

# Manual

Energy Invoice Professional



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These instructions explain how to create an energy invoice in GridVis Desktop.

#### Content

- ▪ Scope of **Energy Invoice Professional** functions
- ▪ Explanation of reactive energy and increased reactive energy
- ▪ Creating a new data export
- ▪ Configuring the **Energy Invoice Professional** exports
- ▪ Execute the export
- 
- 

The "**Energy Invoice Professional**" function creates a report with the following content:

- ▪ Energy invoice with position table.
- ▪ Optional column display and description.
- ▪ Addresses, information and labeling fields.
- ▪ User-defined customer logo.
- ▪ 6 price brackets with additional information.
- ▪ Output of increased reactive energy.
- ▪ Fixed and relative costs.
- ▪ Bar chart for history and comparative period.
- ▪ Additional tables for history and comparative period.
- ▪ Position markings for overruns.
- ▪ Energy quantity as area ratio.

You can also create the "**Energy Invoice Professional**" as an **XLS**, **XLSX** or **PDF** file containing:

- ▪ Performance values (AVG, MAX),
- ▪ Electrical energy values
- ▪ User-defined energy values (e.g. gas, water, oil or other values).

30.08.2017

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Rechnungs-Nr.: RN-789123

Zeitraum: 01.07.2017 - 31.07.2017

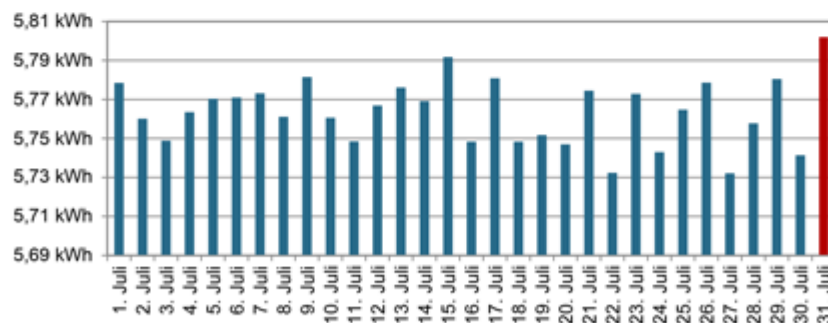
Pos	Kostenstelle	Verbrauch	Startwert	Endwert	Preis	Einheit	Summe
1	Beleuchtung	178,68 kWh	1.818,00 kWh	1.996,00 kWh	0,1000	€/kWh	17,87 €
2	Klimaanlage	533,28 kWh	60.234,00 kWh	60.766,00 kWh	0,1000	€/kWh	53,33 €
3	Maschine 1	0,53 MWh	60,00 MWh	61,00 MWh	0,1000	€/MWh	0,05 €
4	Gesamt	0,00 GWh	0,00 GWh	0,00 GWh	0,1000	€/GWh	0,00 €

Grundgebühr: 10,00 €

MwSt. 19.0%: 15,44 €

Summe (Brutto) 96,69 €

Monatsübersicht, Beleuchtung (#1)



Muster Bank IBAN : DE02120300000000202051 BIC : BYLADEM1001

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**i** The configuration of the "Energy Invoice Professional" requires recorded values (historical values) of your measuring device and the corresponding type of measured value.

The active power factor is important when preparing energy invoices.

The ratio of active power **P** to apparent power **S** is called active power factor or active factor. The power factor can be between 0 and 1.

With sinusoidal currents, the active power factor corresponds to the cosine ( $\cos \varphi$ ). It is defined by the ratio  $P/S$ . The active power factor is a measure of which part of the apparent power is converted into active power. When active power and voltage is constant, the higher the active power factor  $\cos \varphi$ , the smaller the apparent power and current.

The tangent ( $\tan$ ) of the phase shift angle ( $\varphi$ ) makes it easy to convert the reactive and active unit.

The system tries to achieve the highest possible power factor to avoid transmission losses in power supply units. Ideally, it is exactly 1 but is practically only about 0.95 (inductive). Power utility companies frequently prescribe a power factor of at least 0.9 for their customers. If this value is not reached, the active energy drawn will be invoiced separately. This is irrelevant, however, for private households. Systems for power factor correction serve to increase the power factor. If capacitors of suitable size are connected in parallel to the loads, the reactive current oscillates between the capacitor and the inductive load. The higher-level network is no longer under an additional load. If a power factor of 1 is reached through a correction, only active current is transmitted.

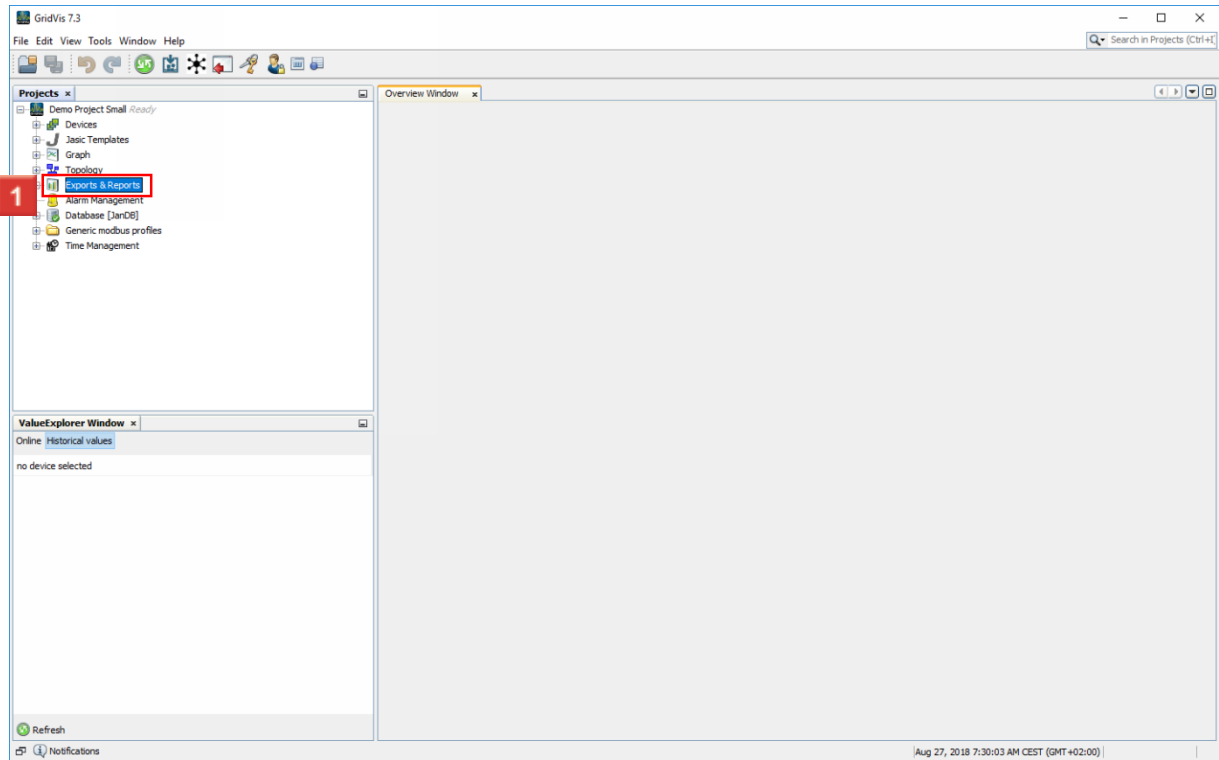
You can find more information about this subject on our [website](#).

The electricity supply contract specifies an active power factor ("target  $\cos\phi$ ") of 0.95.

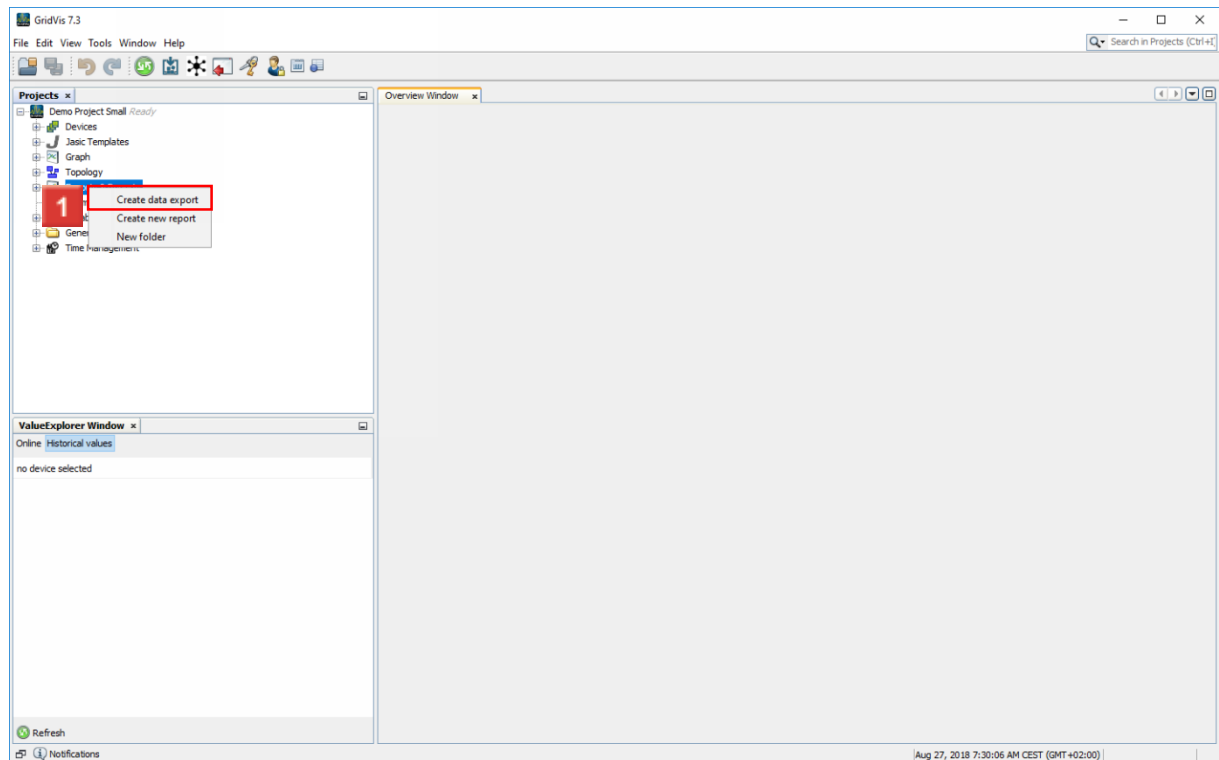
According to the formula: Target  $\tan\phi = \tan(\arccos 0.95) = 0.33$ , the customer has 33% of his active energy as reactive energy at no charge:

Active energy of 100,000 kWh results in free reactive energy of approximately 33,000 kvarh. For reactive energy of 75,000 kvarh, 42,000 kvarh are charged separately to the customer as increased reactive energy.

