

Renewable Energy Area Collaboration Tool (REACT) – Manual

Project No. 2S01-067

Introduction

The Renewable Energy Area Collaboration Tool (REACT) is a user-friendly tool that has been developed within the framework of the Interreg 2 Seas BISEPS project. The aim of this tool is to determine optimal low carbon technology solutions for business clusters, exploiting potential energy synergies. The tool has the ambition to (partly) replace expensive and time-consuming energy audits at business cluster level, making energy investment decisions more straightforward and therefore more likely.



The main target group for the tool are business cluster managers aiming to realise money savings and reduce CO₂ emissions within their business cluster(s). General (energy) data from the cluster and the individual companies serve as input for the tool. To keep the tool easily accessible and user-friendly, the required data inputs are kept to a minimum.

This manual will help you to use the tool and get the best results out of it, with practical step-by-step explanations and links to short video tutorials. It will help you to interpret the results and create optimal simulations.

The tool can be reached via <https://react.biseps.eu>

REACT is an output of the BISEPS-project, a cross-border cooperation project between Belgium, France, the Netherlands and the United Kingdom, within the Interreg 2-Seas Program. More information on www.biseps.eu



The BISEPS-project

Heat and electricity are essential to drive industrial processes and are universal in offices, logistics, shops; everywhere people work. For most businesses, energy is a matter of course, something not to worry about. It might be an important cost item, some businesses require high standards of energy security, others sustainably produced energy with low or zero carbon emissions.

Clusters of businesses, such as business parks, are nucleuses in the energy system. Their use of energy is intensive, the type of energy used is very diverse (low vs. high-temperature heat, kinetic energy, reactive energy, etc.), many types of energy conversions occur and result in substantial waste heat.

Business parks have the potential to become the hotspots in the energy transition. Up to recently they have relied largely on fossil electricity and gas, in future they will be fed by local, renewable solar energy installed on the vast roofs of enterprises, wind energy from shared wind turbines on the business park and district (grid) heating networks. The future energy system in a carbon neutral world will have energy storage using hydrogen and batteries, in combination with a demand/supply response via smart grids and waste heat recovery via intelligent and adaptive district heating systems. The energy transition is an energy infrastructure transition, and business parks will be dedicated energy hubs.

SMEs often lag behind in adopting low-carbon solutions and as they are the majority on business parks, the potential of business parks to become hotspots remains unrealised. An accumulation of barriers is responsible: a lack of knowledge about low-carbon energy solutions, a low sense of urgency, little intention or capacity to invest time or capital, roofs unsuitable for solar power, too complex (energy) regulations, and a lack of effective policies towards business parks...

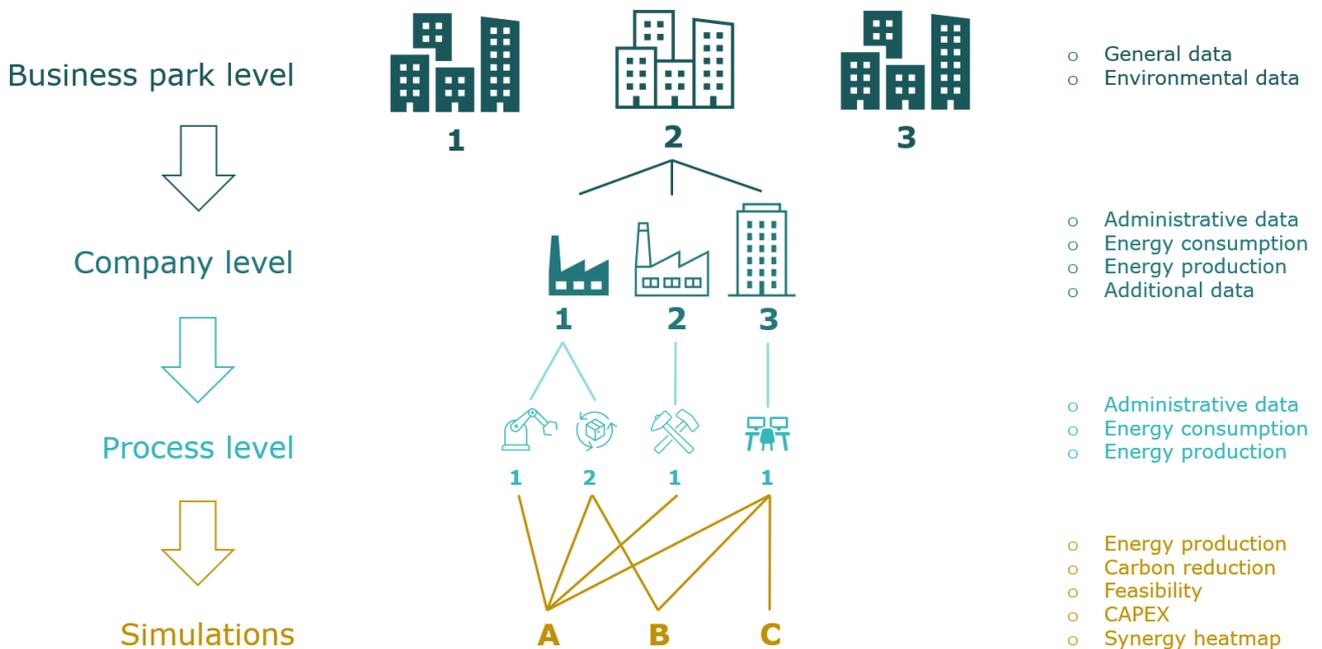
In this context, 8 organisations in Belgium, France, Netherlands and UK tested approaches to activate SMEs in the energy transition via living labs. The concept of "unburdening" was applied: a business park manager, a business support organisation, a BID-manager, a cooperation of businesses or a similar facilitator on a business cluster level supported SMEs in finding sustainable energy solutions. Businesses were supported to work together to achieve economies of scale and other mutual benefits.

Note

REACT is a web based application. You will have the best experience using REACT in the latest version of the Google Chrome browser with version xx of Windows.

REACT allows to create multiple simulations to discover the potential for renewable energy solutions on a business park. REACT needs data to be able to create these simulations. The scheme below shows the architecture of REACT on 4 levels:

