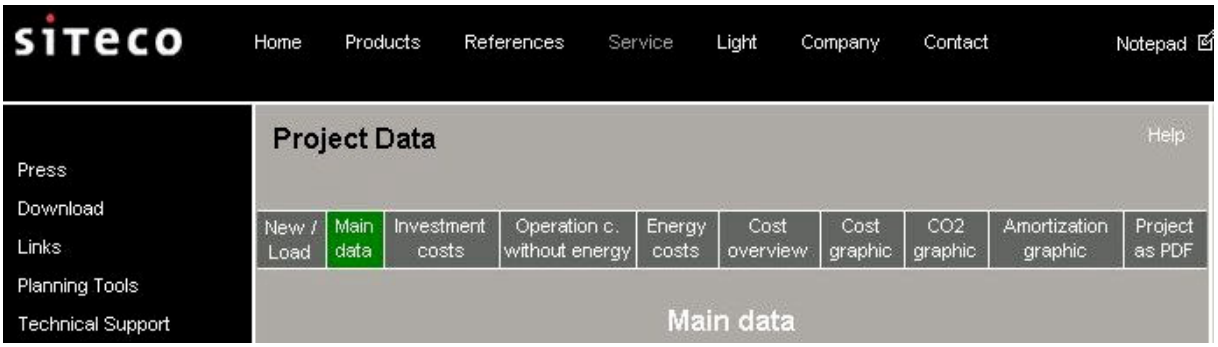
The Siteco Cost Efficiency Calculator is

- 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

- generally available on the Siteco internet page under 'Planning Tools'.
  Here deleting is not possible but all other functions are available.

For each project, a comparison of two installations ('comparison facility and 'new 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
- Investment costs
- Operating costs without energy
- Energy costs

Output pages are:

- Cost overview
- Cost graphic
- CO2 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.***

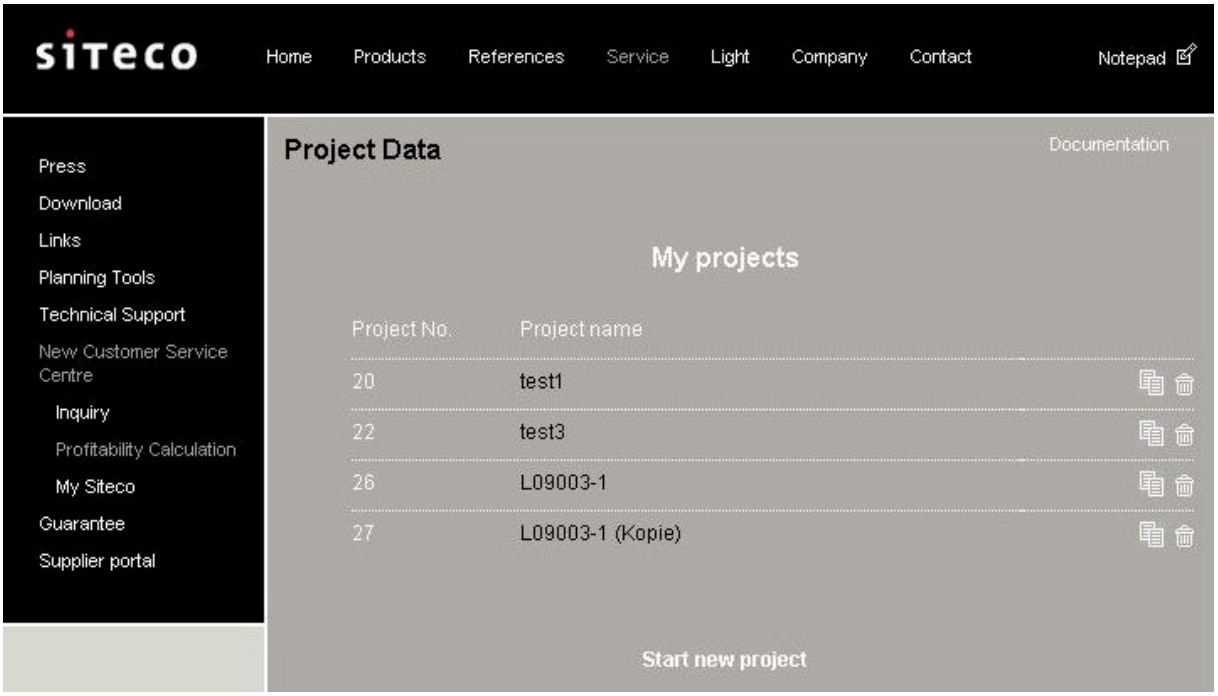
- ***Via the 'Help' link at top right you have a PDF document with suggestions for specific input fields.***

***Note*:**
With the project shown on the following pages, this concerns 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]



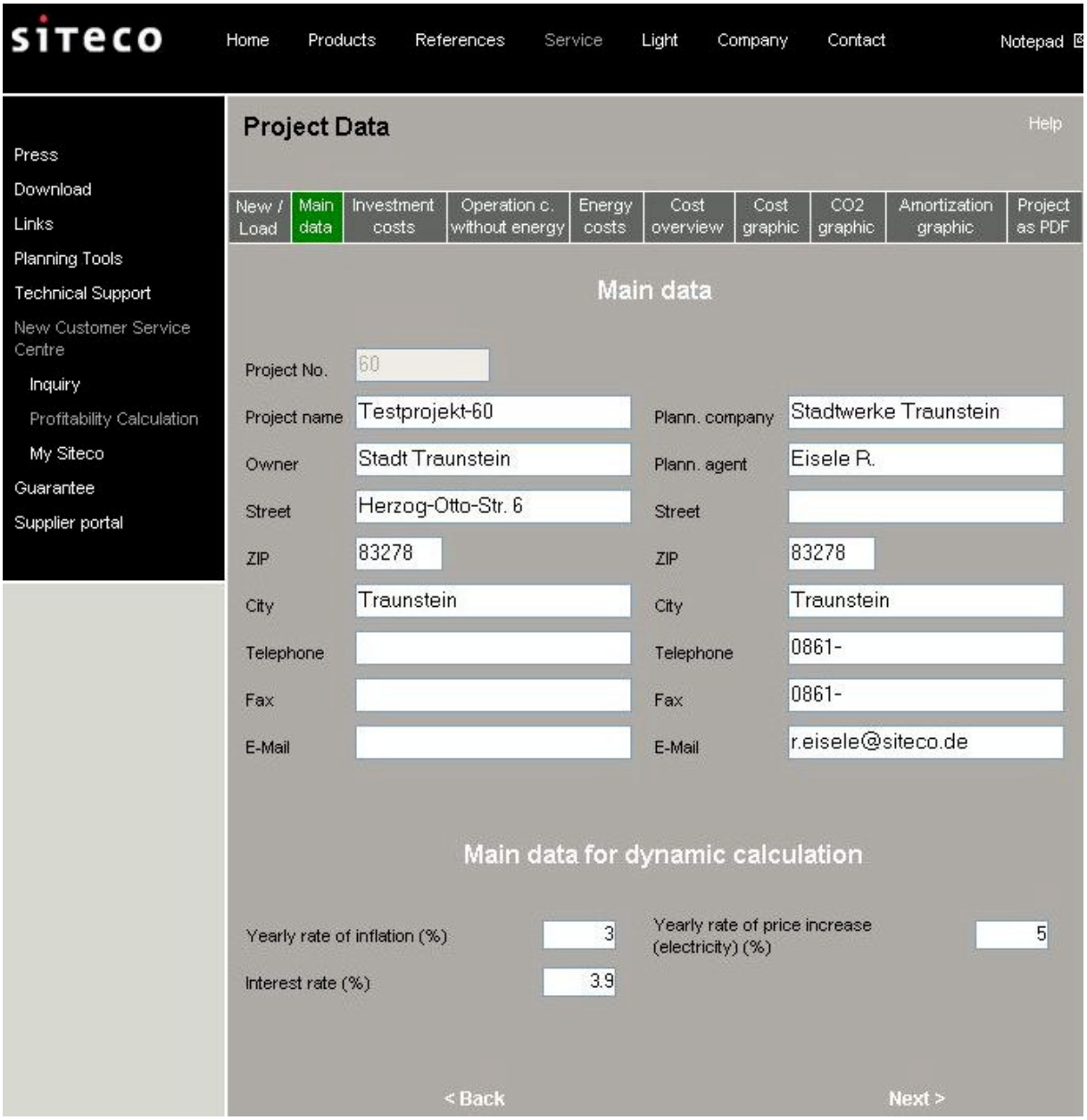
Here you can:

- 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.