- i** Free increased reactive energy of 50% corresponds to a cosine  $\phi$  target of 0.9.
- i** If you invoice apparent power or apparent energy (occurs abroad, for example), enter the **target  $\cos\phi = 1$** . Apparent power and apparent energy appear in the Energy Invoice Professional in kVA or kVAh.

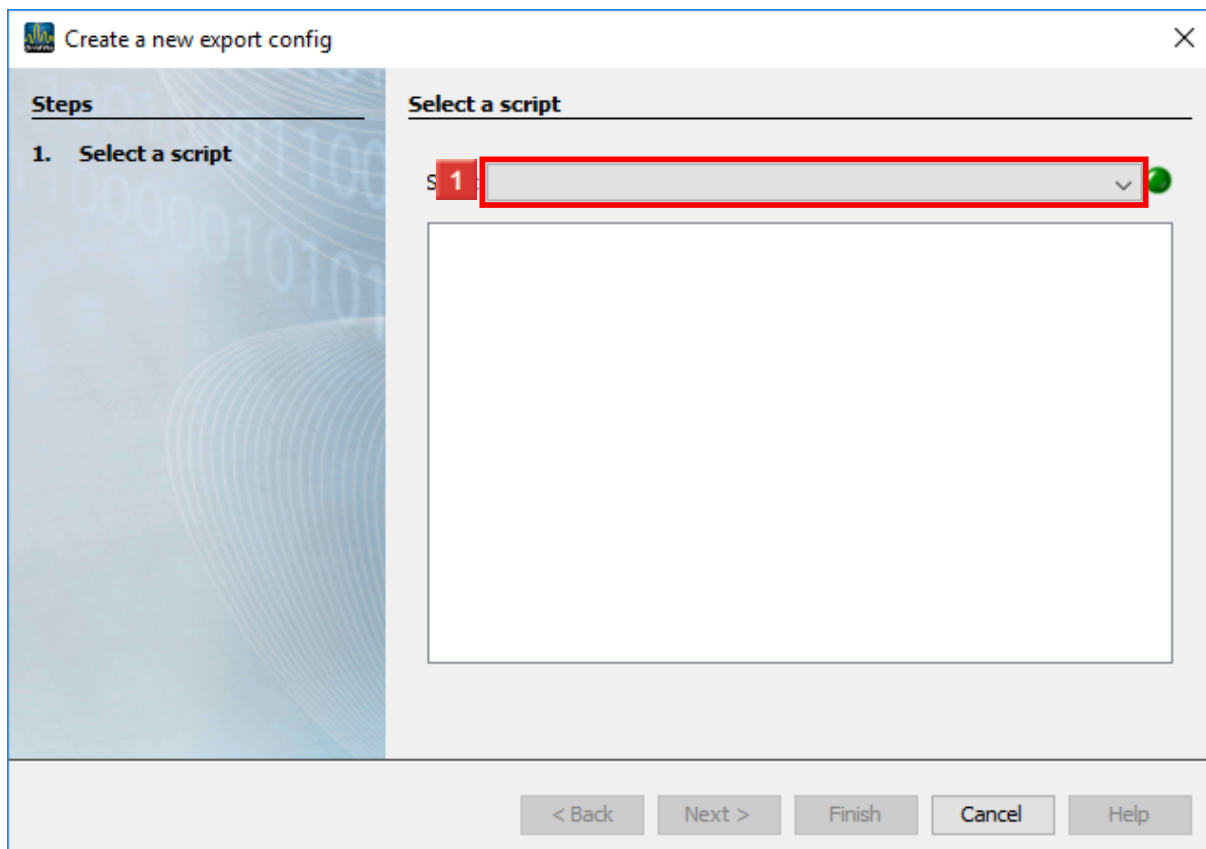


**1** Right-click the **Exporte & Reporte** tree item.

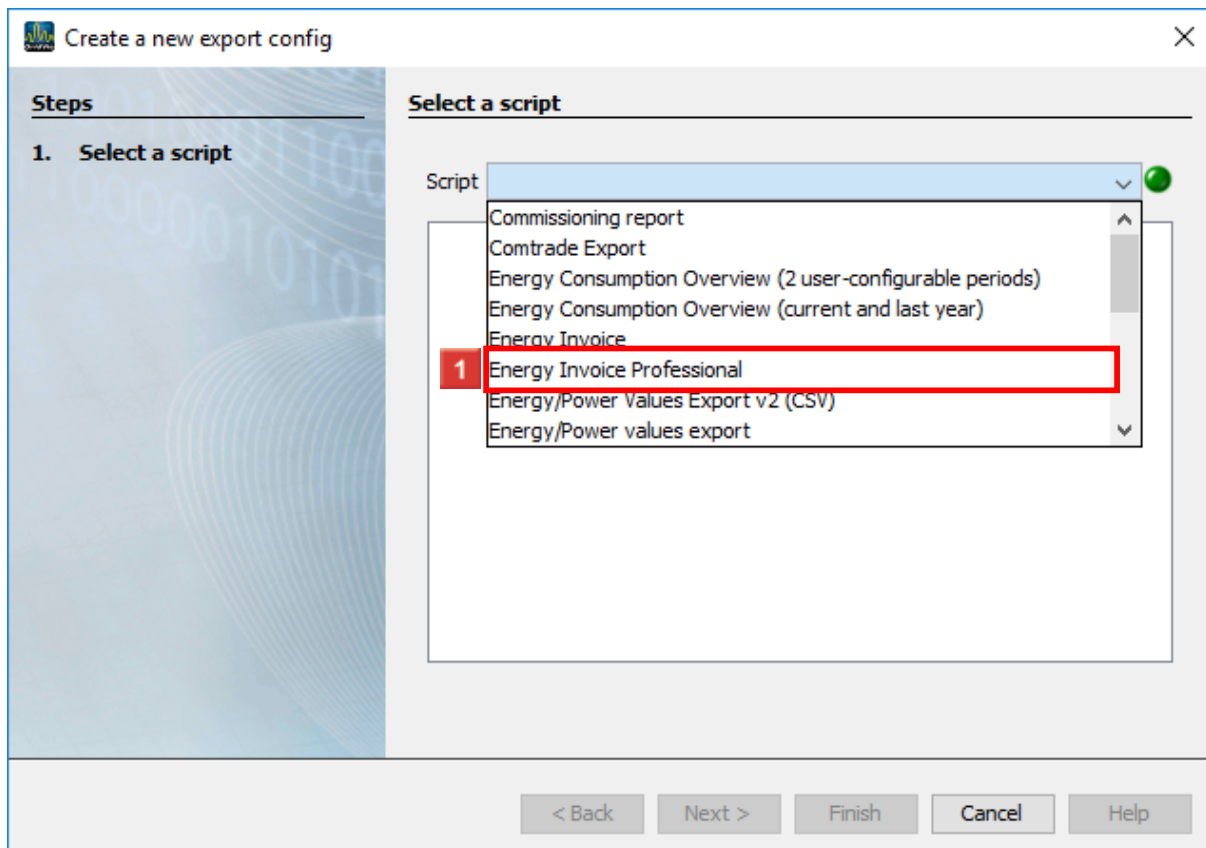


**1** Click the **Create data export** list item.

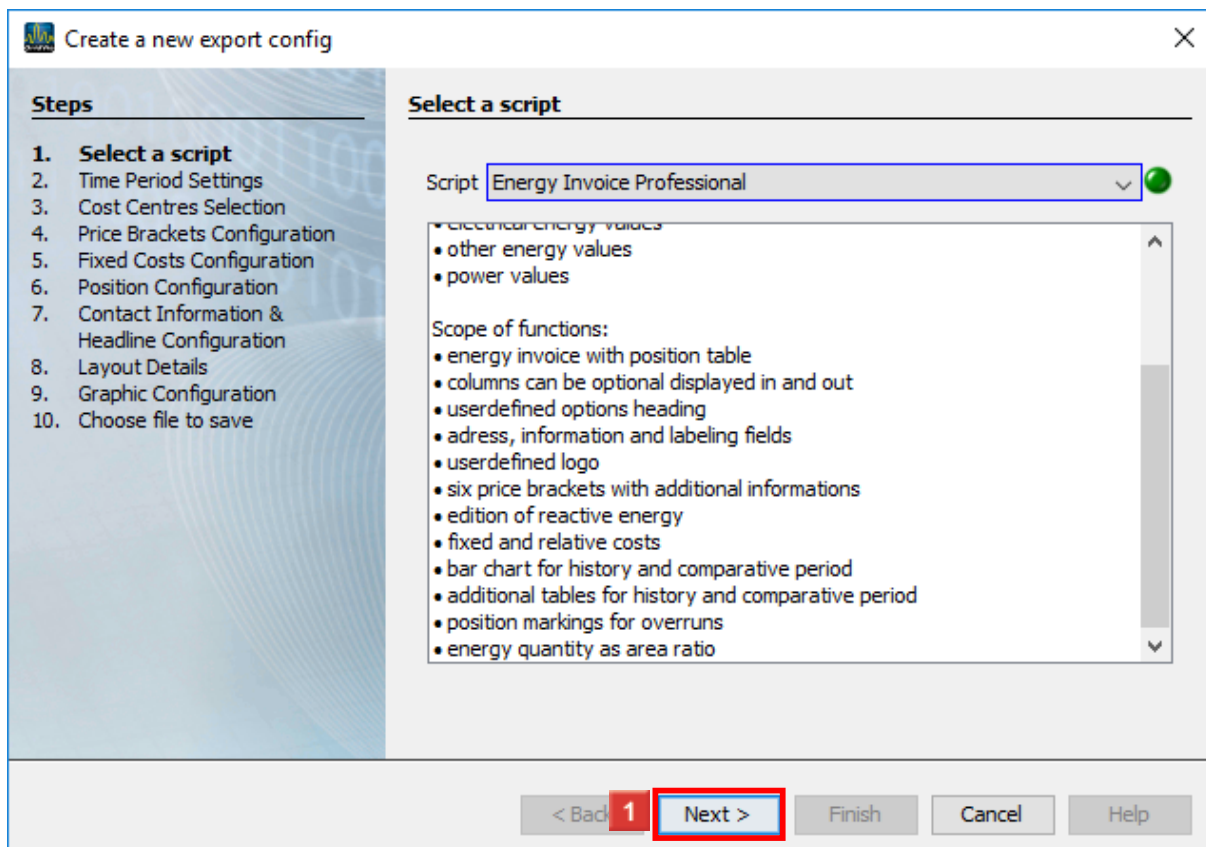
## 1 Create a new export config



**1** Click the **Skript** dropdown button.



1 Click the **Energy Invoice Professional** list item.



1 Click the **Next** button.



The screenshot shows a software window titled "Create a new export config" with a close button (X) in the top right corner. On the left, a "Steps" sidebar lists 10 steps, with step 2, "Time Period Settings", highlighted. The main area is titled "Time Period Settings" and is divided into two sections:

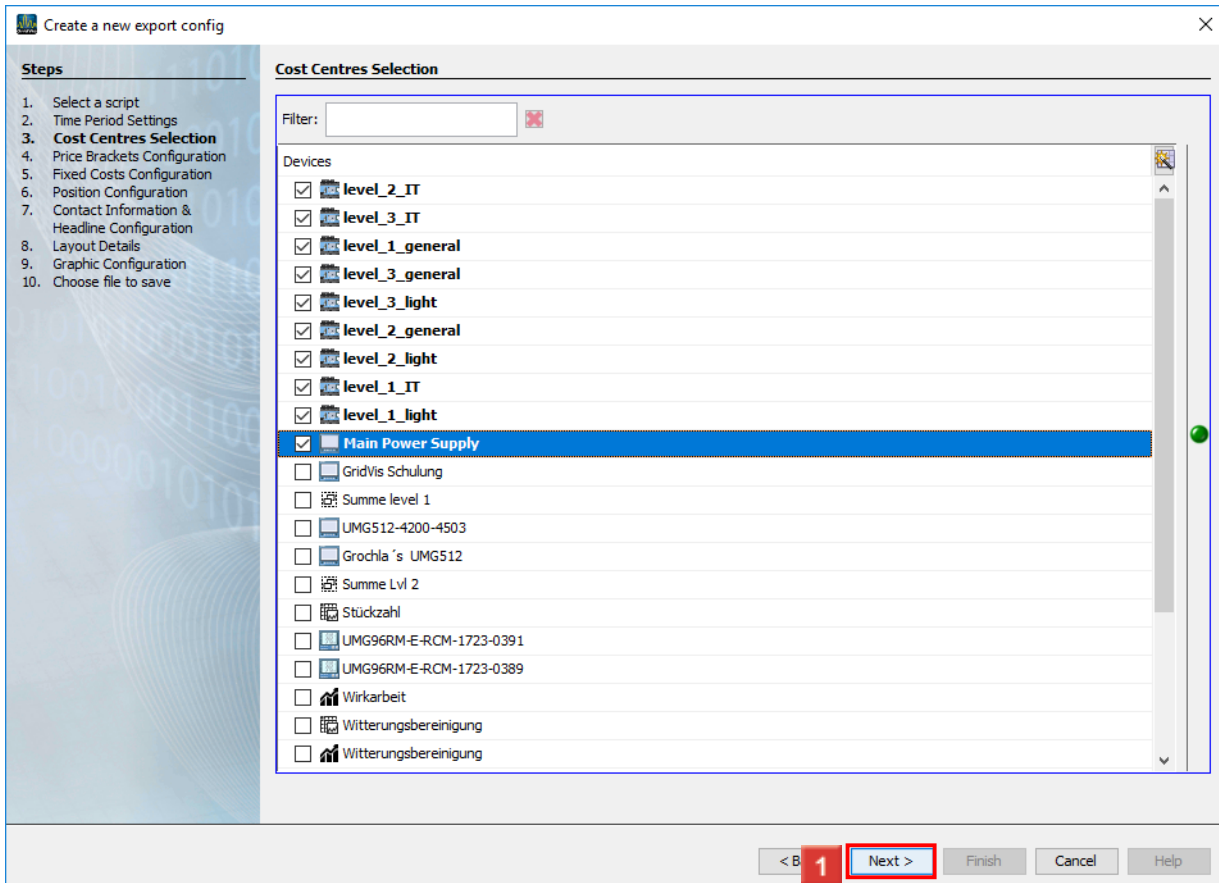
- Report Creation:** Contains the question "Should report creation be automated?" with radio buttons for "Yes" (unselected) and "No" (selected). Below it is a dropdown menu for "Time instant for Report Creation" set to "Monatlich". A red "Please note:" message states: "A time instant for automated creation can be added by means of GridVis Time Management".
- Report Timescale:** Contains the question "Choose a timescale to be included by the report" with a dropdown menu set to "Last 7 days". Below it is the question "Should the current day get included?" with radio buttons for "Yes" (unselected) and "No" (selected). At the bottom, it displays the "Selected time range:" as "8/20/18 - 8/26/18 (12:00 AM - 11:59 PM)".

At the bottom of the window, there are navigation buttons: "< Back", "Next >" (highlighted with a red box and a red '1' in a square), "Finish", "Cancel", and "Help".

**1** In the **Report creation** area, you can have the report created automatically.

In the **Report Timescale** area, you can select time periods from a list over which the report is created.

Click the **Next** button to access the next step.



**1** In this step, you select the measurement devices that provide the values for the invoice.

Click the **Next** button to access the next step.

Create a new export config

**Steps**

1. Select a script
2. Time Period Settings
3. Cost Centres Selection
- 4. Price Brackets Configuration**
5. Fixed Costs Configuration