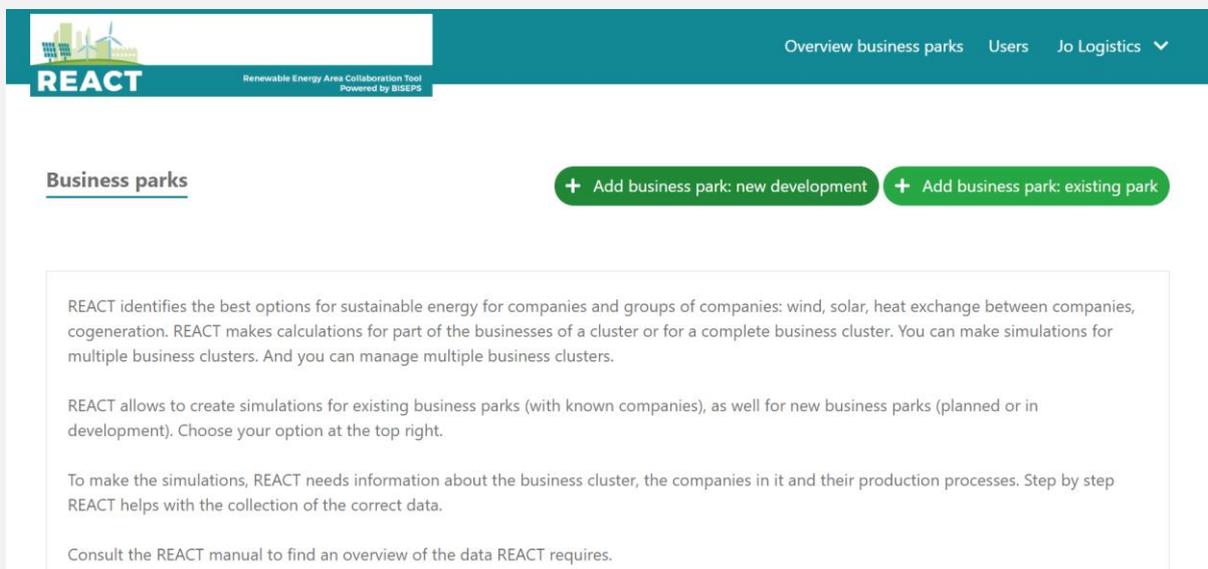
- **Business park level.** REACT allows you to create multiple business parks.
- **Company level.** Every business park contains a number of businesses. Every business needs to be created separately in REACT.
- **Process level.** A business contains at least one process. In case there are multiple substantial energy consuming processes in one company, REACT allows to define these (e.g. production, logistics, offices).
- **Simulations.** REACT can generate multiple simulations for one business park. Make multiple selections of processes and businesses.



This manual will take you through these 4 levels (chapter 3-7). In Chapter 1-2 you will learn how to create an account and manage different users.

REACT for greenfields

This manual will focus on the use of the tool for existing parks, explaining how to create and modify business parks, companies, processes and how to generate and understand a simulation. However, REACT can also be used for newly developed business parks ("greenfields"). Data input for these new developments is very similar to the input for existing parks. The tool for "greenfields" is accessible through the button "Add business park: new development" on the business parks overview screen.



The screenshot displays the REACT web application interface. At the top, there is a teal header bar containing the REACT logo on the left, which includes the text "REACT" and "Renewable Energy Area Collaboration Tool Powered by BSEPS". On the right side of the header, there are navigation links: "Overview business parks", "Users", and "Jo Logistics" with a dropdown arrow. Below the header, the main content area has a white background. On the left, the text "Business parks" is underlined. To the right of this text are two green buttons with white text and plus signs: "+ Add business park: new development" and "+ Add business park: existing park". Below these buttons is a light gray box containing three paragraphs of text:

REACT identifies the best options for sustainable energy for companies and groups of companies: wind, solar, heat exchange between companies, cogeneration. REACT makes calculations for part of the businesses of a cluster or for a complete business cluster. You can make simulations for multiple business clusters. And you can manage multiple business clusters.

REACT allows to create simulations for existing business parks (with known companies), as well for new business parks (planned or in development). Choose your option at the top right.

To make the simulations, REACT needs information about the business cluster, the companies in it and their production processes. Step by step REACT helps with the collection of the correct data.

Consult the REACT manual to find an overview of the data REACT requires.

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1 Create an account and login

1.1 Create an account

Access to the tool is secured with a user login, so that you can safely input and store the data about your business park(s) and/or company(-ies). Before you can use the tool, you need to create a user account. You will need your email address to do this. Once you have created an account, you can log in to the tool using your email address and password.

Visit <https://react.biseps.eu>

The screenshot shows the REACT website homepage. At the top, there is a green header with the REACT logo on the left and the text "Renewable Energy Area Collaboration Tool Powered by BISEPS" on the right. Below the header, there are three columns representing different languages: ENGLISH, NEDERLANDS, and FRANÇAIS. Each column contains a welcome message, a brief description of the tool, and a "START" button. Below these columns, there are three buttons: "Open the REACT manual", "Ontdek de REACT handleiding", and "Consultez le tutoriel REACT". At the bottom, there is a footer with the text "The Renewable Energy Area Collaboration Tool has been developed within the framework of the Interreg 2 Seas BISEPS project: www.biseps.eu" and several logos of partner organizations, including isenergy, Gemeente Breda, LER DAL, CD2, and POM.

Click the "START" button to launch the tool and open the login screen. Click the other buttons to display the REACT tutorial or visit the BISEPS-website (www.biseps.eu) and learn more about this project.



Renewable Energy Area Collaboration Tool
Powered by BISEPS

Login

E-mail *

Password *

[Forgotten your password?](#)

Don't have an account yet? [Create an account](#)

Login

Click "Create an account" next to the login button to start creating your account.



Renewable Energy Area Collaboration Tool
Powered by BISEPS

Register

Naam *

E-mail *

Do you already have an account? [Login](#)

Register

Fill in your name and email address, then click the "Register" button to create your account. You will receive an email to confirm your account has been created? Check the spam folder of your mailbox if you didn't receive an email.

1.2 Log in to the tool

Once you have created a user account (see [Create an account](#)), you can log in to the tool with the chosen email address and password. Visit <https://react.biseps.eu>

The screenshot shows the REACT tool landing page. The header includes the REACT logo and the text "Renewable Energy Area Collaboration Tool Powered by BISEPS". The main content area is divided into three language sections: ENGLISH, NEDERLANDS, and FRANÇAIS. Each section contains a welcome message and a "START" button. Below the language sections, there are three buttons: "Open the REACT manual", "Ontdek de REACT handleiding", and "Consultez le tutoriel REACT". At the bottom, there is a footer with logos of partner organizations and the text "The Renewable Energy Area Collaboration Tool has been developed within the framework of the Interreg 2 Seas BISEPS project: www.biseps.eu".

Click the "START" button to launch the tool and open the login screen.

The screenshot shows the REACT tool login screen. The header includes the REACT logo and the text "Renewable Energy Area Collaboration Tool Powered by BISEPS". The main content area is titled "Login" and contains a form with two input fields: "E-mail *" and "Password *". Below the password field, there is a link "Forgotten your password?". At the bottom, there is a link "Don't have an account yet? Create an account" and a "Login" button.

Fill in the email address and password that you registered when creating your account, then click the "Login" button.

2 Manage users

2.1 Manage users

As a business park manager, you might need an overview of the different companies in your business park. However, these data at company level will often be filled out in the tool by different users, each user only inputting the data for his own company.

In order to make this possible, different users can be added to a same account, with specific access to their respective company or companies. Each individual user will only have access to the own company data, while the business park manager will have access to the data for all registered companies in the business park.