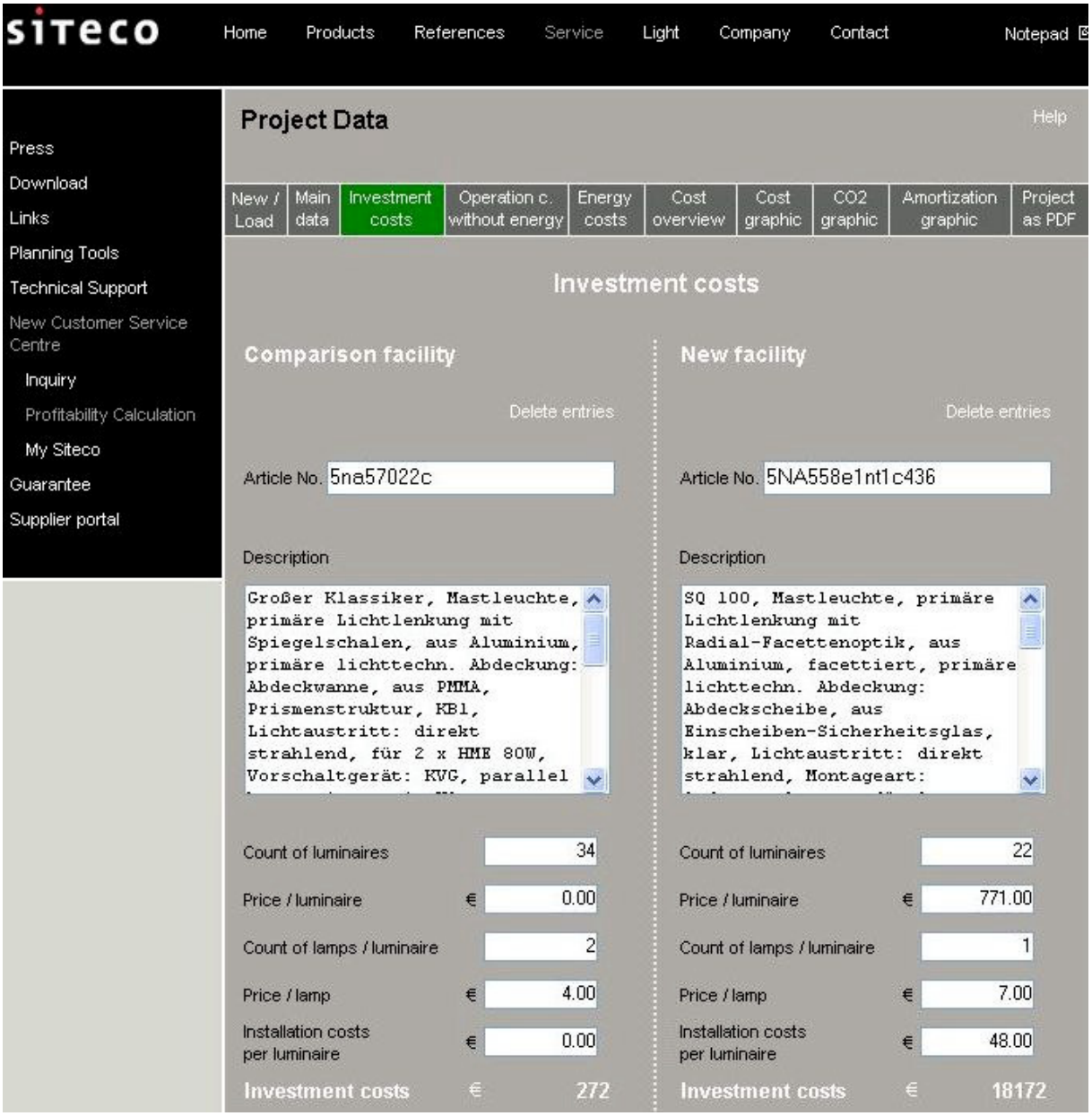
The entries in the right-hand column are read out from your customer data (if these exist) and are automatically displayed. You can however overwrite the fields at any time; the modified entries are then saved in this project.

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 (%)

3. Investment costs



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

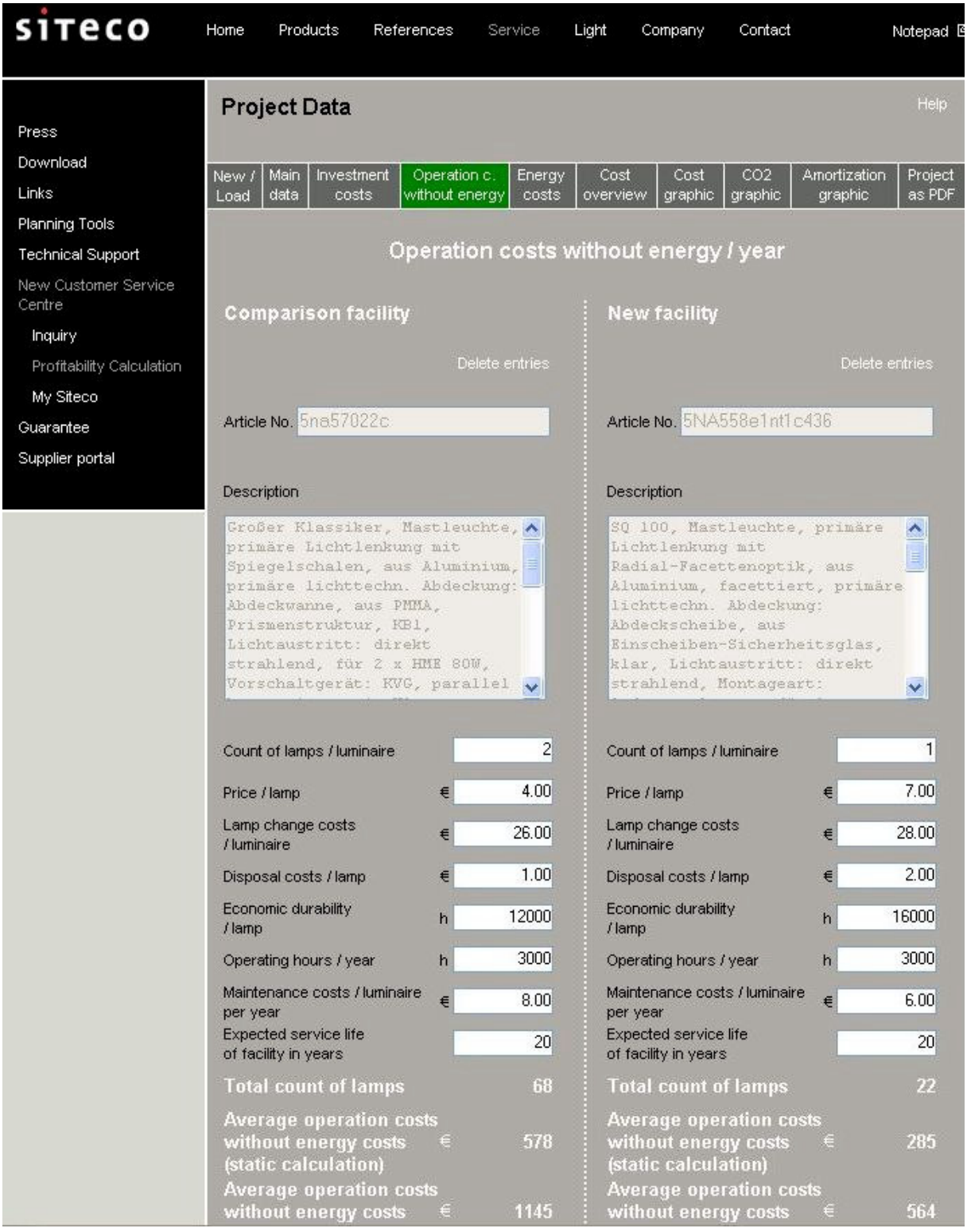
If when the 'Article No.' field is left the entered article number is found in the electronic catalogue, corresponding data (e.g. designation, no. of lamps/luminaires, price/luminaire) are