6. Position Configuration
7. Contact Information & Headline Configuration
8. Layout Details
9. Graphic Configuration
10. Choose file to save

**Price Brackets Configuration**

Currency €

Description	Price\ Unit	Unit	Type	Unit	CosPhi
<input checked="" type="checkbox"/> Active Energy	0.10 €	kWh	Active Energy	AVG	1.00
<input checked="" type="checkbox"/> Extra Reactive Energy	0.10 €	kVarh	Reactive Energy	AVG	0.95
<input checked="" type="checkbox"/> Water	0.97 €	[Unit]	User defined	AVG	1.00
<input checked="" type="checkbox"/> Power Peak	0.10 €	kW	Active Power	MAX	1.00
<input checked="" type="checkbox"/> Gas	0.10 €	[Unit]	User defined	AVG	1.00
<input type="checkbox"/> price bracket 6	0.10 €	kWh	Active Energy	AVG	1.00

**Hint:**  
Price brackets are created to assign them to a specific cost center.  
CosPhi is only required for reactive power & reactive energy.  
For power values, you can decide whether the average or maximum value is to be used.

Sketch of the report

< B **1** Next > Finish Cancel Help

**1** In this step, you configure up to six price brackets.

Click the **Next** button to access the next step.

**i** The following types are available for the energy invoice:

**i**

- i** ▪ Active energy
- i** ▪ Reactive energy
- i** ▪ Apparent energy
- i** ▪ Active power
- i** ▪ Reactive power
- i** ▪ Apparent power
- i** ▪ User-defined

**i**

**i**

**i** With the **Power** type, you can display the average value (**AVG**) or the maximum value (**MAX**).

Create a new export config

**Steps**

1. Select a script
2. Time Period Settings
3. Cost Centres Selection
4. Price Brackets Configuration
- 5. Fixed Costs Configuration**
6. Position Configuration
7. Contact Information & Headline Configuration
8. Layout Details
9. Graphic Configuration
10. Choose file to save

**Fixed Costs Configuration**

Fixed Costs

Description	Reference	Price	Unit
<input checked="" type="checkbox"/> basic fee	absolut	10.00	€
<input checked="" type="checkbox"/> VAT	in percent	19.00	%
<input type="checkbox"/> Fixed costs 3	in percent	19.00	%
<input type="checkbox"/> Fixed costs 4	in percent	19.00	%
<input type="checkbox"/> Fixed costs 5	in percent	19.00	%
<input type="checkbox"/> Fixed costs 6	in percent	19.00	%

**Hint:**  
The relative fixed costs ("in percent") always refer to all items + absolute fixed costs.

Sketch of the Report

< **1** **Next >** Finish Cancel Help

**1** In this step, you configure up to six fixed costs.

Click the **Next** button to access the next step.

