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.

siteco	Home	Proc	lucts Ref	ferences Se	rvice	Light (Company	Contact		Notepad 🖻
Press	Pro	jectl	Data							Help
Download Links	New / Load	Main data	Investment costs	Operation c. without energy	Energy costs	Cost overview	Cost graphic	CO2 graphic	Amortization graphic	Project as PDF
Planning Tools Technical Support					Mai	n data				

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

siteco	Home	Products	References	Service	Light	Company	Contact	Notepad ල්
Press Download Links	Pro	ject Data		Max	projec	te		Documentation
Planning Tools				IVIY	projec	.15		
Technical Support		Project No	Projec	t name				
New Customer Service Centre			test1					- -
Inquiry		22	test3					l d d
Profitability Calculation			lesis					
My Siteco			L0900	3-1				a b
Guarantee			L0900	3-1 (Kopie)				- 6 d
Supplier portal								
				Start	new pro	ject		

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

siteco	Home Produ	ucts Refe	rences	Service	Light	Company	Contact		Notepad B
Press Download Links	Project D	Investment	Operation without ene	and the second sec	Cost overviev	v graphic	CO2 graphic	Amortization graphic	Help Project as PDF
Planning Tools Technical Support New Customer Service Centre	Project No.	60		Ma	in data				
Inquiry Profitability Calculation My Siteco Guarantee Supplier portal	Project name Owner Street ZIP City Telephone Fax E-Mail	Testproje Stadt Trau Herzog-O 83278 Traunstein	unstein tto-Str. 6		Plann. ca Plann. ag Street ZIP City Telephou Fax E-Mail	gent E	itadtwerke isele R. 3278 raunstein 861- 861- eisele@s		
	Yearly rate o	%)	Main c Back	lata for o 3 39		ate of price	increase	Next >	5

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

siteco	Home Products Refe	erences Service	Light Company (Contact	Notepad 🖻
	Project Data				Help
Press					
Download	New / Main Investment	Operation c. Energy	Cost Cost	CO2 Amortiza	ation Project
Links		without energy costs	stands of the same of the second state of the	aphic graph	
Planning Tools					
Technical Support		investr	ient costs		
New Customer Service Centre	Comparison facilit	1	New facility		
Inquiry					
Profitability Calculation		Delete entries		De	lete entries
My Siteco					_
Guarantee	Article No. 5na57022c		Article No. 5NA55	3e1nt1c436	
Supplier portal					
	Description		Description		
	Großer Klassiker, primäre Lichtlenku Spiegelschalen, au primäre lichttechn Abdeckwanne, aus P Prismenstruktur, K Lichtaustritt: dir strahlend, für 2 x Vorschaltgerät: KV	ng mit s Aluminium, Abdeckung: MMA, Bl, ekt HME 80W,	SQ 100, Mastle Lichtlenkung r Radial-Facette Aluminium, fad Lichttechn. AM Abdeckscheibe, Einscheiben-S: klar, Lichtaus strahlend, Mon	nit enoptik, aus settiert, pr odeckung: . aus . aus . cherheitsgl: stritt: dire)	imäre as,
	Count of luminaires	34	Count of luminaires		22
	Price / luminaire	€ 0.00	Price / luminaire	€	771.00
	Count of lamps / luminaire	2	Count of lamps / lum	inaire	1
	Price / lamp	€ 4.00	Price / lamp	€	7.00
	Installation costs per luminaire	€ 0.00	Installation costs per luminaire	€	48.00
	Investment costs	€ 272	Investment cost		18172