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 is therefore 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.

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

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

4. Operating costs without energy



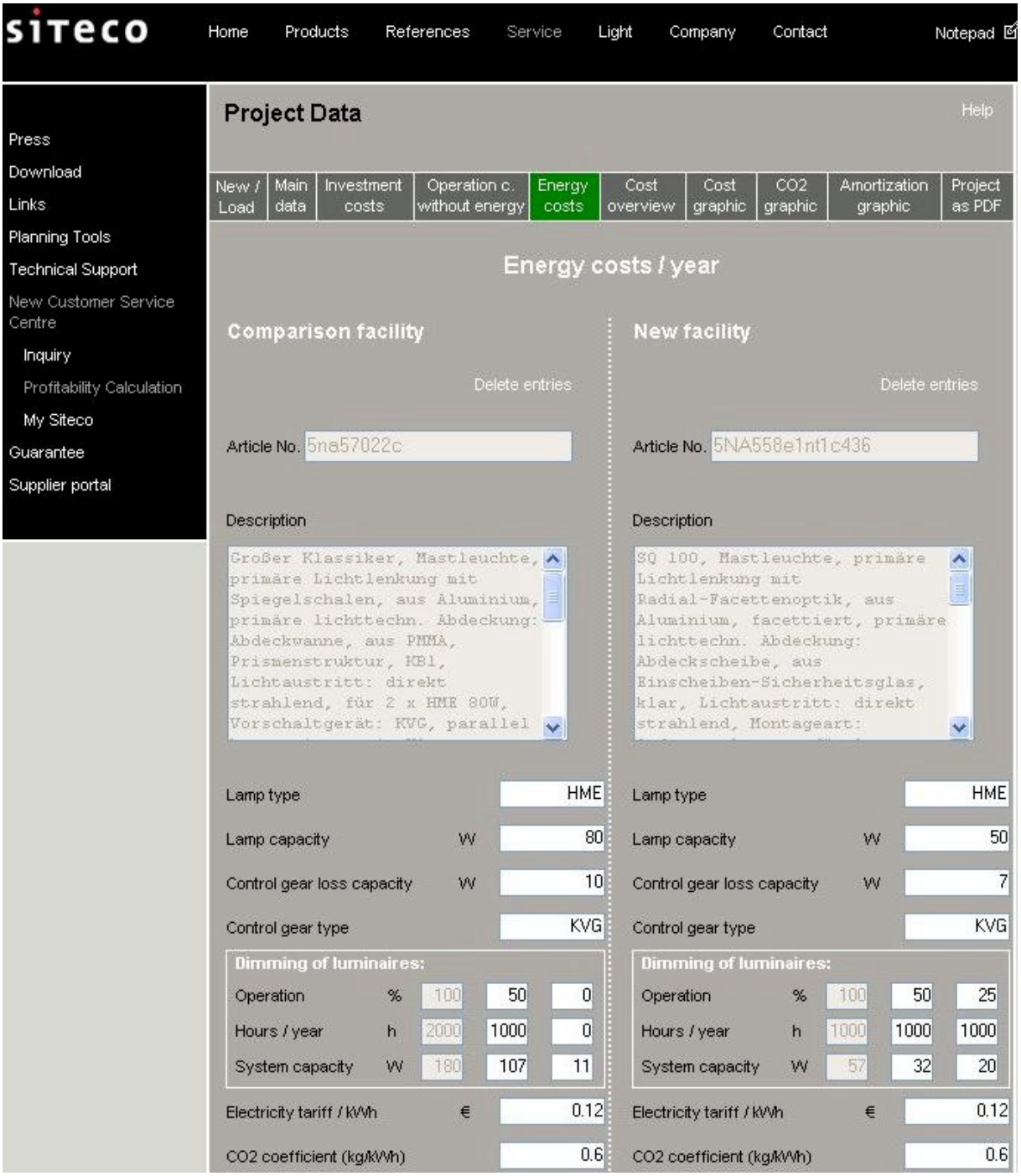
Article number and designation are displayed on this page for information purposes; these cannot be modified.

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

Vales 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)

5. 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' on the right.
Lamp capacity and loss capacity of the control gear are added to the lamp system capacity.

Dimming of luminaires

The first column cannot be edited. The following values are preset:
- operation: 100% (i.e. not dimmed)
- hours / year: the previously entered yearly number of operational hours.
- system capacity (of the luminaire): product of lamp number / luminaire and the lamp system capacity (see above)

The columns in the middle and on the right can be used to integrate regular dimming periods.

In the above example a third of the 'comparison installation' is to be operated **at 50%**.
The '50' entry is only for documentation purposes and does not represent a calculative value. Decisive for the calculation is the 'Time period / year' - here set to 1000 hours - and the (luminaire) system capacity that with 50% operation must be determined from the manufacturer's data.

The 'new facility' in the above example is operated to a third in each case with **25%, 50% and 100% power** .