**i** In this sketch on the right, you see the area that you are configuring in the current step highlighted in black.

## 2 Invoice positions

Create a new export config

**Steps**

- Select a script
- Time Period Settings
- Cost Centres Selection
- Price Brackets Configuration
- Fixed Costs Configuration
- Position Configuration**
- Contact Information & Headline Configuration
- Layout Details
- Graphic Configuration
- Choose file to save

**Position Configuration**

Cost Centre	Price Bracket	Measured Value
New cost cent...	Active Energy	

**Cost Centre** New cost centre 1

**Device** 1

**Price Bracket** Active Energy

**Measured Value**

**Reference Value**

Threshold mark

**Threshold Value** 0 kWh

Add Position Delete Position

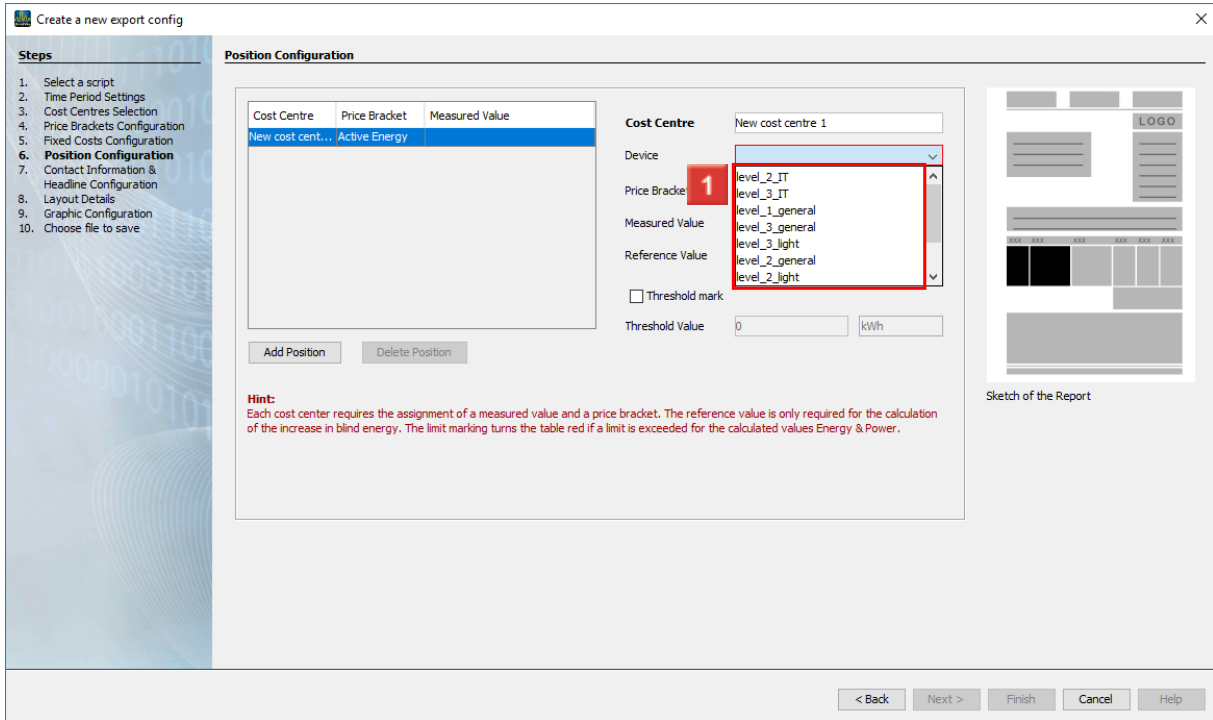
**Hint:**  
Each cost center requires the assignment of a measured value and a price bracket. The reference value is only required for the calculation of the increase in blind energy. The limit marking turns the table red if a limit is exceeded for the calculated values Energy & Power.

Sketch of the Report

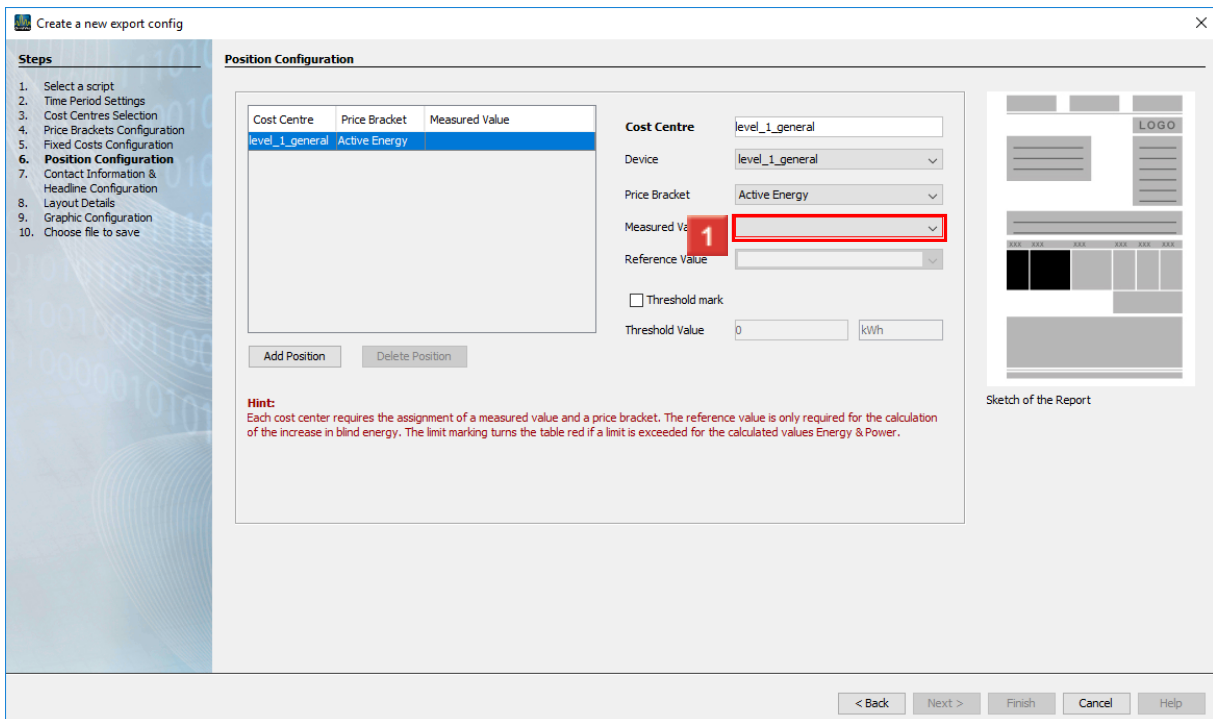
< Back Next > Finish Cancel Help

1 Click the **Measurement device** drop-down button.

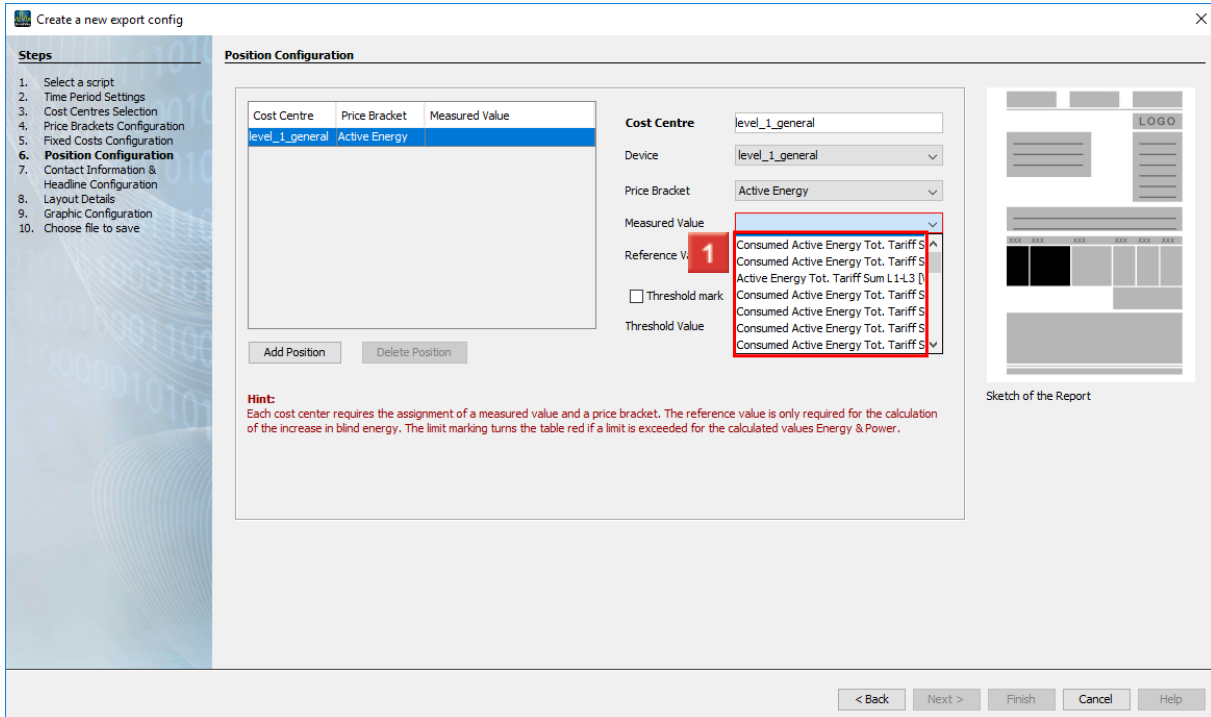
- i You can optionally define a threshold value. If the calculated power or energy values overrun this threshold value, this value is marked in red in the bar chart.
- i The **Reference value** field is only required for the calculating reactive power and reactive energy. Here, enter the active power or active energy to which the calculation is to refer.