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

siteco	Home Products Referen	ices Service	Light Company	Contact	Notepad B
	Project Data				Help
Press					
Download		peration c. Energy	CONTRACTOR STREET, AND ADDREET, AND ADDREET, ADDREET	CO2 Amortiz	
Links Planning Tools	Load data costs wit	hout energy costs	: overview graphic	graphic graph	nic as PDF
Technical Support	Ope	eration costs	without energy	/ / vear	
New Customer Service					
Centre	Comparison facility		New facility		
Inquiry					
Profitability Calculation		Delete entries		De	elete entries
My Siteco			A 11 A 41 TO 14	CE0-1-41-400	-
Guarantee	Article No. 5na57022c		Article No. DINA	558e1nt1c436	
Supplier portal	Description		Description		
	Spiegelschalen, aus , primäre lichttechn Abdeckwanne, aus PMM Prismenstruktur, KB1 Lichtaustritt: direkt strahlend, für 2 x H Vorschaltgerät: KVG,	Abdeckung: A, ; ; HE 80W,	Aluminium, lichttechn. Abdeckschei Binscheiben	be, aus -Sicherheitsgl austritt: dire	imāre as,
	Count of lamps / luminaire	2	Count of lamps /	luminaire	1
	Price / lamp	€ 4.00	Price / lamp	€	7.00
	Lamp change costs / luminaire	€ 26.00	Lamp change co / luminaire	^{sts} €	28.00
	Disposal costs / lamp	€ 1.00	Disposal costs /	lamp €	2.00
	Economic durability / lamp	h 12000	Economic durabi / lamp	lity h	16000
	Operating hours / year	h 3000	Operating hours	/year h	3000
	Maintenance costs / luminaire	€ 8.00	Maintenance cos	sts / Iuminaire €	6.00
	per year Expected service life of facility in years	20	per year Expected servic of facility in year	5/J	20
	Total count of lamps	68	Total count o		22
	Average operation cos without energy costs (static calculation)		Average ope without ener (static calcul	ration costs gy costs €	285
	Average operation cos without energy costs	ts € 1145	Average ope without ener		564

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) -

siteco	Home Products References Service Light Company Contact	Notepad 匠
	Project Data	Help
Press		
Download	New / Main Investment Operation c. Energy Cost Cost CO2 Amortization	Project
Links	Load data costs without energy costs overview graphic graphic graphic	as PDF
Planning Tools		- 10
Technical Support	Energy costs / year	
New Customer Service Centre	Comparison facility	
Inquiry		
Profitability Calculation	Delete entries Delete	entries
My Siteco		
Guarantee	Article No. 5na57022c Article No. 5NA558e1nt1c436	
Supplier portal		
	Description Description	
	Großer Klassiker, Mastleuchte, SQ 100, Mastleuchte, primäre primäre Lichtlenkung mit Spiegelschalen, aus Aluminium, primäre lichttechn. Abdeckung: Abdeckwanne, aus PNMA, Prismenstruktur, KBI, Lichtaustritt: direkt strahlend, für 2 x HME 80W, Vorschaltgerät: KVC, parallel	re V
	Lamp type HME Lamp type	HME
	Lamp capacity VV 80 Lamp capacity VV	50
	Control gear loss capacity VV 10 Control gear loss capacity VV	7
	Control gear type KVG Control gear type	KVG
	Dimming of luminaires:	
	Operation % 100 50 0 Operation % 100 50	25
	Hours/year h 2000 1000 0 Hours/year h 1000 1000	1000
	System capacity W 180 107 11 System capacity W 57 32	20
	Electricity tariff / KWh € 0.12 Electricity tariff / KWh €	0.12
	CO2 coefficient (kg/kWh) 0.6 CO2 coefficient (kg/kWh)	0.6

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	6.12	Power input of facility	1.25
Energy consumption / year	15879	Energy consumption / year	2397
CO2 coefficient (kg/kWh	0.6	CO2 coefficient (kg/kWh	0.6
CO2 emission of facility / year	9.53	CO2 emission of facility / year	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

TECO Home Products References	Service L	ight Company Contac	t Note
Project Data			F
s and a second s			
nload New / Main Investment Opera	tion c. Energy	Cost Cost CO2	Amortization Pro
Load data costs without		overview graphic graphic	graphic as
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v Customer Service re Cost ov quiry ofitability Calculation	erview / yea	r (static comparisor	1)
/ Siteco		Comparison facility	New facility
rantee		0	901
alier portal Linear depreciation of fac	ility –	0	0
	€	578	285
Operation costs without e	energy costs 兴	100	49
Energy costs	€	1905	288
Lifetyy costs	%	100	15
Total operation costs	€	2483	573
	%	100	23
Total costs	€	2483	1474
10(0) (03(3	%	100	59
CO2 emission		9.53	1.44

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.