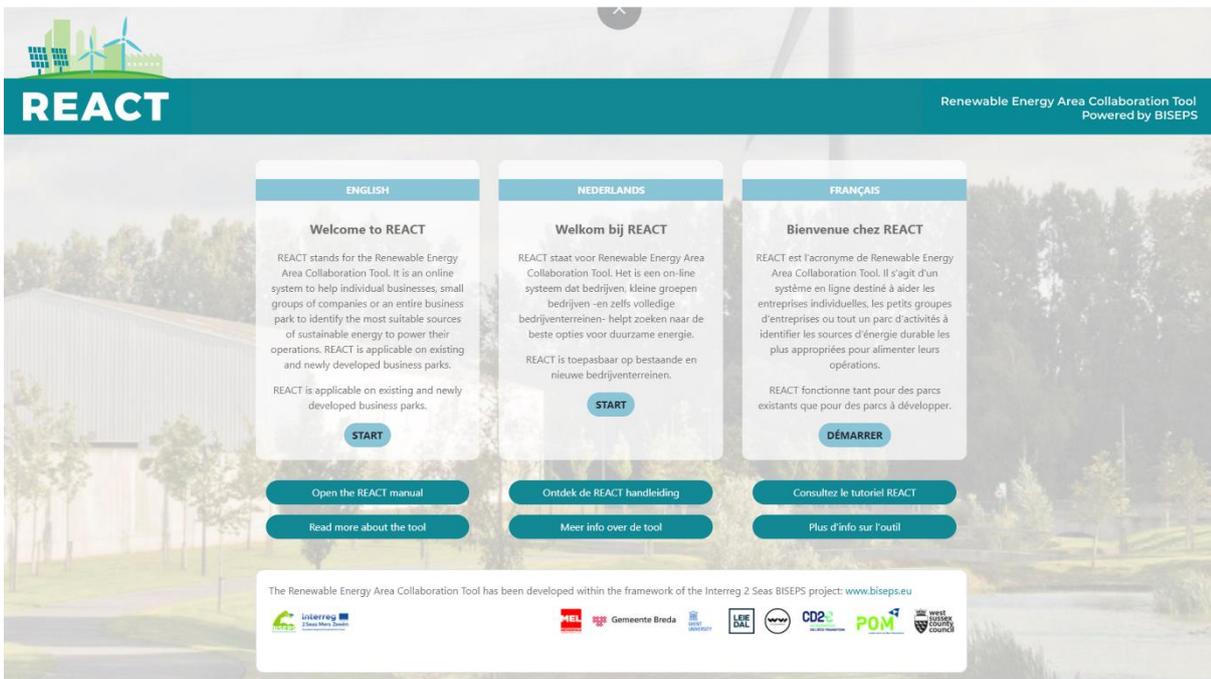
2.2 Add user

In order to give access to other users in your business park, you can add users to your account.

Launch the REACT tool and log in to your account first (see [Create an account](#)

[Access to](#) the tool is secured with a user login, so that you can safely input and store the data about your business park(s) and/or company(-ies). Before you can use the tool, you need to create a user account. You will need your email address to do this. Once you have created an account, you can log in to the tool using your email address and password.

Visit <https://react.biseps.eu>



Click the "START" button to launch the tool and open the login screen. Click the other buttons to display the REACT tutorial or visit the BISEPS-website (www.biseps.eu) and learn more about this project.



Renewable Energy Area Collaboration Tool
Powered by BISEPS

Login

E-mail *

Password *

[Forgotten your password?](#)

Don't have an account yet? [Create an account](#)

Login

Click "Create an account" next to the login button to start creating your account.



Renewable Energy Area Collaboration Tool
Powered by BISEPS

Register

Naam *

E-mail *

Do you already have an account? [Login](#)

Register

Fill in your name and email address, then click the "Register" button to create your account. You will receive an email to confirm your account has been created? Check the spam folder of your mailbox if you didn't receive an email.

Log in to the tool)

In the overview (home) screen, click the "Users" tab in the upper right corner (next to your account name) to open the user management module.



Business parks

+ Add business park: new development

+ Add business park: existing park

REACT identifies the best options for sustainable energy for companies and groups of companies: wind, solar, heat exchange between companies, cogeneration. REACT makes calculations for part of the businesses of a cluster or for a complete business cluster. You can make simulations for multiple business clusters. And you can manage multiple business clusters.

REACT allows to create simulations for existing business parks (with known companies), as well for new business parks (planned or in development). Choose your option at the top right.

To make the simulations, REACT needs information about the business cluster, the companies in it and their production processes. Step by step REACT helps with the collection of the correct data.

Consult the REACT manual to find an overview of the data REACT requires.

Users

[+ Add user](#)

Business park managers		Business owners	
E-mail	Username	Roles	
bisepts.react@gmail.com	Jo Logistics	Business Park Manager	

On the "Users" screen, click the green "+ Add user" button in the upper right corner.

Add user

Username *

E-mail *

User's acces level *

Link business clusters * Link companies *
 Business park 1 Company 1

[Add](#)

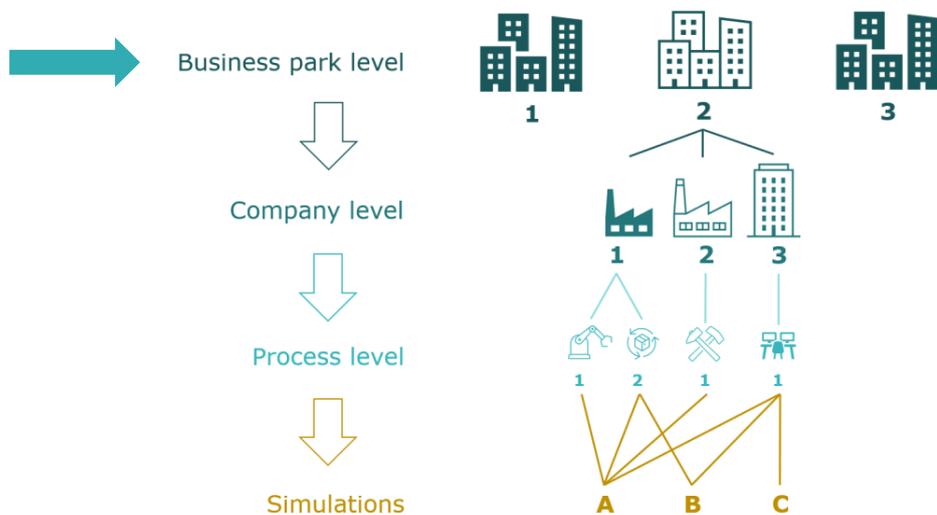
Fill in the Username and email address for the user to be created, then select the "User's access level" from the scroll down list :

- Business Park Manager: this type of user will be able to see all data for the business park and can add company owners
- Company owner: this type of user will be able to fill in and consult data only for the selected company/companies

In the tick box lists at the bottom, select the business park(s) and company(-ies) that you want to assign to the user. The user will only have access to the assigned business park(s) and/or company(-ies). When you select the business park, the user will automatically see all the businesses of that business park too.

The newly created user will get an email with the request to create a password, and will be able to login to REACT.

3 Create / edit a business park



Data can be inputted for business parks, individual companies and processes within a company. In order to do this, the respective entities need to be created first.