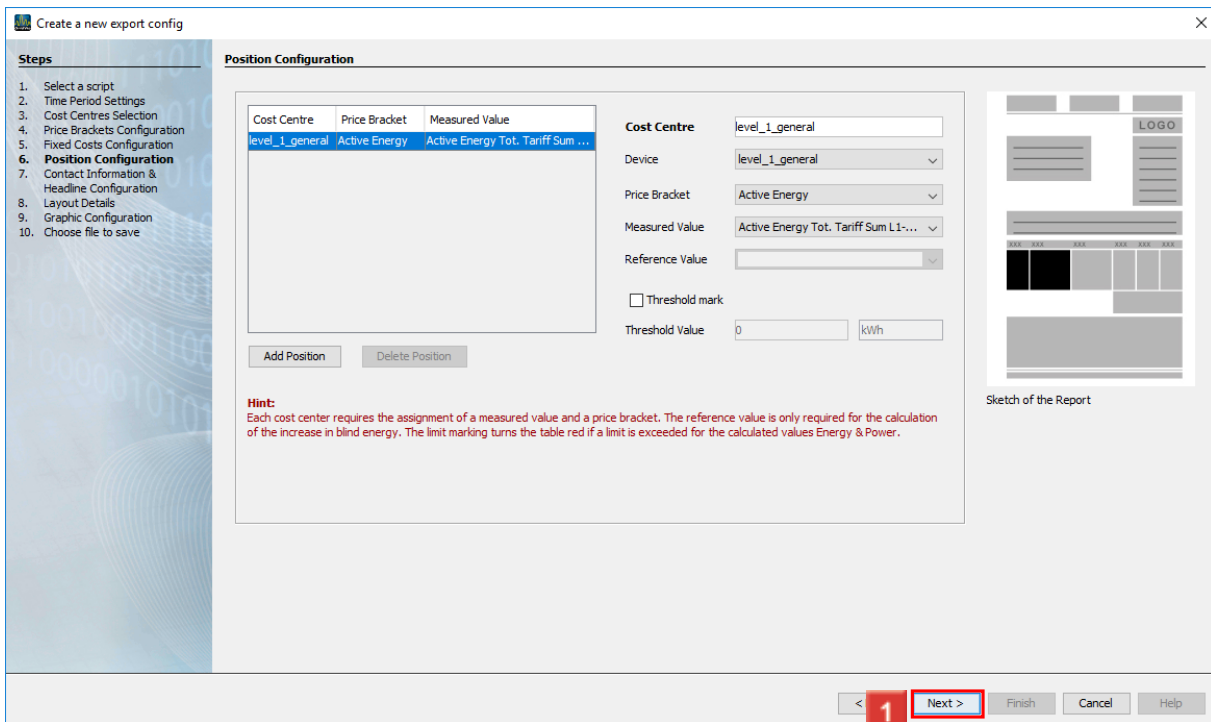
**1** Select a device from the list.



**1** Click the **Measured Value** dropdown button.



**1** Select the desired measured value from the selection list.



**1** Create additional positions by clicking the **Add Position** button.

Click the **Next** button to access the next step.

### 3 Display options

Create a new export config

**Steps**

- Select a script
- Time Period Settings
- Cost Centres Selection
- Price Brackets Configuration
- Fixed Costs Configuration
- Position Configuration
- Contact Information & Headline Configuration**
- Layout Details
- Graphic Configuration
- Choose file to save

**Contact Information & Headline Configuration**

Contact information

Sender

Recipient: Janitza electronics GmbH  
Vor dem Polstück  
35633

Phone

Fax

Email

Website

Bank

IBAN

BIC

Textfield: Customer-ID: 123456  
Contract-ID: 987654  
Invoice-ID: 121212

Show Logo 489/550 Character

Select Logo

No Image selected

**Hint:**  
Configure sender and recipient data. You can use the text field to write your own text.

Headline

What information should appear in the header?

Filename  Date  Page number

Sketch of the Report

< 1 Next > Finish Cancel Help

1 Click the **Next** button.

Create a new export config

**Steps**

- Select a script
- Time Period Settings
- Cost Centres Selection
- Price Brackets Configuration
- Fixed Costs Configuration
- Position Configuration
- Contact Information & Headline Configuration
- Layout Details**
- Graphic Configuration
- Choose file to save

**Layout Details**

Heading name & display

Sorting: by Cost Centre

Position: Pos

Cost Centre: Cost Centre

Position Value: Position value

Start Value: Start value

End Value: End value

Price: Consumption

Unit: Unit

Total: Total

**Hint:**  
The individual columns can be renamed or shown or hidden completely.

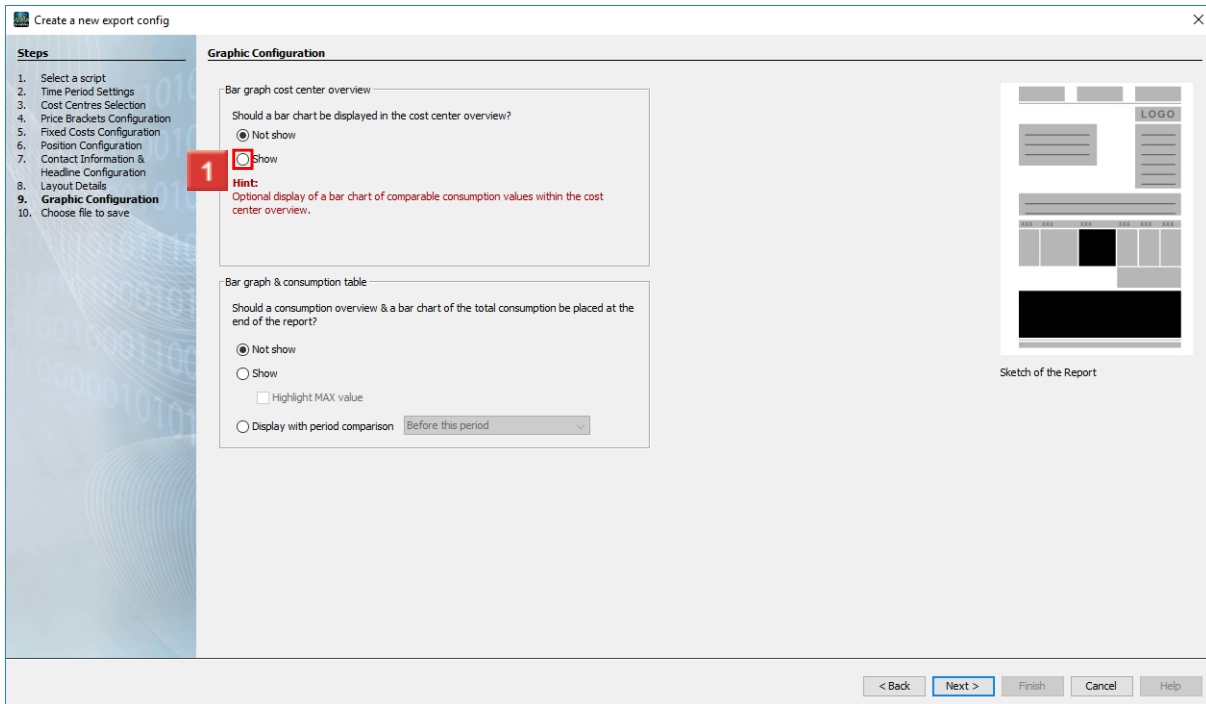
Sketch of the Report

< 1 Next > Finish Cancel Help

1 In this step, you can adjust the designation of individual columns or hide them using the selection fields.

Click the **Next** button to access the next step.