ытесо	Home I	Products	References Serv	/ice I	Light C	ompany	Contact	N	lotep
ress	Proje	ct Data							н
ownload inks	CONTRACTOR AND	lain Investme ata costs		Energy costs	Cost overview	Cost graphic	CO2 graphic	Amortization graphic	Pro as
lanning Tools	Stat	tic view	Dynamic	: view (C	3)		Dynar	nic view (C4)	
Inquiry		Dy	ynamic compa	irison	or oper	ration c	osts (C	23)	
Profitability Calculation									
Profitability Calculation My Siteco					Comp	arison f	acility	New facilit	y
My Siteco Guarantee					Comp ∈	arison f	acility 22905	New facilit	2007
My Siteco Guarantee	Ор	peration cost	ts without energy c	osts		arison f	1000000000		9
My Siteco Guarantee			is without energy c	osts	€	arison f	22905	1127	9
My Siteco Guarantee		peration cost ergy costs	s without energy c	osts	€ 6 €	arison f	22905 100	1127	9
My Siteco Guarantee	En:	ergy costs		osts 9	€ 6 €		22905 100 91658	1127 4 1383	9 9 6 5
My Siteco Guarantee	En:			osts 9	E		22905 100 91658 100	1127: 4: 1383: 1:	9 9 6 5 5
	En	ergy costs	n costs	• osts 9 9 9	E		22905 100 91658 100 114563	1127: 4: 1383: 1: 2511:	9 9 6 5 5 2

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.

	ne Products References Service	Lig	n Cu	ompany	Contact		Votepa
F	Project Data						He
ress	•						
ownload Ne	w / Main Investment Operation c. Energ	v	Cost	Cost	CO2	Amortization	Proje
	oad data costs without energy cost		verview	graphic	graphic	graphic	as F
lanning Tools	Static view Dynamic view	/ (C3)		Dynar	nic view (C4)	
echnical Support							
ew Customer Service							
entre	Dynamic compai	iso	n of to	tal cost	s (C4)		
Inquiry							
Profitability Calculation My Siteco			Comp	arison f	acility	New facili	by
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							201
	Operation costs without energy costs				22905	1127	79
	Operation costs without energy costs		-		100		79 19
	Operation costs without energy costs						19
	Operation costs without energy costs				100 91658	4	19 36
					100 91658 100	4 1383 1	19 36 15
	Energy costs				100 91658	4	19 36 15
		% € %			100 91658 100	4 1383 1 2511	19 36 15
Supplier portal	Energy costs Total operation costs	% € €			100 91658 100 14563	4 1383 1 2511	9 6 5 5 2
	Energy costs	% € %			100 91658 100 14563 100	4 1383 1 2511 2	9 6 5 5 2 8
	Energy costs Total operation costs	% € % €			100 91658 100 14563 100 585	4 1383 1 2511 2 3905	9 6 5 5 2 8 7