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

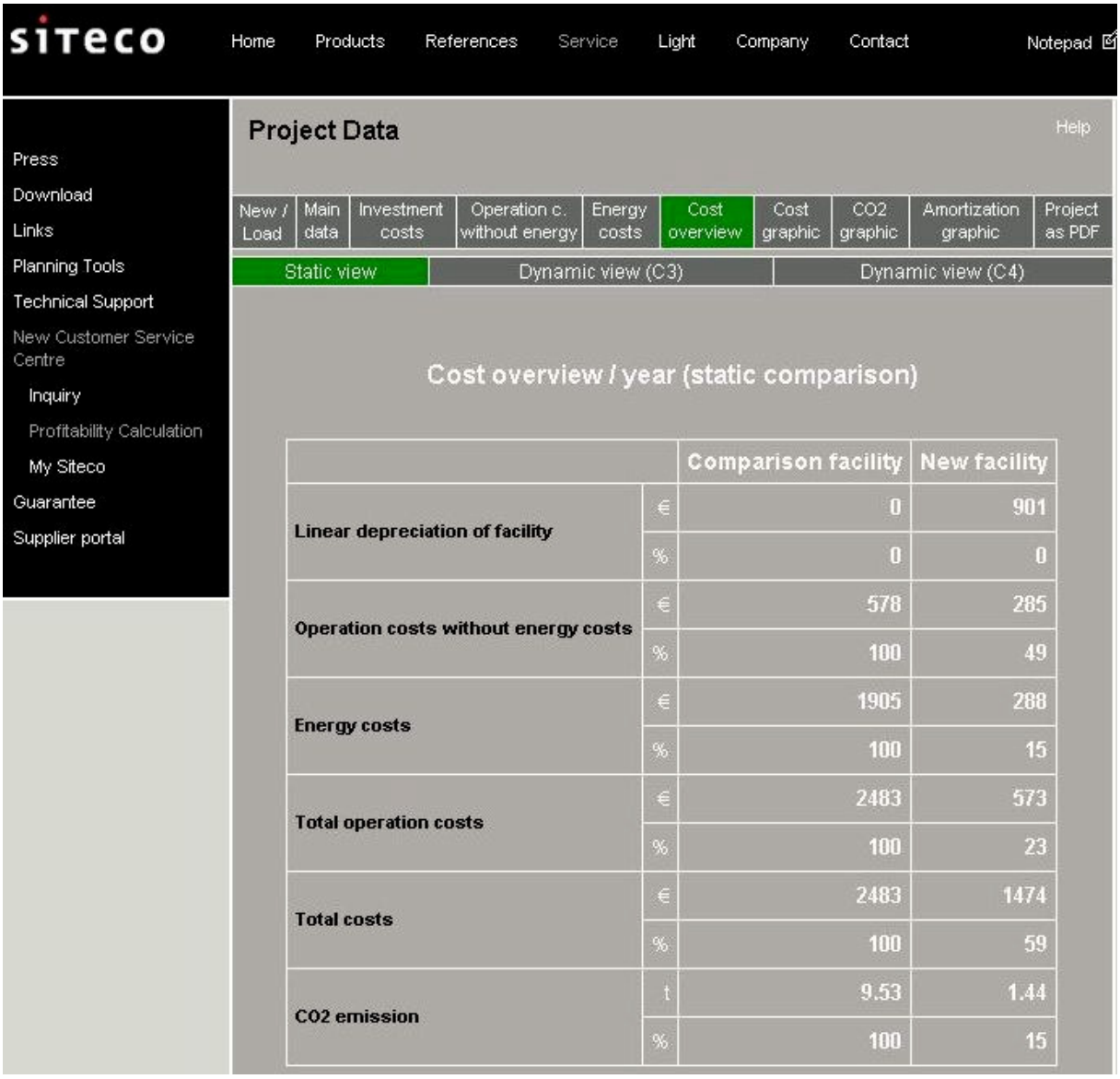
Power input of facility	kW	6.12	Power input of facility	kW	1.25
Energy consumption / year	kWh	15879	Energy consumption / year	kWh	2397
CO2 coefficient (kg/kWh)		0.6	CO2 coefficient (kg/kWh)		0.6
CO2 emission of facility / year	t	9.53	CO2 emission of facility / year	t	1.44
Average energy costs (static calculation)	€	1905	Average energy costs (static calculation)	€	288
Average energy costs (dynamic calculation)	€	4583	Average energy costs (dynamic calculation)	€	692

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

6. Cost overview

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

6.1 Static view



		Comparison facility	New facility
Linear depreciation of facility	€	0	901
	%	0	0
Operation costs without energy costs	€	578	285
	%	100	49
Energy costs	€	1905	288
	%	100	15
Total operation costs	€	2483	573
	%	100	23
Total costs	€	2483	1474
	%	100	59
CO2 emission	t	9.53	1.44
	%	100	15

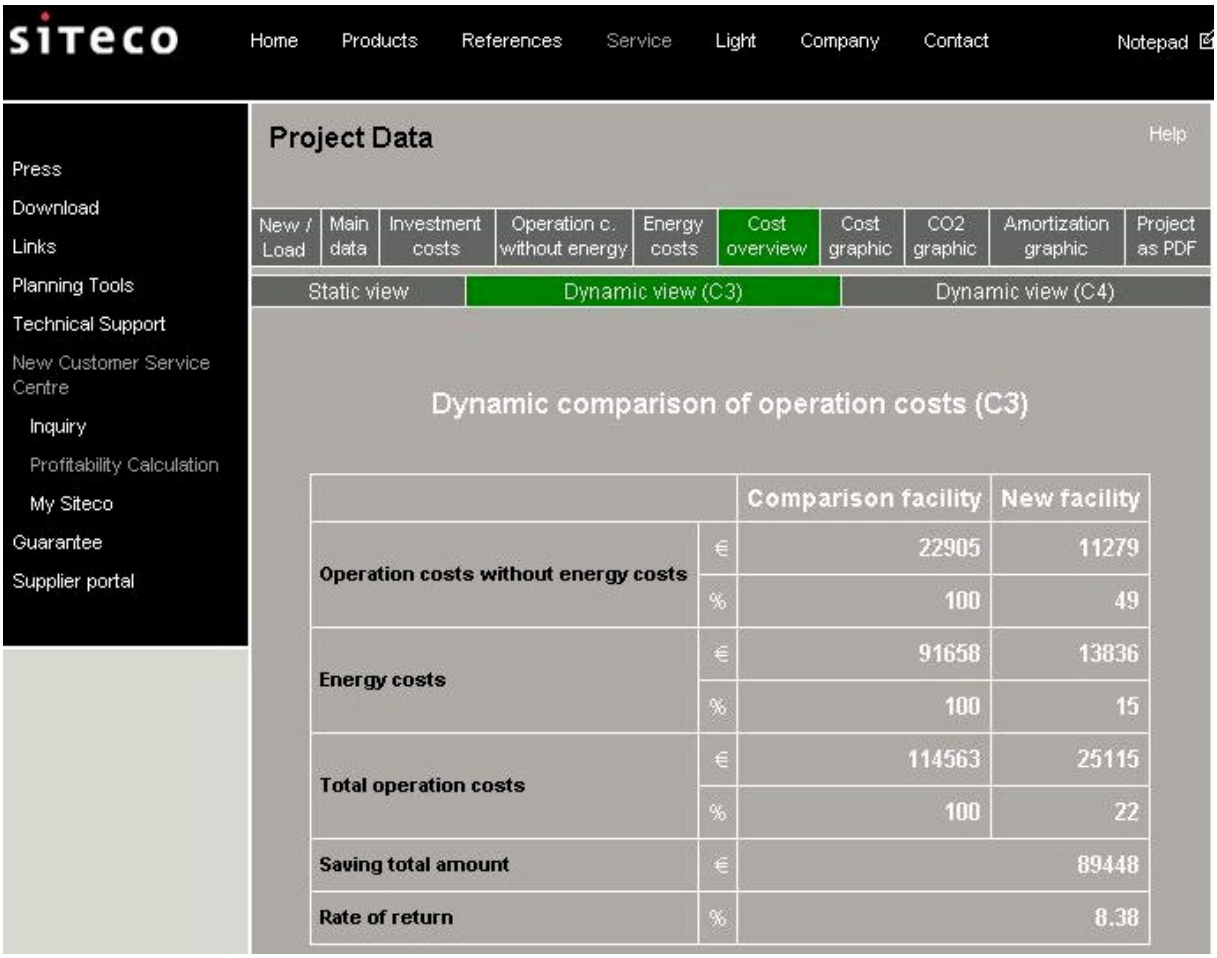
In the cost overview, the individual cost positions and CO2 emission are compared in absolute and percentage terms.
With static analysis the 'linear depreciation of the facility' is defined from the costs for luminaires added to the mounting costs and this is spread across the years of service life.
In the comparison facility example, no new luminaires were installed.

6.2 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.