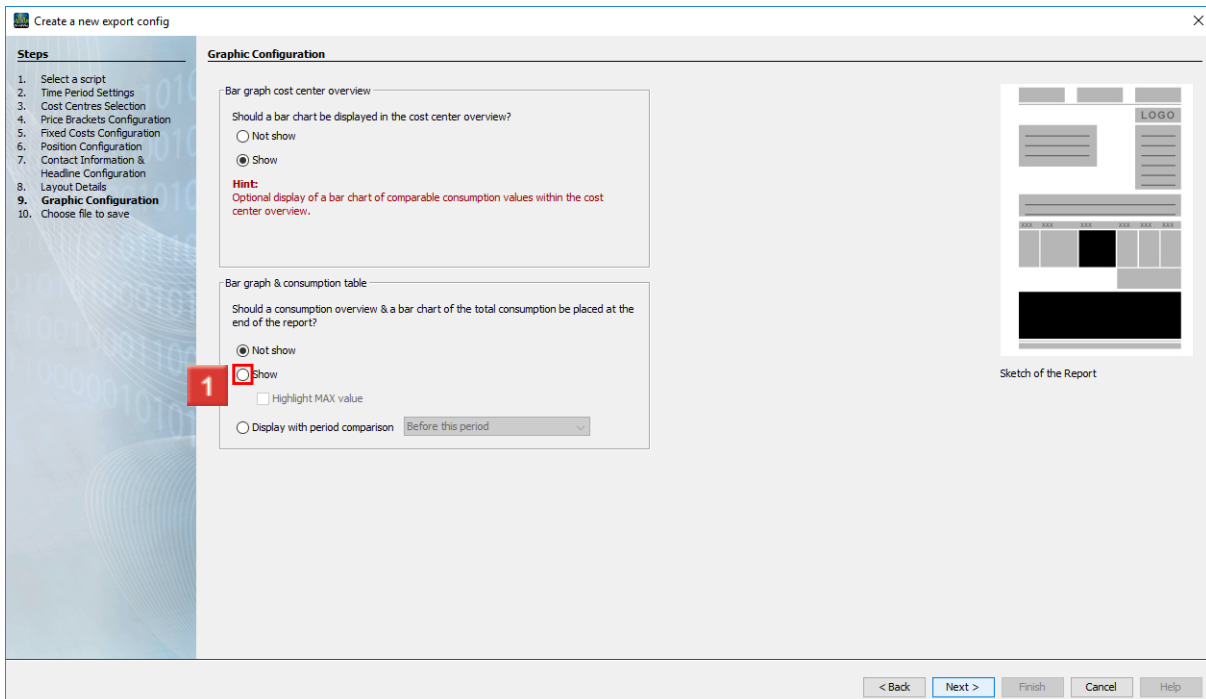




**1** Click the **Show** radio button to display the cost center consumption as a bar chart.

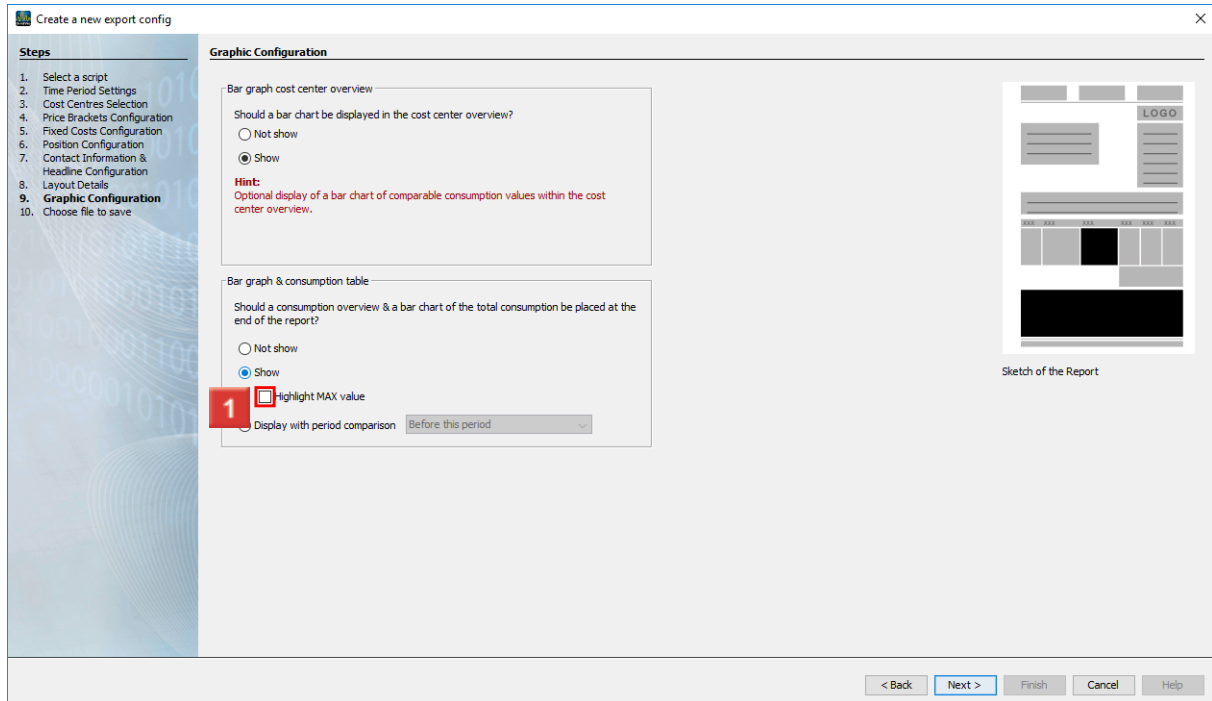
Zeitraum: 01.01.2018 - 31.12.2018

Pos	Kostenstelle	Verbrauch	Preis	Einheit	Summe
1	level_2	500,71 kWh	0,1000	€/kWh	50,07 €
		Grundgebühr:			10,00 €
		MwSt. 19.0%:			11,41 €
		Summe (Brutto)			71,49 €

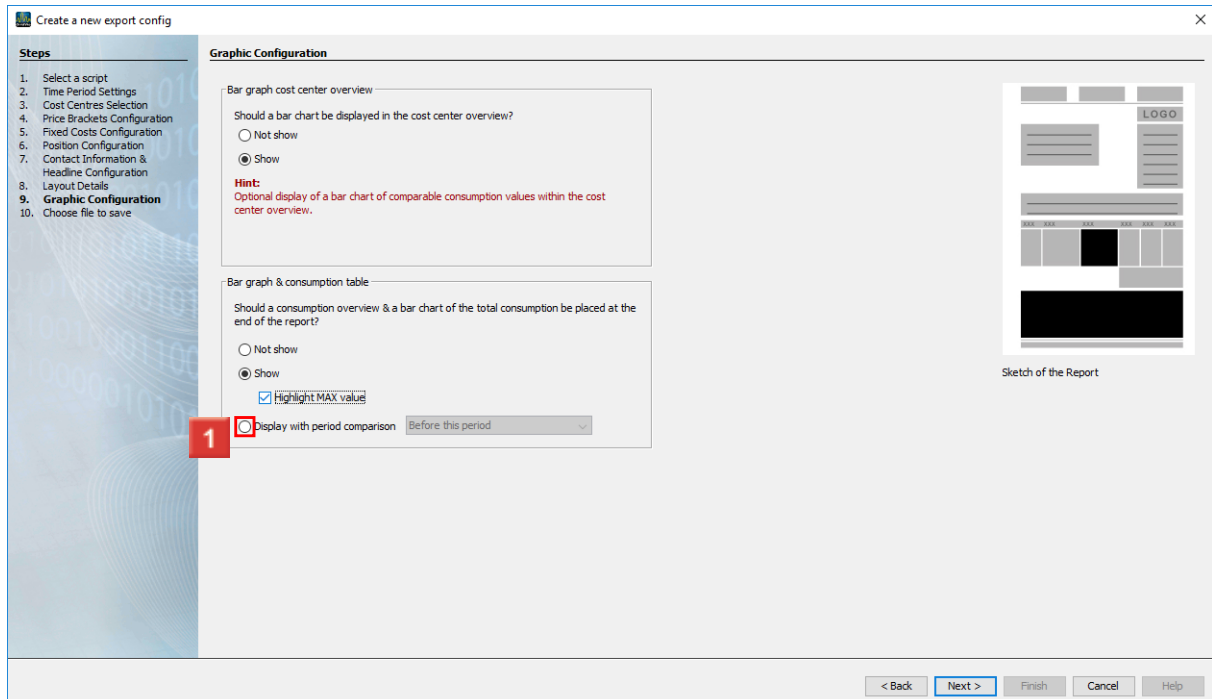


**1** Click the **Show** radio button to include the bar chart and consumption table of the total consumption in the report.

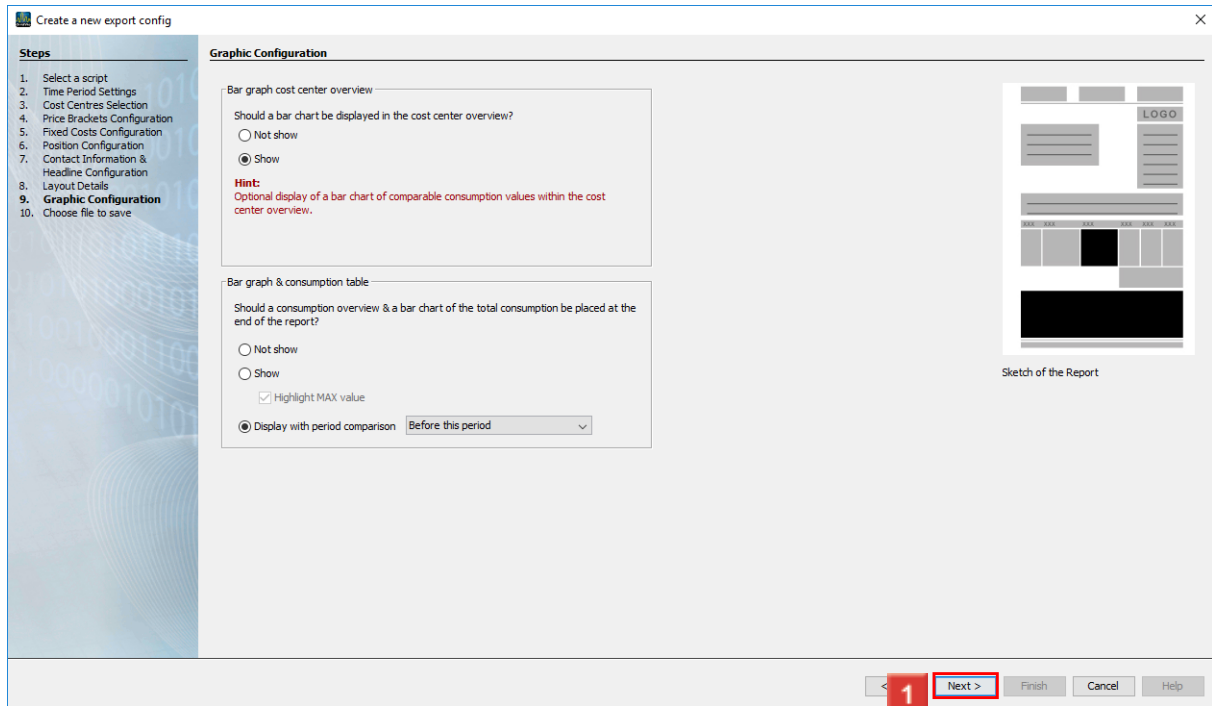
**i** You can integrate a detailed consumption overview in tabular form and as a bar chart in the report. You can choose whether this view is only created for the selected time period or whether the consumption is to be compared with that of a comparison period.



**1** Click the **Highlight MAX Values** radio button to highlight the maximum values in the report in red.

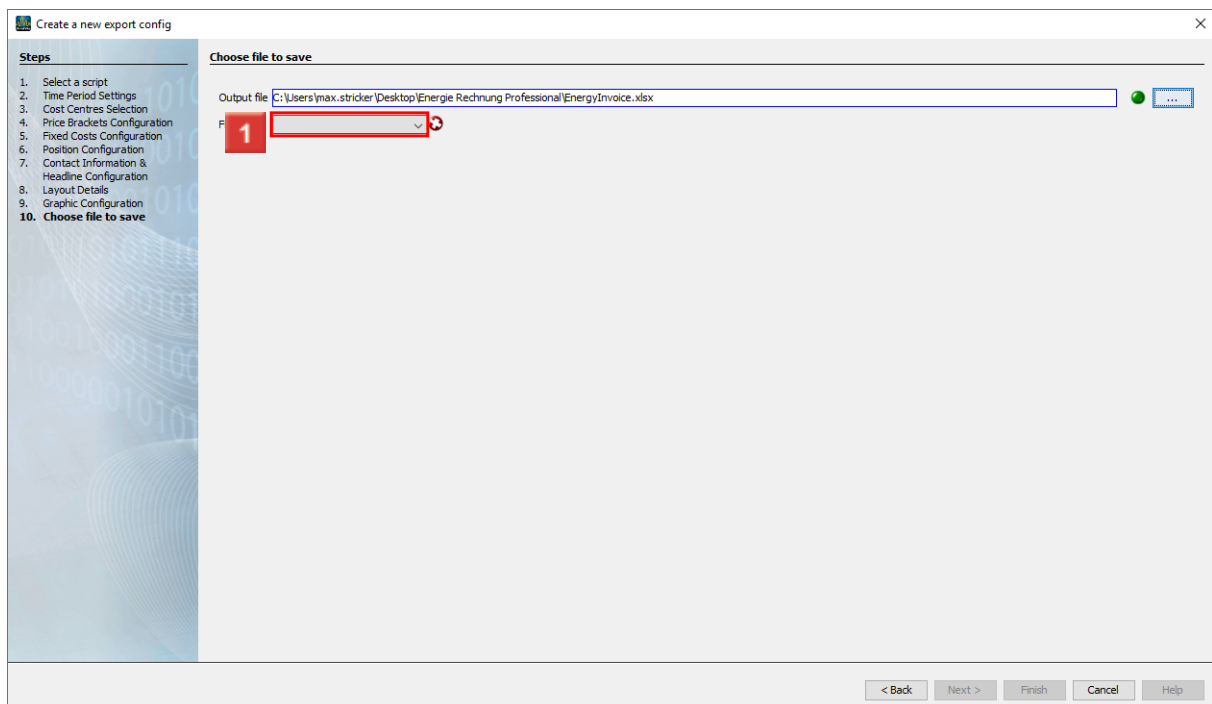


**1** Click the **Display with period comparison** radio button to integrate a comparison with a comparative period in the chart and table.