Tooltips

Some questions ask for very specific data or need the data to be inputted in a specific format. For those questions, practical tooltips have been added to explain eg. what data is required, what unit is to be used or where data can be found. The tooltips can be displayed by clicking the **i** icon that is shown next to a question.

Localisation of the business park * **i**

Locate the business park and draw the boundary on the map

Draw the business park outline on the map. x

1. Search for the business park on the map and zoom in.
2. Select the 'draw a shape' icon (on the right of the small hand) to draw the outline.
3. Click on a corner of the business park to draw the first section of your outline. Draw as many continuous lines as needed around the perimeter. The boundary line will close itself.
4. Click on the small hand if you need to alter your outline. Click on the orange area within the boundary to drag it into a new position. Right click on the mouse to delete the area and start again.

Per business cluster you can draw one outline. In case the business park has different sites (each substantial), then create an extra business park (e.g. "Park site 1", "Park site 2, etc.)

3.1 Create a business park

REACT Renewable Energy Area Collaboration Tool Powered by BISEPS

Overview business parks Users Jo Citizen ▾

Business parks

+ Add business park: new development + Add business park: existing park

REACT identifies the best options for sustainable energy for companies and groups of companies: wind, solar, heat exchange between companies, cogeneration. REACT makes calculations for part of the businesses of a cluster or for a complete business cluster. You can make simulations for multiple business clusters. And you can manage multiple business clusters.

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Consult the REACT manual to find an overview of the data REACT requires.

Create your business clusters, add companies and processes, and let REACT do the rest of the work.

Manage companies and processes Edit business cluster

BlueBridge

On the home/overview screen, click the “+ Add business park: existing park” button in the upper right corner.

General

Name of the business park *

The name of the business park or cluster

Business park 1

Localisation of the business park * ⓘ

Locate the business park and draw the boundary on the map



Back

Next

You can now add all relevant data for the business park to be created, starting with some general data such as the name and location. Fields marked with * are mandatory. Other fields can left blank if no data is available.

Environmental data

REACT uses a range of standard environmental data to provide an estimate of the potential energy production and carbon reduction for the business park. This data can be specified here to provide a more accurate simulation.

Average wind speed (m/s) * ⓘ

What is the average wind speed at 50m height?

Solar specific yield ⓘ

What is the average yearly specific yield of solar panels at the site?

Average CO2 emissions (t CO₂/MWh) ⓘ

What is the average CO₂ emission per MWh of electricity?

Natural gas caloric value (MWh/m³)

What is the caloric value of 1 m³ of natural gas?

Back

Next

Click "Next" to continue to the next screen. Apart from the administrative data, also technological and environmental data about the business park is required. Use the "Next" button to navigate through the different steps until the data input is finished. You will then be taken to the overview screen and see the newly created business park listed.

Pre-fill of values

Some inputs are optional, so these fields can be left blank when data is not known. The required information will then be derived from statistical datasets to estimate the energy consumption and profile of the company. E.g. the specific energy use of different industrial applications can be estimated through life cycle analysis statistics; likewise the energy use per m² of office space can be estimated based on historical datasets. Additionally, the yield of a solar power installation on the roof will be calculated for the given geographic location. In general, it is best to fill in as much exact data as possible, in order to reduce the estimation variance.

The questions on business park level

REACT uses a range of standard environmental data to provide an estimate of the potential energy production and carbon reduction for the business park. This data can be specified here to provide a more accurate simulation.

Business park name	The name of the business park or cluster
Localisation of the business park	Locate the business park and draw the boundary on the map
Average wind speed (m/s)	What is the average wind speed at a height of 50m?
Solar specific yield (kWh/kWp)	What is the average yearly specific yield of solar panels at the site?
Average CO2 emissions (tCO2/MWh)	What is the average CO2-emissions factor at the site?
Natural gas caloric value (MWh/m ³)	What is the average natural gas calorific value at the site?

3.2 Edit a business park

If a business park has been created, its data can still be modified or completed afterwards.

REACT Renewable Energy Area Collaboration Tool
Powered by BISEPS

Overview business parks Users Jo Citizen ▾

Business parks

+ Add business park: new development + Add business park: existing park

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REACT allows to create simulations for existing business parks (with known companies), as well for new business parks (planned or in development). Choose your option at the top right.

To make the simulations, REACT needs information about the business cluster, the companies in it and their production processes. Step by step REACT helps with the collection of the correct data.

Consult the REACT manual to find an overview of the data REACT requires.

Create your business clusters, add companies and processes, and let REACT do the rest of the work.

Manage companies and processes	Edit business cluster
BlueBridge	

On the “Business parks” overview screen, click the pencil icon next to the name of the business park that you want to edit.

General

Name of the business park *

The name of the business park or cluster

Business park 1

Localisation of the business park * ⓘ

Locate the business park and draw the boundary on the map

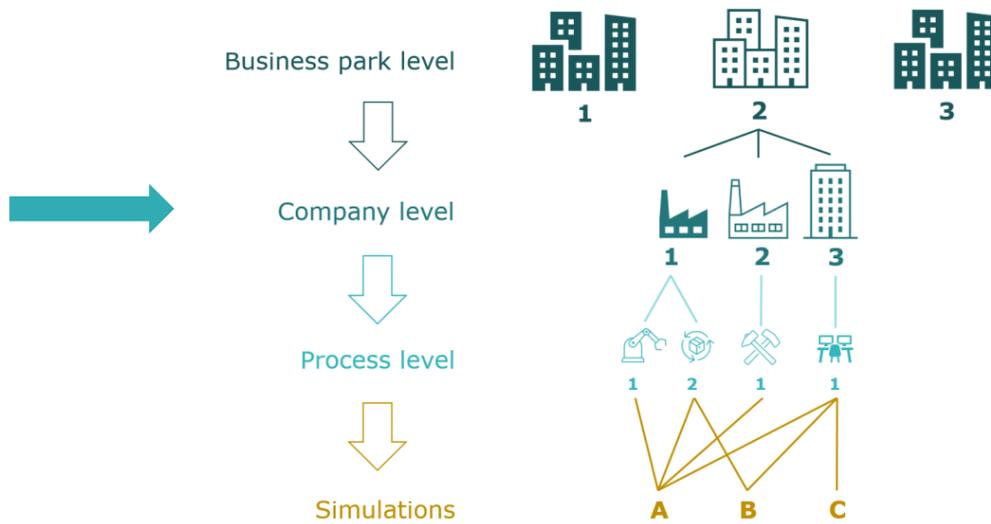


Back

Next

All previously inputted data can now be changed/completed. Click the "Next" button at the bottom of the screen to save your changes and continue to the next screen, until you reach the end of the data input forms.

4 Create / edit a company



4.1 Create a company

For each business park, several companies can be created.

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To make the simulations, REACT needs information about the business cluster, the companies in it and their production processes. Step by step REACT helps with the collection of the correct data.

Consult the REACT manual to find an overview of the data REACT requires.

Create your business clusters, add companies and processes, and let REACT do the rest of the work.