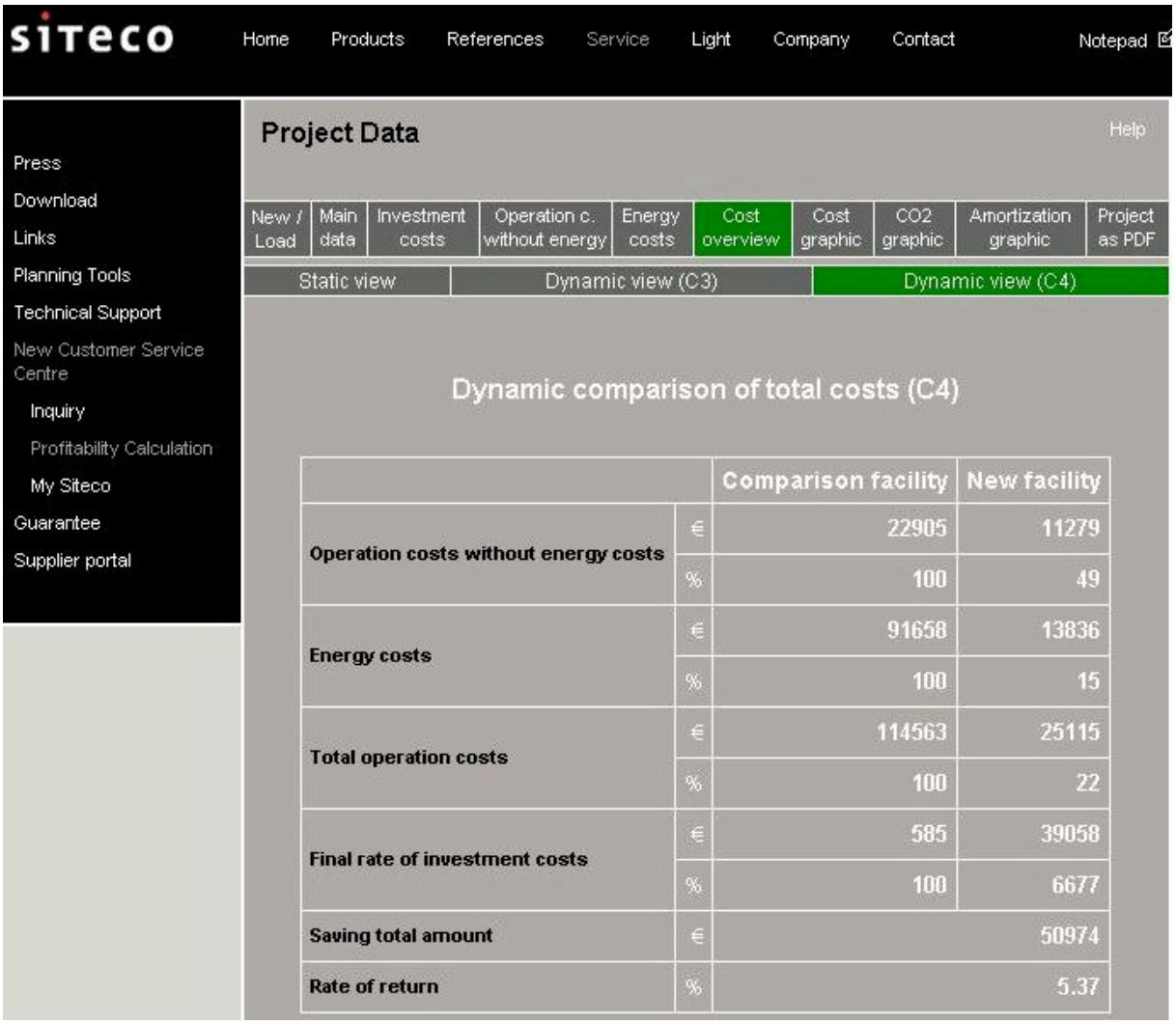
		Comparison facility	New facility
Operation costs without energy costs	€	22905	11279
	%	100	49
Energy costs	€	91658	13836
	%	100	15
Total operation costs	€	114563	25115
	%	100	22
Saving total amount	€		89448
Rate of return	%		8.38

6.3 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.

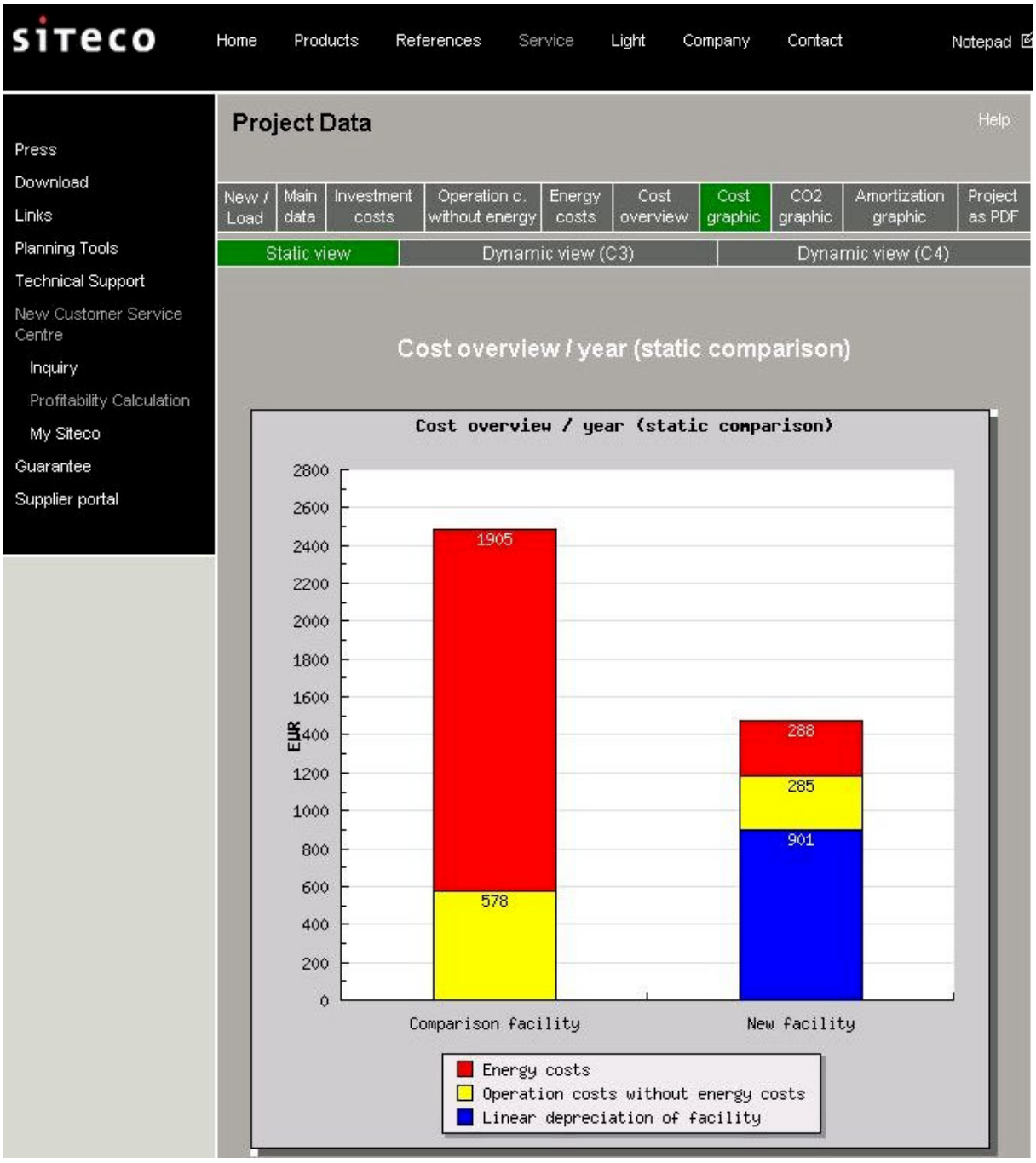
- The end value is used for calculating, i.e. it is specified which value has been achieved per year via the added investment (for the new installation).
- The end value is defined from the sum of the saved operating costs; these are accumulated as rates of an exponentially increasing pension with the 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
Operation costs without energy costs	€	22905	11279
	%	100	49
Energy costs	€	91658	13836
	%	100	15
Total operation costs	€	114563	25115
	%	100	22
Final rate of investment costs	€	585	39058
	%	100	6677
Saving total amount	€		50974
Rate of return	%		5.37