1 Click the **Next** button.

## 4 Storage location



**1** Click the **File action** dropdown button.

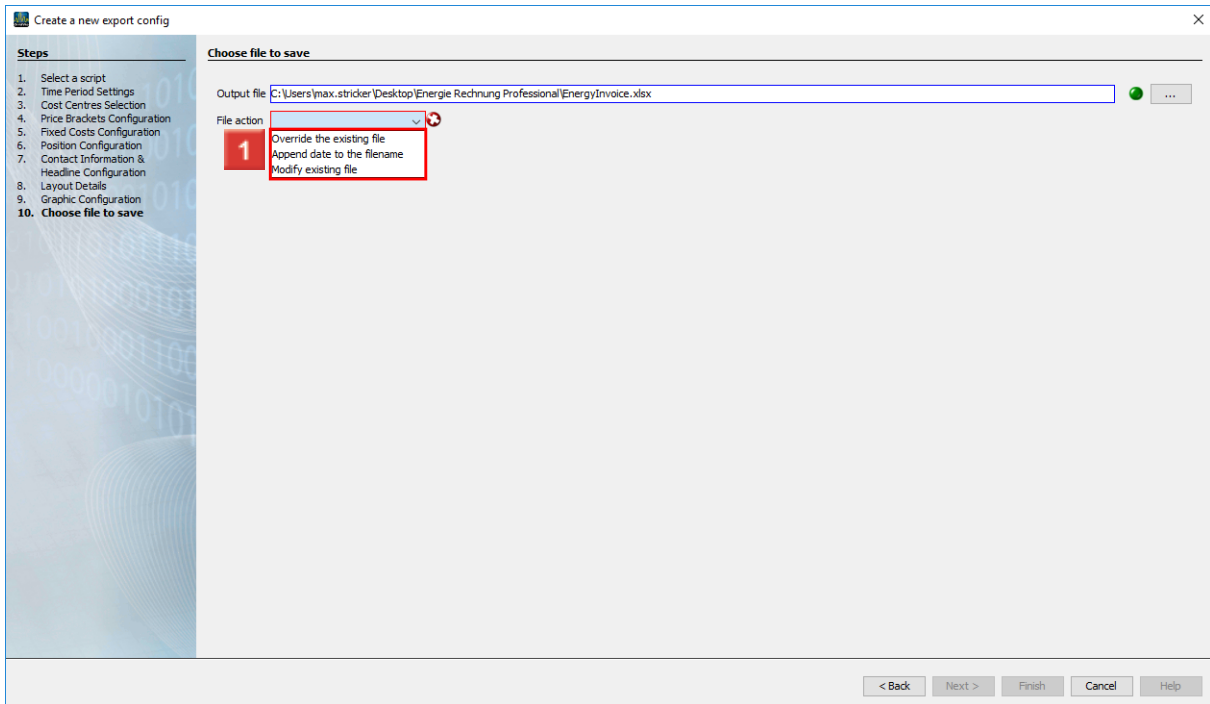
**i** The possible output formats include:

**i**

**i** ▪ PDF

**i** ▪ xls

**i** ▪xlsx



**1** Select a file action that will be executed if the specified file already exists.

**i** **Append a date to the file name:**

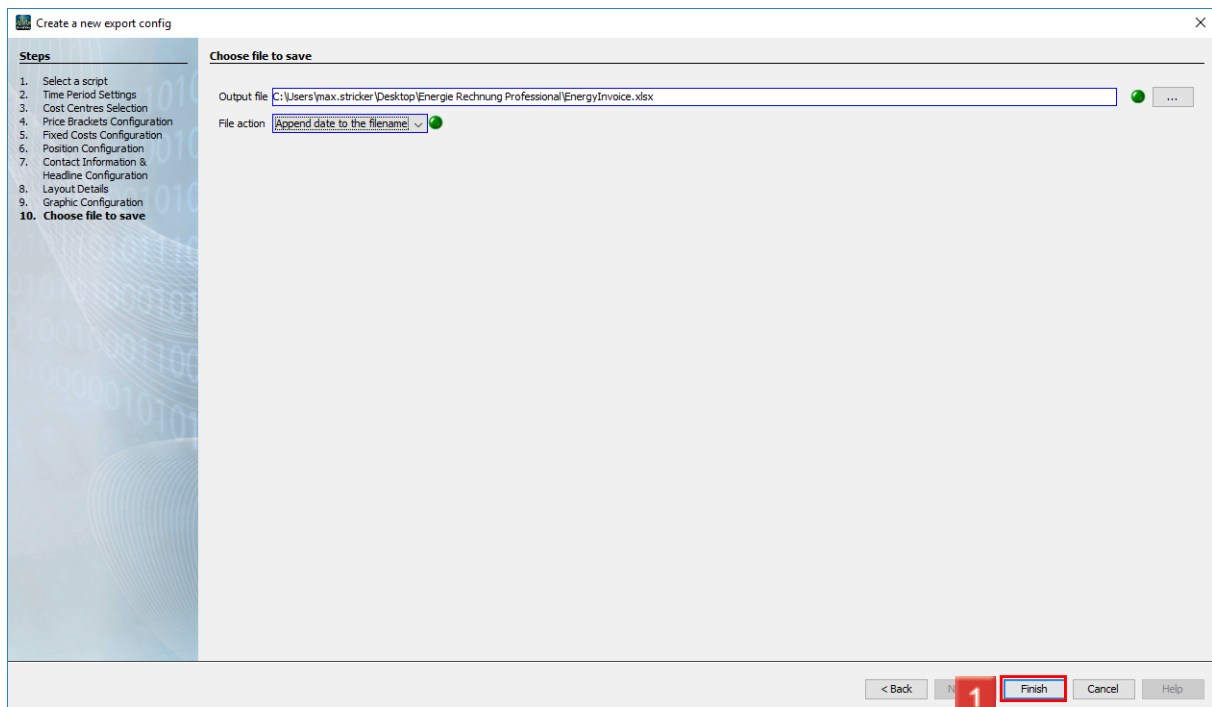
**i** Creates an additional file and appends the execution date of the report to the file name

**i** **Modify existing file:**

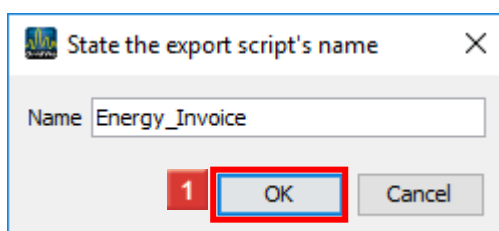
**i** Edits the data in an existing file. Spreadsheets added in an Excel file are kept.

**i** **Overwrite existing file:**

**i** Overwrites an existing report. Edits made by a user in the document are lost.



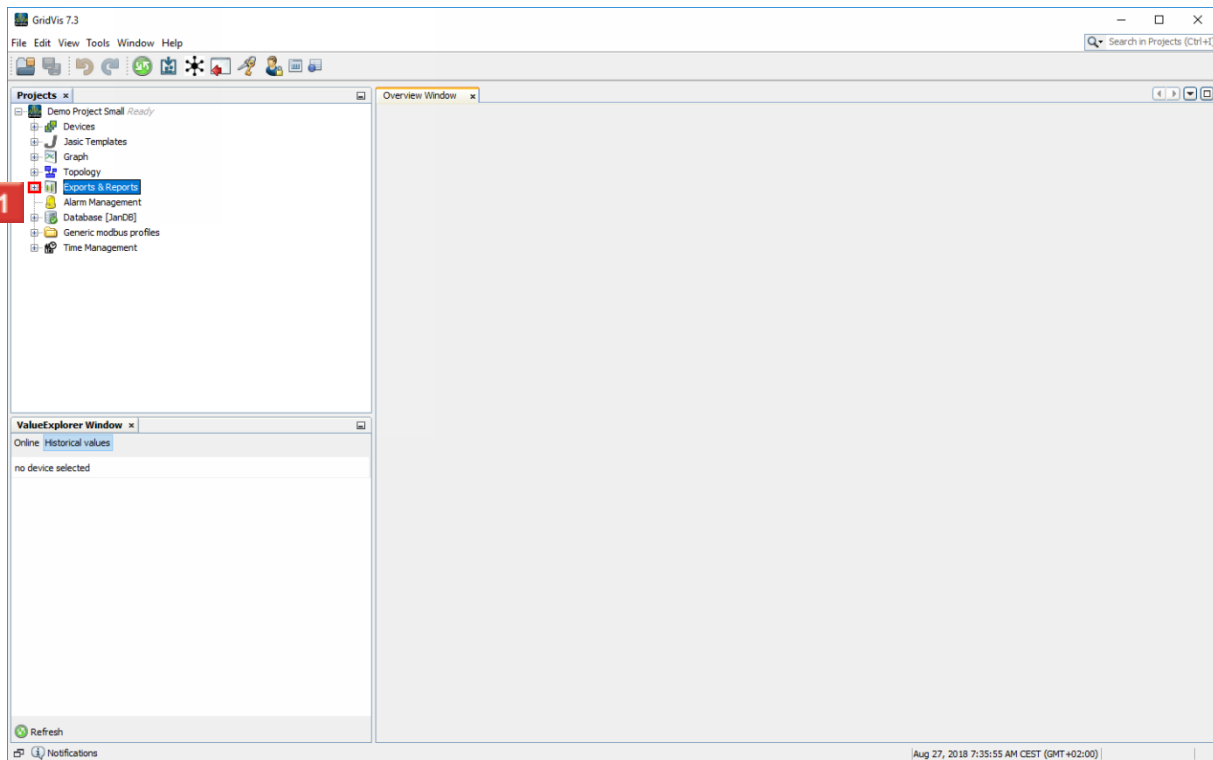
**1** Click the **Finish** button.