Manage companies and processes	Edit business cluster
BlueBridge	
Technologiepark Zwijnaarde	

On the overview screen, select the business park you want to create a company in, by clicking on the name of the business park.



Renewable Energy Area Collaboration Tool
Powered by BISEPS

Overview business parks Users Jo Citizen ▾

Business park

👁 Simulations **+ Add company**

To create a simulation, you need to input information about the companies within the business cluster as well as the processes they perform. This questionnaire provides you with an overview of the data REACT needs.

Input the information for each of the companies within your business cluster here. Remember to add at least one process for each company. REACT does the rest of the work.

[Manage company processes](#)

[Edit companies](#)

Click the "+ Add company" button in the upper right corner of the screen to add a company in the business park.

The questions on company level

For each company, a set of questions need to be answered. The table below shows all questions. There are 3 categories:

1. **Energy consumption data.** REACT needs to know how much energy the company uses based on actual consumption in recent years. Enter your data as accurately as possible in this section. If the company anticipates significant changes to its business (expansion, change of business process etc.), an estimate of future energy consumption should be provided.
2. **Energy production data.** REACT needs to know how much energy the company produces based on actual production figures in recent years. Enter your data as accurately as possible in this section. If the company anticipates significant changes to its business (expansion, change of business process etc.), an estimate of future production should be provided.
3. **Additional information.** Other information about the renewable energy potential for the company site and business park.

Company name	The name of the company or business.	
Company address	The main address of the company or business on the business park.	
Localisation of the company	Locate the company and draw its outline on the map. You can map multiple locations here.	
Built area (m ²)	REACT calculates the surface (m ²) based on the map. You can change this here if you need to.	
Electrical energy: total yearly consumption (MWh)	The total amount of electricity consumed each year measured in MWh.	
Type of connection to the electrical grid	Is the company connected to the high or medium voltage grid (requiring on site transformers), or directly connected to the low voltage grid?	<ul style="list-style-type: none"> • High voltage (transport grid) • Medium voltage (distribution grid) • Low voltage (distribution grid) • Unknown
Natural gas: total yearly consumption	The total amount of natural gas consumed each year. This can be input in m ³ or ft ³ and REACT will recalculate to MWh.	
Natural gas: unit of consumption		<ul style="list-style-type: none"> • MWh • m³ • ft³
Type of connection to the natural gas grid	Is the company connected to the high or medium pressure grid (requiring on site expanders) or directly connected to the low pressure grid?	<ul style="list-style-type: none"> • High pressure (transport grid) • Medium pressure (distribution grid) • Low pressure (distribution grid) • Unknown
Hot water : total yearly consumption	The total amount of hot water consumed each year. Only to be filled in if the business is connected to a low-temperature heat exchange grid. Needs to be the hot water consumption after the heat exchanger, if present.	
Hot water: unit of consumption		<ul style="list-style-type: none"> • MWh • m³ • ft³ • l • gal

Type of hot water connection		<ul style="list-style-type: none"> No connection High temperature (>80°C) Low temperature (<60°C) Unknown
Steam: total yearly consumption	The total amount of steam consumed each year.	
Steam: unit of consumption		<ul style="list-style-type: none"> MWh Kg ton
On site energy production	Is electrical energy produced on site?	<ul style="list-style-type: none"> No Solar PV Solar thermal Small wind turbines Medium wind turbines Large wind turbines Biomass Other
Amount of production (MWh)	If so, enter the total amount of electricity produced each year measured in MWh.	
Emergency power	Is there an emergency power supply on site?	<ul style="list-style-type: none"> No Diesel genset Gas turbine UPS (battery) Other
Are vehicles for on-site transportation present?	If so, which fuel do they run on?	<ul style="list-style-type: none"> No Diesel or petrol battery powered hydrogen compressed air Other
Car park	Is there an outdoor car park? If so, for how many vehicles?	
Electric cars	Is your company interested in using electric vehicles?	<ul style="list-style-type: none"> No or not now Yes Do not know

Administrative

Company name *

The name of the company or business

Company 1

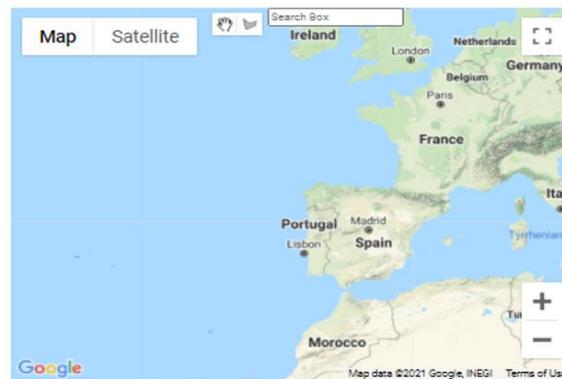
Company address *

The main address of the company or business on the business park

Business street 1, Works, UK

Localisation of the company *

Localise the company and draw its outline on the map. You can map multiple locations here.



Built area (m²)

REACT calculates the surface (m²) based on the map. You can change this here if you need to.

Back

Next

Input all relevant data for the company to be created, starting with some administrative data. Fields marked with * are mandatory. Other fields can be left blank if no data is available.

Apart from the administrative data, data about energy consumption, energy production and some additional data about the company are required. Use the "Next" button to navigate through the screens until all data is filled out.

Click "Next" to proceed to the next screen.



Energy consumption

REACT needs to know how much energy the company uses based on actual consumption in recent years. Enter your data as accurately as possible in this section. If the company anticipates significant changes to its business (expansion, change of business process etc.), an estimate of future energy consumption should be provided.

Electrical energy: total yearly consumption *

The total amount of electricity consumed each year, required in MWh

Type of connection to the electrical grid

- High voltage (transport grid)
- Medium voltage (distribution grid)
- Low voltage (distribution grid)
- Unknown

Natural gas: total yearly consumption

The total amount of natural gas consumed each year. This can be input in m³ or ft³ and REACT will recalculate to MWh.

Natural gas: unit of consumption

- MWh
- m³
- feet³

Hot water: total yearly consumption

The total amount of hot water consumed each year. Only to be filled in if the business is connected to a low-temperature heat exchange grid. Needs to be the hot water consumption after the heat exchanger, if present.

0

Hot water: unit of consumption

- MWh
- m³
- feet³
- l
- gal

Type of hot water connection

- No connection
- High temperature (>80°C)
- Low temperature (<60°C)
- Unknown

Steam: total yearly consumption

The total amount of steam consumed each year.

0

Steam: unit of consumption

- MWh
- kg
- ton

Back

Next

Business park

Simulations

+ Add company

To create a simulation, you need to input information about the companies within the business cluster as well as the processes they perform. This questionnaire provides you with an overview of the data REACT needs.

Input the information for each of the companies within your business cluster here. Remember to add at least one process for each company. REACT does the rest of the work.

Manage company processes

Edit companies



Company 1



The company will now appear in the "Companies" overview screen of the business park.

4.2 Edit a company

After a company has been created, its data can still be modified or completed afterwards.

Business park

Simulations

+ Add company

To create a simulation, you need to input information about the companies within the business cluster as well as the processes they perform. This questionnaire provides you with an overview of the data REACT needs.