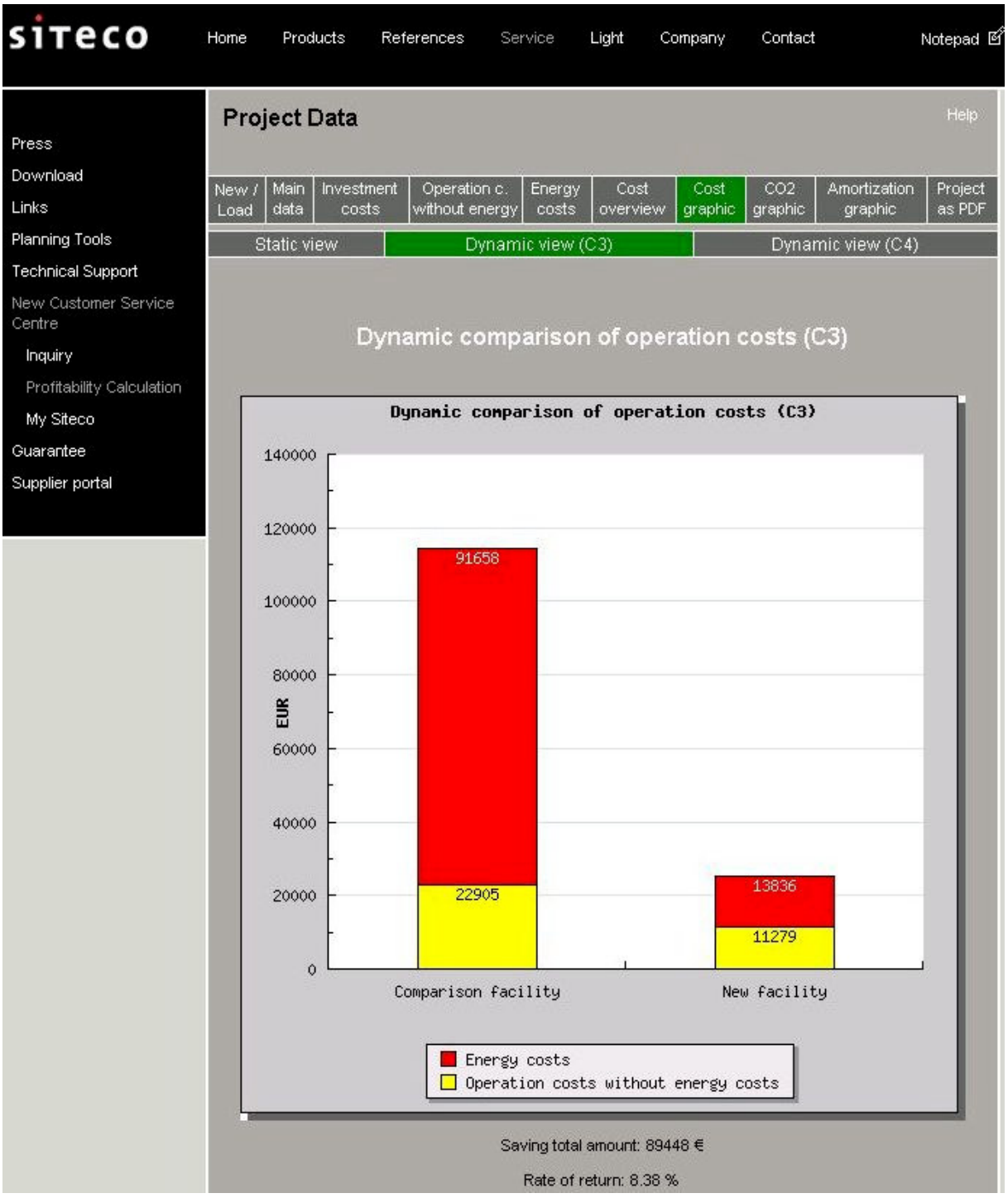
7. Cost graphic

7.1 Static view



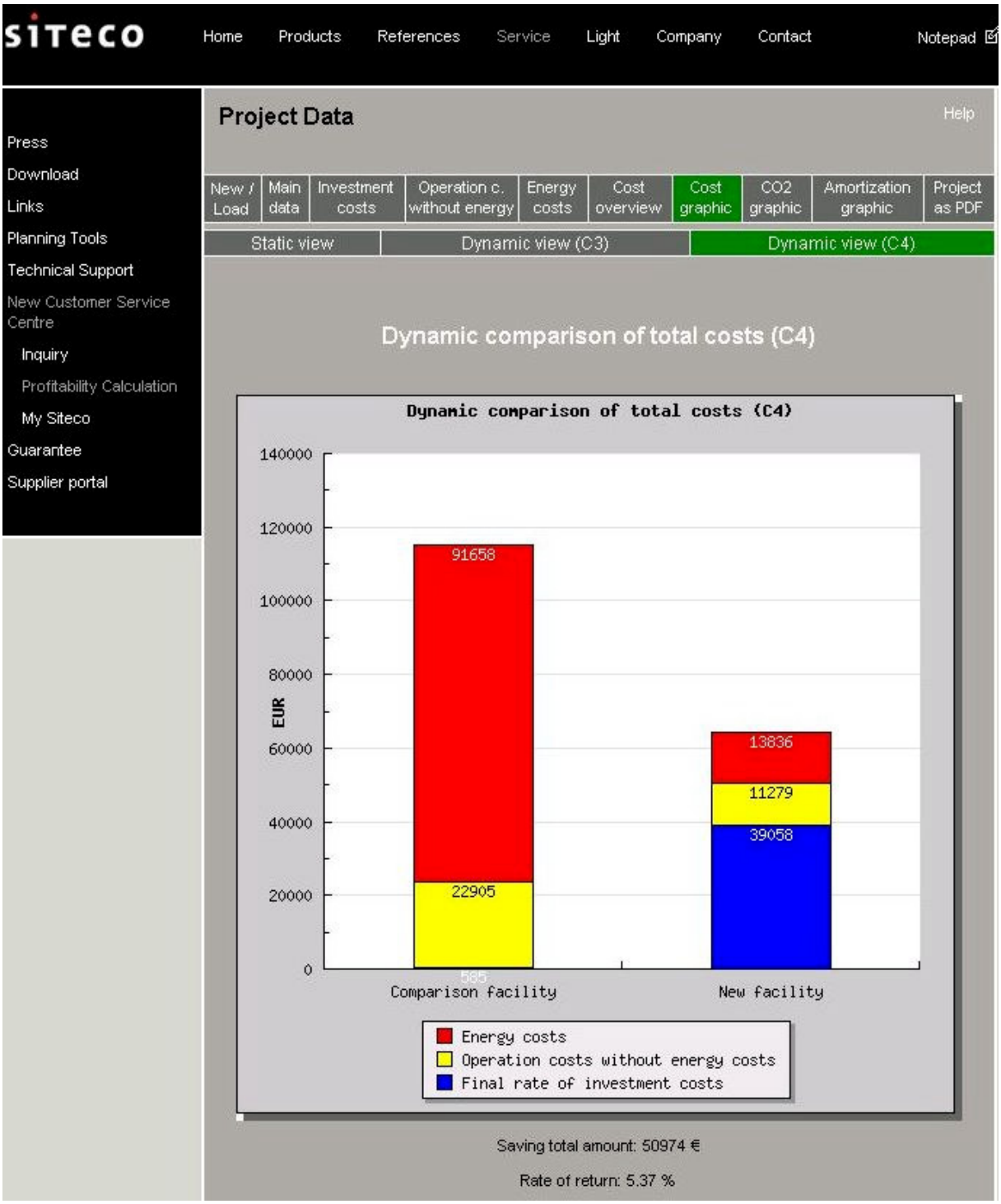
The figure represents total annual costs with its components of 'linear depreciation of the facility, 'operation costs without energy costs' and 'energy costs'.