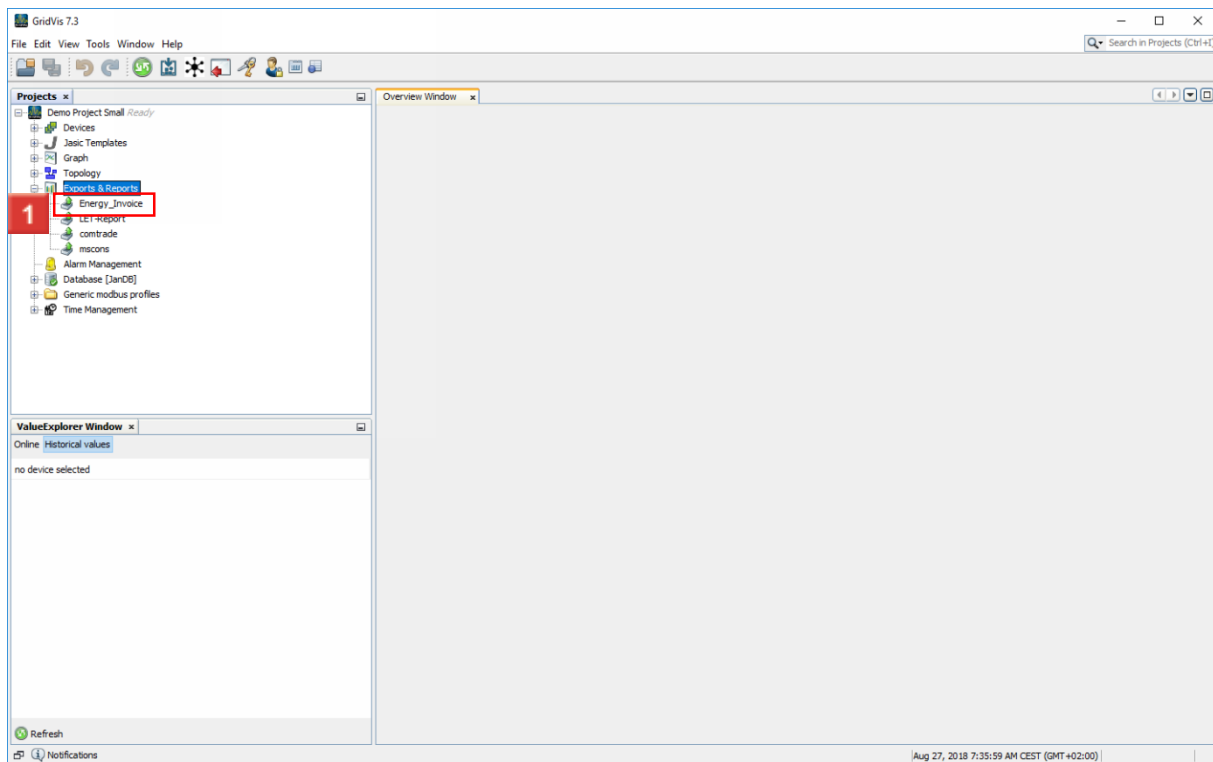
**1** In this step, you enter the name under which the export is to be saved in GridVis.

Click the **OK** button.

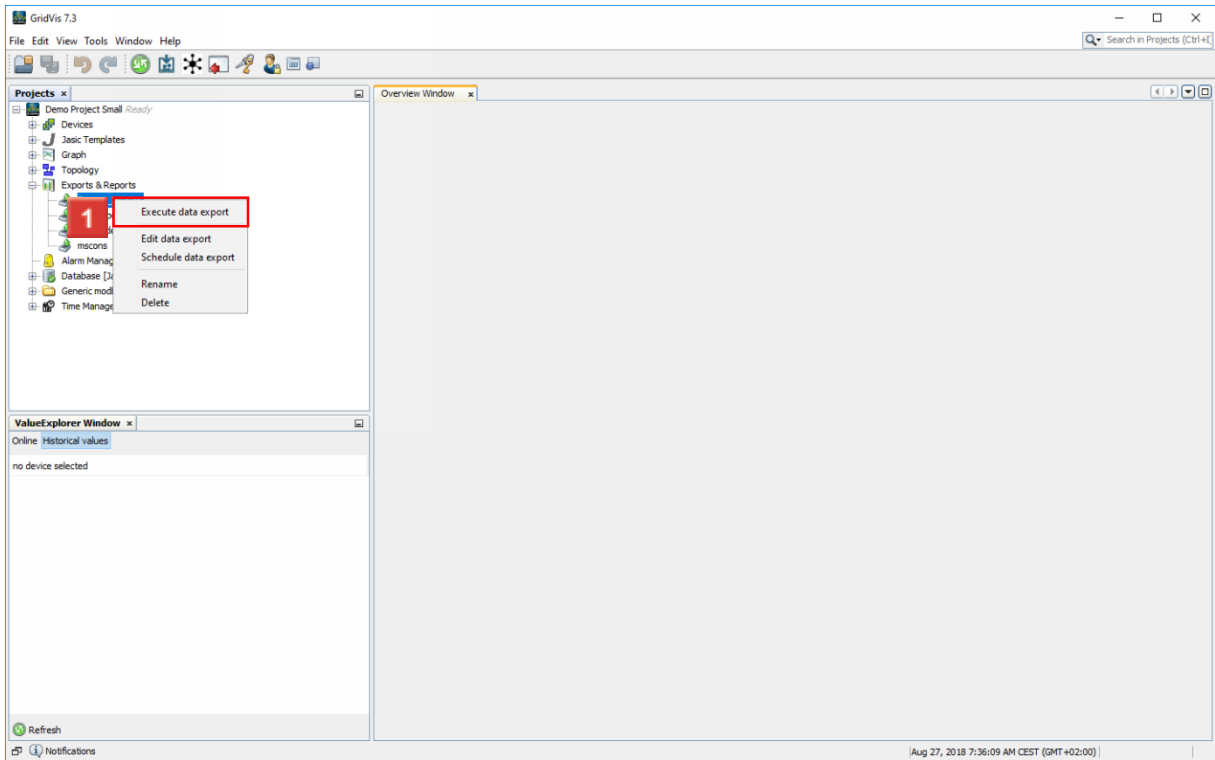
## 5 Execute Energy Invoice Professional.



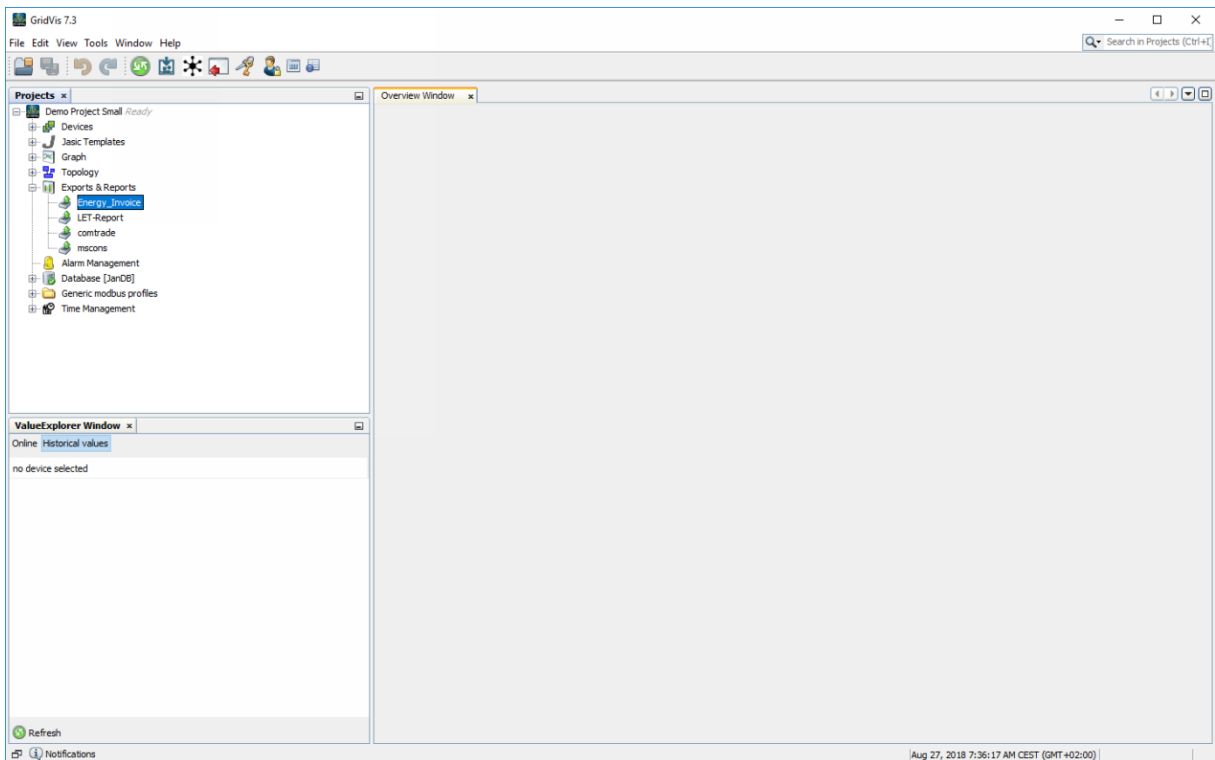
**1** Open the **Exports & Reports** tree item



**1** Right-click the desired export.



**1** Click the **Execute data export** list item.



Please enter your text here.

Increased reactive energy

The increased reactive energy is calculated from the active energy and the defined active power factor.

Storage options



If you have subsequently edited an energy invoice created in Excel, select the "Modify existing file" option to retain these changes.

#### Threshold values

You can configure threshold values, which are marked in the prepared invoice when exceeded.