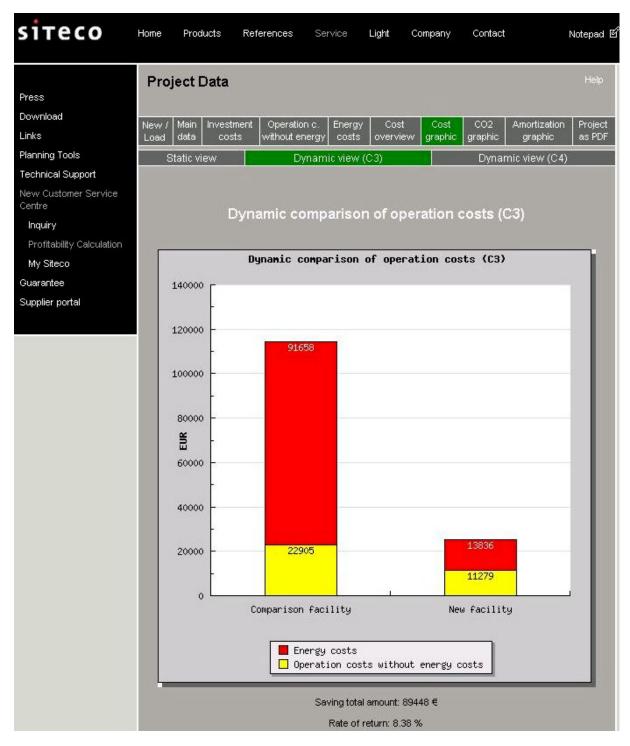
7. Cost graphic

7.1 Static view

siteco	Home	Products	References	Service	Light	Company	Contact		Notepad 匠
Press	Pro	ject Data							Help
Download								A	-
Links	New /	Main Invest	Contract and a second second			No. of the second s	CO2 graphic	Amortization graphic	Project as PDF
Planning Tools	8	Static view	D	, ynamic view	/ (C3)		Dynan	nic view (C4)
Technical Support									
New Customer Service Centre			Costove	rview / v	ear (st	atic comp	oarison)		
Inquiry							,		
Profitability Calculation	- 3 <u>-</u>	_	Coat ava	autou (u		atia agua		_	
My Siteco			LOST OVE	rview / y	jear (st	atic compa	arison/		- 11
Guarantee		²⁸⁰⁰ [
Supplier portal		2600							
		2400 -	19	05					
		2200							
		2000	_						
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		1600							
		H 400					288		
		1200 -					285		
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			Er	nergy costs Deration co	sts with	out energy o of facility		-20	

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)



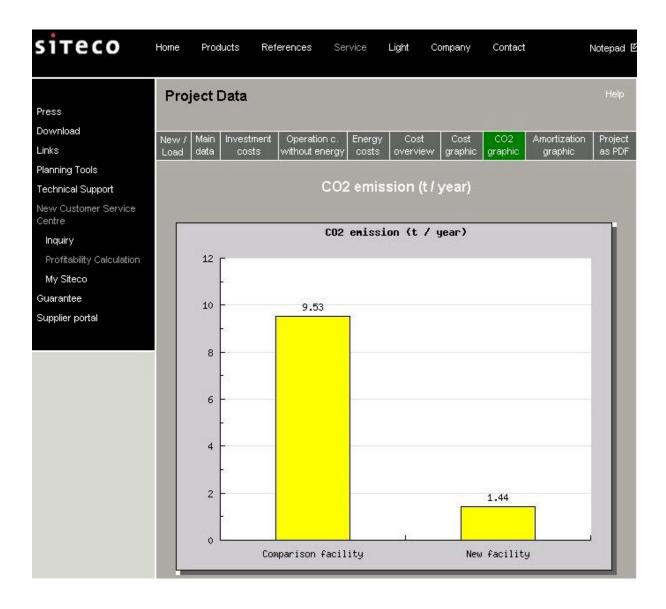
The figure shows pure operating costs accumulating during the complete service life.

7.3 Dynamic view (C4)

iteco	Home Pro	ducts	References	Service	Light	Company	Contact	Notep:
	Project	Data						He
ress								
ownload inks	New / Main					000		Amortization Proj
anning Tools	Load data				1	ew graphic	graphic	graphic as F
chnical Support	Static	view		ynamic view	(03)		Dynami	c view (C4)
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Inquiry			Dynamic	. compa	13011 0		313 (04)	
Profitability Calculation								1
My Siteco			Dynamic	comparis	on of t	otal cost:	s (C4)	
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		۰ <u> </u>	Comparisor	n facility		Ne	w facility	
				nergy costs peration co:		out energy (costs	
				inal rate o				
		-						
				Saving tot	al amount:	50974 €		
				Rate of	return: 5.	37 %		

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

siteco	Home	Products	Refe	erences	Service	Light	Company	Contact		Notepad @
Press	Proj	ect Dat	a							Help
Download	New /	Main Inv	estment	Operation c	. Energy	Cost	Cost	CO2	Amortization	Project
Links	Load	data (costs	without energ	gy costs	overvie	w graphic	graphic	graphic	as PDF
Planning Tools	S	tatic view		Dyna	mic view	(C3)		Dynai	mic view (C4)
Technical Support										
New Customer Service Centre										
Inquiry					Static a	mortiz	ation			
Profitability Calculation										
My Siteco		40000 -			Static a	amortiz	ation			
Guarantee		E							-	<u> </u>
Supplier portal		35000							/	
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							ts of new a	100 PO 100 PO 100 PO 100		
				Amortization	of add, inve	estment co	osts after 9.37	7 years		