Input the information for each of the companies within your business cluster here. Remember to add at least one process for each company. REACT does the rest of the work.

Manage company processes

Edit companies



Company 1



On the "Companies" overview screen, click the pencil icon next to the company that you want to edit.



Renewable Energy Area Collaboration Tool
Powered by BISEPS

Overview business parks Users Jo Citizen ▾

Administrative

Company name *

The name of the company or business

Company 1

Company address *

The main address of the company or business on the business park

Business street 1, Works, UK

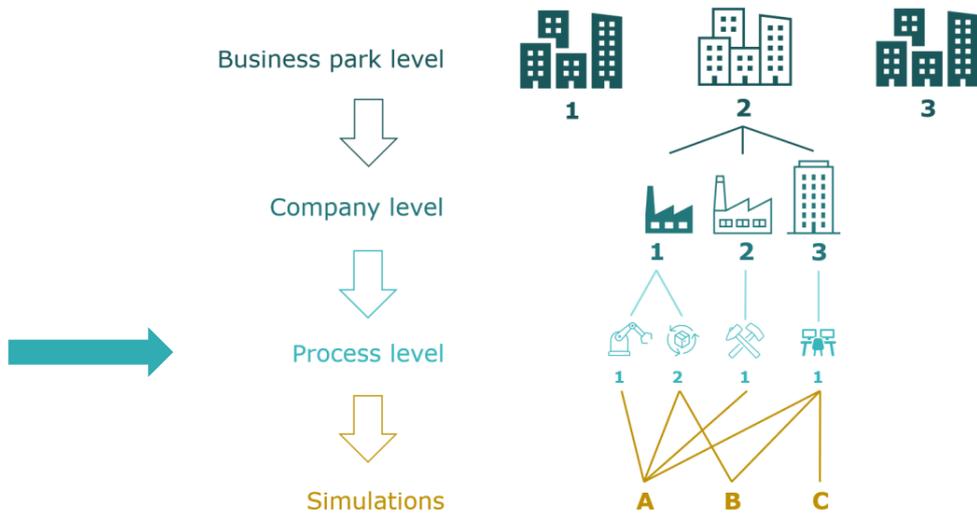
Localisation of the company *

Localise the company and draw its outline on the map. You can map multiple locations here.



The inputted data (starting with Administrative data) can now be changed/completed. Click the "Next" button at the bottom of the screen to save your changes and continue to the next screen. Once you've finished the last screen, click "Next" again to save the changes and close the editing mode.

5 Create / edit a process



5.1 Create a process

Within a company, different processes or activities are possible, such as office activities, production, logistics, cooled logistics... In order to make simulations as accurate as possible, data can be filled out for various processes.



Business parks

+ Add business park: new development

+ Add business park: existing park

REACT identifies the best options for sustainable energy for companies and groups of companies: wind, solar, heat exchange between companies, cogeneration. REACT makes calculations for part of the businesses of a cluster or for a complete business cluster. You can make simulations for multiple business clusters. And you can manage multiple business clusters.

REACT allows to create simulations for existing business parks (with known companies), as well for new business parks (planned or in development). Choose your option at the top right.

To make the simulations, REACT needs information about the business cluster, the companies in it and their production processes. Step by step REACT helps with the collection of the correct data.

Consult the REACT manual to find an overview of the data REACT requires.

Create your business clusters, add companies and processes, and let REACT do the rest of the work.

Manage companies and processes

Edit business cluster

 BlueBridge 
 Technologiemarkt Zwijnaarde 

Business park

Simulations

+ Add company

To create a simulation, you need to input information about the companies within the business cluster as well as the processes they perform. This questionnaire provides you with an overview of the data REACT needs.

Input the information for each of the companies within your business cluster here. Remember to add at least one process for each company. REACT does the rest of the work.

Manage company processes

Edit companies



Company 1



Select the business park and then the company you want to add a process for, by clicking on the business park name and then on the company name in the list of companies. The "Processes" screen will show.



Overview business parks

Users

Jo Citizen



Processes

+ Add process

Companies might manage one or multiple processes each with its own energy profile. REACT maps these based upon a few simple questions.

- Add 1 process, in case of a smaller company or a company with a homogeneous energy profile (e.g. an office, logistics, production, ...).
- Add multiple processes in case of a company with different processes with a substantial energy consumption and very different energy profile (e.g. an office 9-5 and a 24 hour production facility).

If significant changes are anticipated to the way your company operates in the future (i.e. site expansion, new production processes, change of business), you should make an estimate of the future anticipated energy consumption.

Overview of company processes

Edit company processes

Click the "+ Add process" button to start adding a process.

The questions on process level

Per process, a set of questions need to be answered. The table below shows all questions. There are 3 categories:

General process data: When do the company processes take place? Select the profile that fits best with the process. REACT couples the right energy profile to the process.

Energy consumption: You have already completed the energy consumption data for the company. Now input the energy consumption data for this process.

Potential heat recovery: REACT checks whether there is substantial waste heat present that can be used by another company or in another production process.

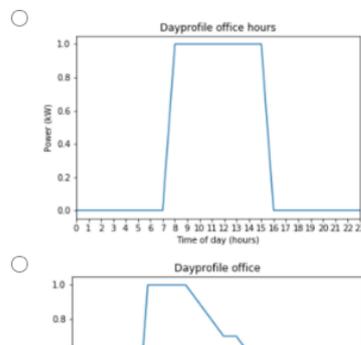
Process name	Select the process from the list or select 'other' to add your own	<ul style="list-style-type: none"> Office/small business Industrial Tertiary / residential Logistics Other
Daily operating pattern	When do the daily company processes take place? Select the profile that fits best with the process. REACT couples the right energy profile to the process.	<ul style="list-style-type: none"> Dayprofile office hours (7-16h) Dayprofile office (5-20h) Dayprofile industry (5-22h) Dayprofile 2 shifts (4-21h) Dayprofile fully continuous (24/24) SLP small business/office SLP large business / industry Dayprofile residence SLP residential
Weekly operating pattern	Which days of the week do your processes take place? Select the profile that fits best with the process. REACT couples the right energy profile to the process.	<ul style="list-style-type: none"> Continuous (7/7) SLP small business/office SLP large business / industry SLP residential
Process area (m ²)	How much surface area does this process take up in the company, in m ² ?	
Electrical energy (MWh)	The total amount of electricity consumed each year by this process, in MWh.	
Natural gas (MWh)	The total amount of natural gas consumed each year by this process, in MWh.	
Hot water (m ³)	The total amount of hot water consumed each year by this process, in m ³ .	
Type of hot water	Type of hot water required?	<ul style="list-style-type: none"> High temperature (>60°C) Low temperature (<60°C) Unknown
Hot water preparation	How is this hot water prepared?	<ul style="list-style-type: none"> Gas boiler Electric water heater CHP Heat pump Other
Steam (tons)	The total amount of steam consumed each year by this process, in tons.	

Click "Next" to proceed to the next screen. You will now be asked to input data about energy consumption and energy production from the process. Click "Next" to navigate through the screens.