7.2 Dynamic view (C3)



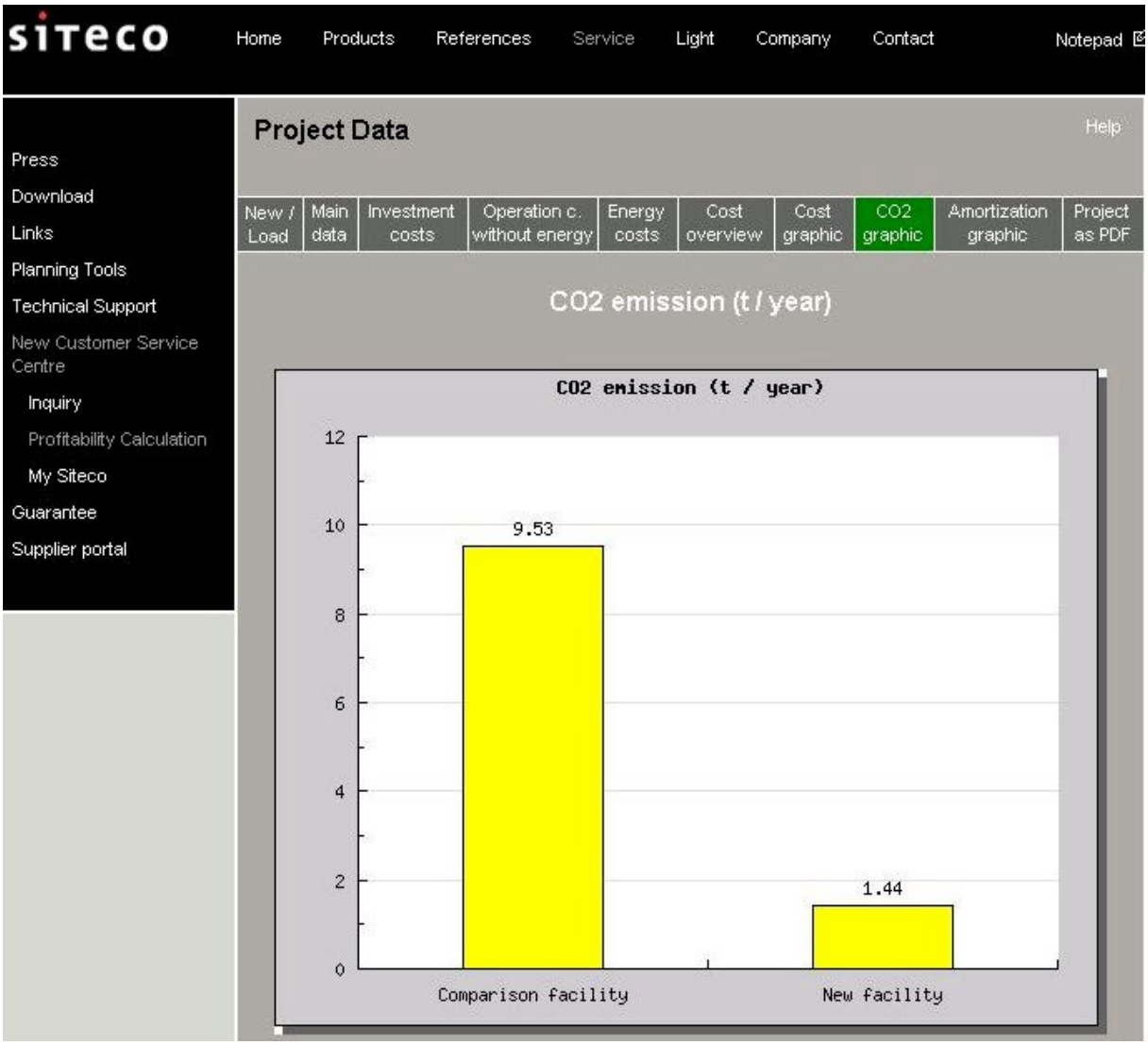
The figure shows pure operating costs accumulating during the complete service life.

7.3 Dynamic view (C4)



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

8. CO2



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

9. Amortization graphic

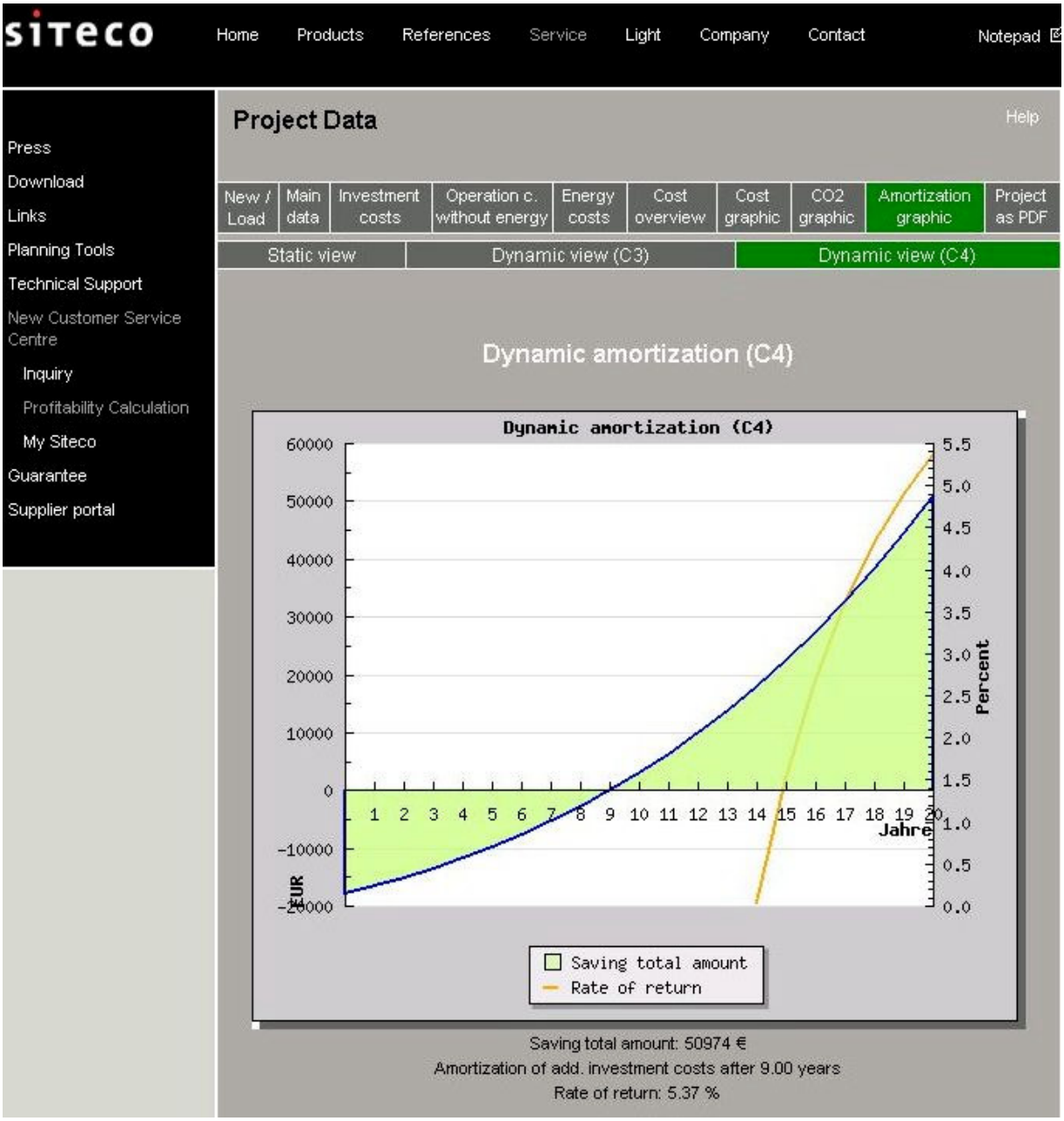
9.1 Static view

This figure shows the time point for static amortisation.
In the example the added investment costs of the 'new facility are balanced by the lower operating costs after 9.37 years. From then onwards the 'net use‘ is positive.