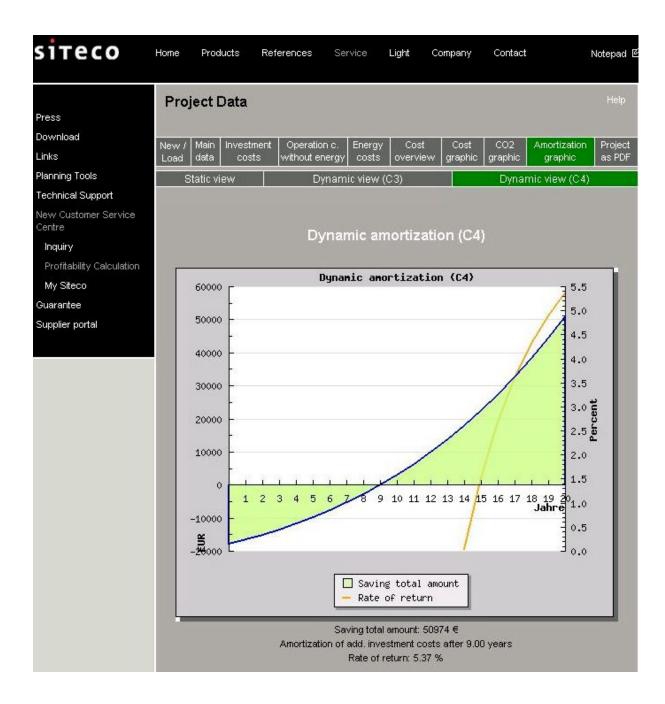
This figure shows the time point for static amortisation. In the example the added investment costs of the 'new facility are balanced by the lower operating costs after 9.37 years. From then onwards the 'net use' is positive.

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:

Rentability	calcula	tion					
Project: Testp	rojekt-60						
Main data							
Project No.	60						
Project name	Testprojek		Pla	nn. company	Stadtwerke Traun	stein	
Owner	Stadt Traunstein			nn. agent	Eisele R.		
Street	Herzog-O	tto-Str. 6		teet			
ZIP City	83278 Traunsteir	1	28		83278 Traunstein		
Telephone	raunster		Cit	y echone	D801-		
Fax			Fa		0861-		
E-Mail				Aail	r eisele@siteca.de		
Main data for	dynamic	calculation					
Yearly rate of inf interest cate:		3.0%		arly rate rease (electrici	of price 5.0 %		
Investment c				New facil	ity.		
Article No.:		ön	a67022o	Article No	D.:	5NA55Be1	int1o436
Description:				Descriptio	on:		
Spiegelschalen, Abdeckung: Abdec Lichtaustritt, dire Vorschultgerüt: KV max, 2,5 mm ² , Leuchtengehäuse, lichtgrau (RAL 703 295 mm, Schutzart (aus Akimi kwanne, aus kt strahlend G, parallel ko Netzanschlu aus Akim 5), Länge 85 t (gesamt): IP Vorschaltgerä I (Schutze	a, primáre Lichté num, primáre PMMA, Prismenste PMMA, Prismenste PMMA, Prismenste PMMA, Prismenste as 230 V. AC inium, Druckguss 0 nm, Breike 352 3. Schutzart (Lan tersum): IP23, Sir disung), Prüfbeid	lichtlechn uktur, KB1, ME 80W, me 3polig, 50 Hz, lacklert, mm, Höhe upercaum) hutzklasse	lichttechn. Einscheib strahlend, 100W, 0 Vorschaft kompensie Stecker, 3 50 Hz, Ler lacklart, 9 467 mm, 42/60 m Auminum Schutzart (Schutzart	cettenoptik, aus Ali Abbleckung en-Sicherheitsglas, Montageart: Aufwatz Ibertagenungs-Zindige gerst: VVG mit Th ert. Rekdzierschultun polig, ohne Phasenwi uchtengehäuse-Obert- raustuminum (RAL Q Hohw 218 mm, Zopfi	Abdeckscheibe, ktar, Lichtaustri, 4. Ansatz, Sir 1 x rät mit Abschalt termoschutzschalte g mit Relais und M. Netzanschluss: el, aus Auminum, I 007), Länge (88 m M. Netzanschluss: el, aus Auminum, I 007), Länge (88 m el, aus Auminum, I und Burger, Barner el, aus Auminum, I und Burger, Barner el, el, aus Auminum, I und Burger, Barner el, el, aus Auminum, I und Burger, Barner el, el, aus Auminum, I aus Auminum,	prima a c dire HST/HS automatil r, paral Timer, n 230 V, A Druckgus sm, Breil Autopol Atal 2000 (t) SK

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