Administrative

Process name *

Daily operating pattern *



First fill in some administrative data about the process. Fields marked with * are mandatory fields.

Energy consumption

REACT needs to know how much energy the company uses based on actual consumption in recent years. Enter your data as accurately as possible in this section. If the company anticipates significant changes to its business (expansion, change of business process etc.), an estimate of future energy consumption should be provided.

Electrical energy: total consumption (MWh)

The total amount of electricity consumed each year by this process, in MWh.

Natural gas: total consumption (MWh)

The total amount of natural gas consumed each year by this process, in MWh.

Hot water: total consumption (m³)

The total amount of hot water consumed each year by this process, in m³.

Energy production

REACT needs to know how much energy the company produces based on actual production figures in recent years. Enter your data as accurately as possible in this section. If the company anticipates significant changes to its business (expansion, change of business process etc.), an estimate of future production should be provided.

Process cooling

- No
- Electrical cooling (refrigeration)
- Liquid cooling
- Air cooling
- Other

Process waste heat (MWh)

If the process generates waste heat, how much (in MWh per year)?

Back

Next

Back

Next

On the last screen, click "Next" again to save the data input and continue to the process overview screen. The process will now appear in the "Processes" overview of the company.

5.2 Edit a process

After a process has been created, its data can still be modified or completed.

Processes

+ Add process

Companies might manage one or multiple processes each with its own energy profile. REACT maps these based upon a few simple questions.

- Add 1 process, in case of a smaller company or a company with a homogeneous energy profile (e.g. an office, logistics, production, ...).
- Add multiple processes in case of a company with different processes with a substantial energy consumption and very different energy profile (e.g. an office 9-5 and a 24 hour production facility).

If significant changes are anticipated to the way your company operates in the future (i.e. site expansion, new production processes, change of business), you should make an estimate of the future anticipated energy consumption.

Overview of company processes

Edit company processes



Office/small business



On the "Processes" overview screen, click the pencil icon next to the process that you want to edit.

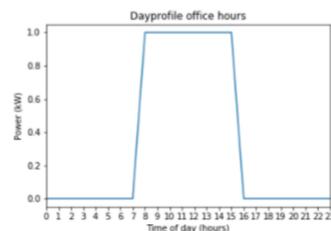


Administrative

Process name *

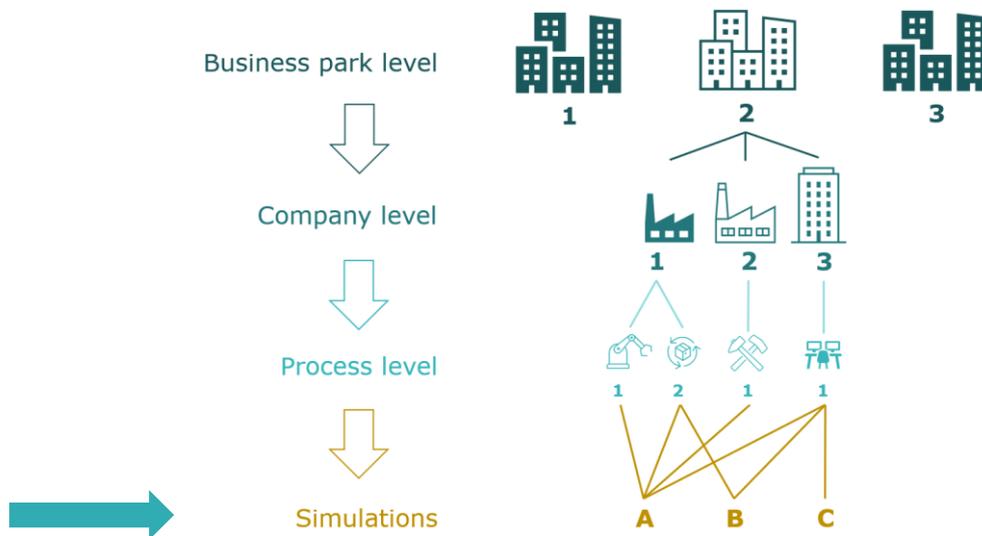
Office/small business

Daily operating pattern *



The previously inputted data (starting with the Administrative data) can now be changed/completed. Click the "Next" button to save your changes and proceed to the next screen. Once you've finished the last screen, click "Next" again to save the changes and close the editing mode.

6 Generate a simulation



Based on the data inputs, REACT is able to generate a simulation of optimal energy solutions for the companies in the business park. This optimal configuration will be the result of a combination of technical, economic, financial, legal, spatial and organisational parameters.

The REACT tool simulations can not fully replace feasibility studies, but can certainly serve as a good basis to determine useful solutions for further investigation.

6.1 Guide to a good simulation

In order to generate a useful simulation, we advise to provide as much accurate information as possible about the different companies and processes. The simulation can be tailored to your needs, by including or excluding individual companies and/or processes in/from the simulation. If accurate data for a specific company or process is missing, we advise to exclude this company/process from the simulation. For a more general simulation on business park level, try to include as many companies (with relevant data) as possible.

Some general tips & tricks:

- Use the synergy maps to filter simulation results and get a clear view on specific aspects.
- Cluster companies/processes with electricity demand & potential for solar PV.
- Cluster heat intensive businesses.
- For heat exchange / district heating: keep in mind geographic location of companies (the closer the better).
- Combine high energy & heat demand with CHP.
- Combine wind energy potential with all electricity demand.

6.2 Generate a simulation

Once all data for a business park and for the companies and processes in the business park have been inputted, a simulation of suited energy solutions can be generated.

Business parks + Add business park: new development + Add business park: existing park

REACT identifies the best options for sustainable energy for companies and groups of companies: wind, solar, heat exchange between companies, cogeneration. REACT makes calculations for part of the businesses of a cluster or for a complete business cluster. You can make simulations for multiple business clusters. And you can manage multiple business clusters.

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Create your business clusters, add companies and processes, and let REACT do the rest of the work.

Manage companies and processes Edit business cluster

BlueBridge

Technologiepark Zwijnaarde

In the "Business parks" overview, click on the name of the business park you want to run a simulation for.

Business park Simulations + Add company

To create a simulation, you need to input information about the companies within the business cluster as well as the processes they perform. This questionnaire provides you with an overview of the data REACT needs.

Input the information for each of the companies within your business cluster here. Remember to add at least one process for each company. REACT does the rest of the work.

Manage company processes Edit companies

Company 1

On the companies overview screen, click the "Simulations" button to load the "Simulations" screen

Simulations

+ Request new simulation

Create simulations that calculate the potential for renewable energy on the business park.

Create multiple simulations: for the entire business park, per company or for a selection of companies and/or processes. This can give other results and new insights. Click the "+ create new simulation button" and select companies and processes. Rename each simulation. Check the video tutorial with tips and tricks.

Below are all your simulations. They have the status "finished" (the simulation is finished and you can view it), "running" (the simulation is calculating), or "failed" (something went wrong, check out the possible causes here).

Click the "Request new simulation" button to launch your simulation.