9.2 Dynamic view (C3 method)

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

9.3 Dynamic view (C4 method)

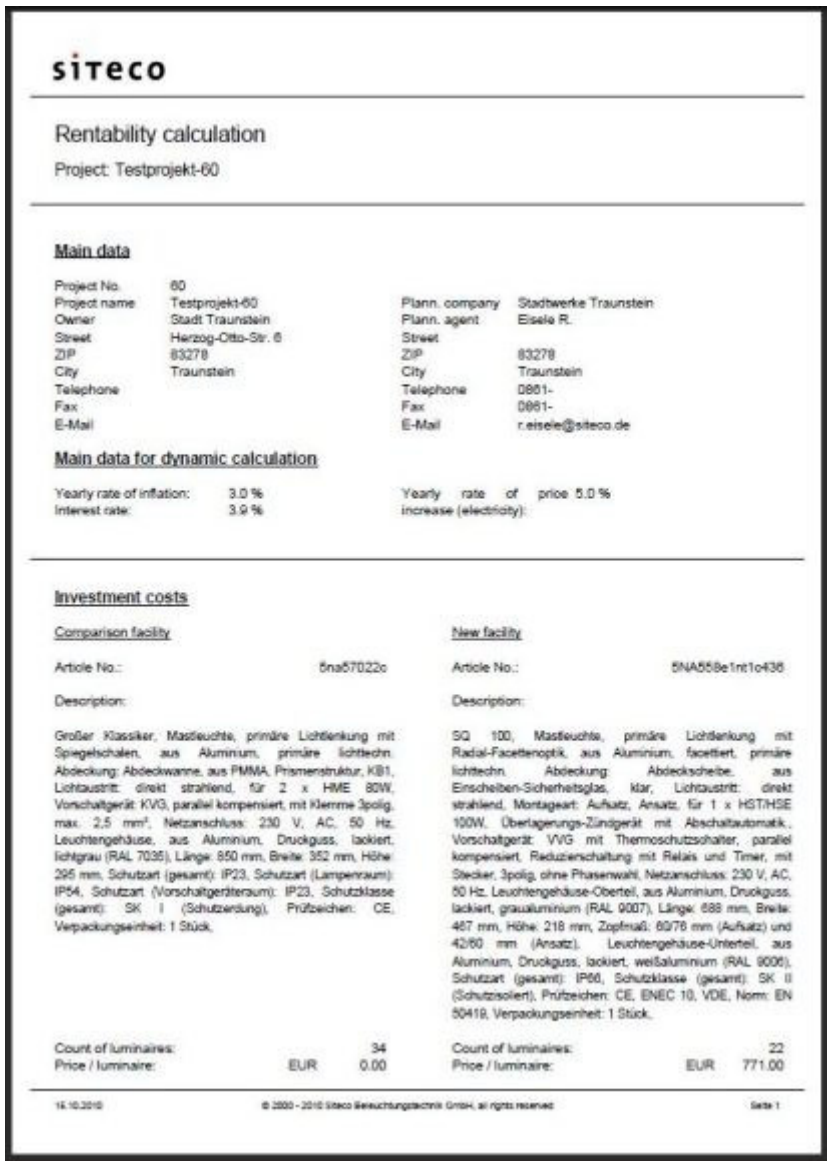


This figure represents the course of amortisation and monetary return over the service life. With this dynamic analysis, amortisation of the new installation is achieved already after 9.00 years.

10. 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

Rentability calculation

Project: Testprojekt-60

Main data

Project No.	60		
Project name	Testprojekt-60	Plann. company	Stadtwerke Traunstein
Owner	Stadt Traunstein	Plann. agent	Eisele R.
Street	Herzog-Otto-Str. 6	Street	
ZIP	83278	ZIP	83278
City	Traunstein	City	Traunstein
Telephone		Telephone	0861-
Fax		Fax	0861-
E-Mail		E-Mail	r.eisele@siteco.de

Main data for dynamic calculation

Yearly rate of inflation:	3.0 %	Yearly rate of price increase (electricity):	5.0 %
Interest rate:	3.9 %		

Investment costs

Comparison facility		New facility	
Article No.:	5na57022c	Article No.:	5NA558e1nt1o436
Description:		Description:	
Großer Klassiker, Mastleuchte, primäre Lichtlenkung mit Spiegelschalen, aus Aluminium, primäre lichttechn. Abdeckung: Abdeckwanne, aus PMMA, Prismenstruktur, KB1, Lichtaustritt: direkt strahlend, für 2 x HME 80W, Vorschaltgerät: KVG, parallel kompensiert, mit Klemme 3polig, max. 2,5 mm², Netzanschluss: 230 V, AC, 50 Hz, Leuchtengehäuse, aus Aluminium, Druckguss, lackiert, lichtgrau (RAL 7035), Länge: 850 mm, Breite: 352 mm, Höhe: 295 mm, Schutzart (gesamt): IP23, Schutzart (Lampenraum): IP54, Schutzart (Vorschaltgeräteraum): IP23, Schutzklasse (gesamt): SK I (Schutzerdung), Prüfzeichen: CE, Verpackungseinheit: 1 Stück,		SQ 100, Mastleuchte, primäre Lichtlenkung mit Radial-Facettenoptik, aus Aluminium, facettiert, primäre lichttechn. Abdeckung: Abdeckscheibe, aus Einscheiben-Sicherheitsglas, klar, Lichtaustritt: direkt strahlend, Montageart: Aufsatz, Ansatz, für 1 x HST/HSE 100W, Überlagerungs-Zündgerät mit Abschaltautomatik, Vorschaltgerät: VVG mit Thermoschutzschalter, parallel kompensiert, Reduzierschaltung: mit Relais und Timer, mit Stecker, 3polig, ohne Phasenwahl, Netzanschluss: 230 V, AC, 50 Hz, Leuchtengehäuse-Oberteil, aus Aluminium, Druckguss, lackiert, graualuminium (RAL 9007), Länge: 688 mm, Breite: 467 mm, Höhe: 218 mm, Zopfmaß: 60/76 mm (Aufsatz) und 42/60 mm (Ansatz), Leuchtengehäuse-Unterteil, aus Aluminium, Druckguss, lackiert, weißaluminium (RAL 9006), Schutzart (gesamt): IP66, Schutzklasse (gesamt): SK II (Schutzisoliert), Prüfzeichen: CE, ENEC 10, VDE, Norm: EN 50419, Verpackungseinheit: 1 Stück,	
Count of luminaires:	34	Count of luminaires:	22
Price / luminaire:	EUR 0.00	Price / luminaire:	EUR 771.00

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