Renewable Energy Area Collaboration Tool
Powered by BISEPS

Overview business parks Users Jo Logistics ▾

Name *

Simulation Company 2

Businesspark *

Business park 1 ▾

Processes *

Company 1: Kantoor/KMO

Company 2: Industrial

Company 2: Office/small business

Request

Fill in a name for the simulation, select the business park from the dropdown list and select the processes to be included in the simulation. Click the "Request" button to launch the simulation.

Simulations

+ Request new simulation

Create simulations that calculate the potential for renewable energy on the business park.

Create multiple simulations: for the entire business park, per company or for a selection of companies and/or processes. This can give other results and new insights. Click the "+ create new simulation button" and select companies and processes. Rename each simulation. Check the video tutorial with tips and tricks.

Below are all your simulations. They have the status "finished" (the simulation is finished and you can view it), "running" (the simulation is calculating), or "failed" (something went wrong, check out the possible causes here).



Simulation Company 2 **Finished**



A notification will pop up to confirm that the request was submitted successfully, and the status of the simulation will appear next to the name in the simulations overview. Use the refresh button of your web browser to update the status. Once the simulation is ready (this may take a few minutes), its status in the overview will change to "Finished". If the simulation did not succeed, it will appear with a red tag "Failed" in the overview.

Click on the name of your simulation (or the little "eye" icon) to display the results.

Simulation results for "Simulation Company 2"

Here are the simulation results for your group of businesses or business park. They set out the potential benefits of sustainable energy technologies such as wind, solar, district heat or combined heat and power (CHP).

You can explore these results further by running another simulation with a different combination of companies and/or processes. This will help you to identify the most suitable technology options for each area of your business park or group of companies. The video tutorial features tips and tricks to help you with this.

Companies included in the simulation ▼

The companies and processes included in this simulation are identified with a tick. Those that have not have been marked with a cross.

Company 1 ▶

Company 2 ▼

Industrial ✓

Office/small business ✓

Most suitable technologies ▼

REACT has identified wind, solar, heat network and combined heat and power (CHP) as suitable technologies for this group of businesses and/or processes. The technologies are ranked according to their feasibility, with the most feasible solution at the top.

PV ▼

Overall score ?	Co2 savings ?	Capex (capital investment) ?	Technical feasibility ?
100	32 kton	€86,860	High

Extra information ? ▼

Estimated available capacity: 86 kWp
Estimated yearly energy: 81.7 MWh
Estimated self consumption ratio: 76.8%

Wind ▼

Overall score ?	Co2 savings ?	Capex (capital investment) ?	Technical feasibility ?
81	1.59 kton	€2.4M	Medium

Extra information ? ▼

Estimated available capacity: 2.3MW (1 turbine)
Estimated yearly energy: 4.03 GWh
Estimated self consumption ratio: 66.8%

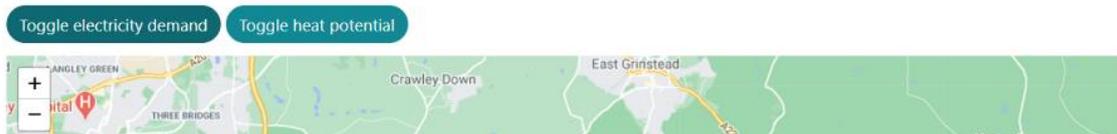
Heat grid			
Overall score	Co2 savings	Capex (capital investment)	Technical feasibility
2	1.4 kton	€1M	Low
Extra information Estimated grid length: 2 km			

Synergy maps

The map shows the current electricity and heat demand as well as the potential from solar PV and waste heat. Use one of the four buttons to filter your results and to view each aspect more clearly. The colours indicate the energy intensity of each business.

You can use this map as the starting point for new simulations. For example, if you have identified a cluster of companies with a high electricity demand you could explore linking them to companies with high potential for generating electricity through solar PV. Check our video tutorial for more tips and tricks.

Place your cursor over the map to see the detailed values.



The "Simulation results" screen will show the names of the companies in the simulation, as well as the best suited technologies, with a rating on different aspects per technology. For more information on this rating, see

Interpretation of simulation/results.

If you want to download or share the simulation, use the "Print as pdf" function of your computer to save the simulation as a pdf file.

7 Interpretation of simulation/results

7.1 Overall score

The higher the overall score (up to 100) the more suitable the technology. REACT will register a high score for technologies

- that are highly feasible from a technical perspective;
- that have a favourable investment cost, and;
- where a high percentage of energy generated on the business park will be consumed there.

7.2 CO2 savings

REACT projects annual carbon savings based on the maximum potential energy produced by the group of businesses and the relevant carbon emissions factor (tonnes CO2 per MWh).

7.3 Capex

Capex is the capital investment of the project. REACT forecasts the level of capital expenditure (CAPEX) needed to install the technologies, but not the operating costs. REACT uses average costs per kW installed. Costs are provided in EUR.

7.4 Technical feasibility

REACT estimates technical feasibility based on industry expertise.

- Solar PV (high technical feasibility): roof quality, condition and load capacity are the main barriers.
- Combined Heat and Power, (average technical feasibility) - matching the qualitative (temperature) and quantitative (volume and time) aspects of electricity and heat supply and demand can be challenging.
- Wind energy (average technical feasibility) - spatial and environmental constraints can make delivery difficult. A detailed spatial study would need to be carried out as a next step if wind energy is identified as an option.
- Heat network (low technical feasibility) - matching the supply and demand for heat energy between business and / or processes can be difficult. Delivering an integrated pipe network between heat source and heat demand can also be a limiting factor.

7.5 Extra information

For solar PV

- The estimate assumes 60% solar PV coverage of all roof surfaces within the group of businesses.
- Ground-based PV installations are not considered.
- The estimated available capacity (the rate at which a system generates energy at peak performance i.e. noon on a sunny day) is expressed in kilowatts peak (kWp).
- The estimated yearly energy is equivalent to the number of megawatt hours (MWh) produced by all the solar PV in the group of businesses.

- The estimated self-consumption ratio is the yearly estimated energy production divided by the yearly electricity consumption of the group of businesses.

For wind

- The estimated available capacity is expressed in megawatts (MW).
- This is the rate at which a turbine generates energy at peak performance, for example during the most windy part of the day.
- The estimated yearly energy is the megawatt hours (MWh) produced. The estimated self-consumption ratio is the yearly estimated energy production divided by the yearly electricity consumption of the group of businesses.

For combined heat and power

- - The estimated optimal capacity is the amount of heat / electricity produced by the CHP at full load (expressed in megawatts). REACT optimises the capacity of the CHP on the heat demand, and considers electricity as by-product.
- The estimated yearly electricity is the megawatt hours (MWh) produced.- The estimated self-consumption ratio of electricity is the yearly estimated electricity production of CHP divided by the yearly electricity consumption of the group of businesses
- The estimated yearly heat is the megawatt hours (MWh) produced. The estimated self-consumption ratio of heat is the yearly estimated heat production of CHP divided by the yearly electricity consumption of the group of businesses.

For heat network

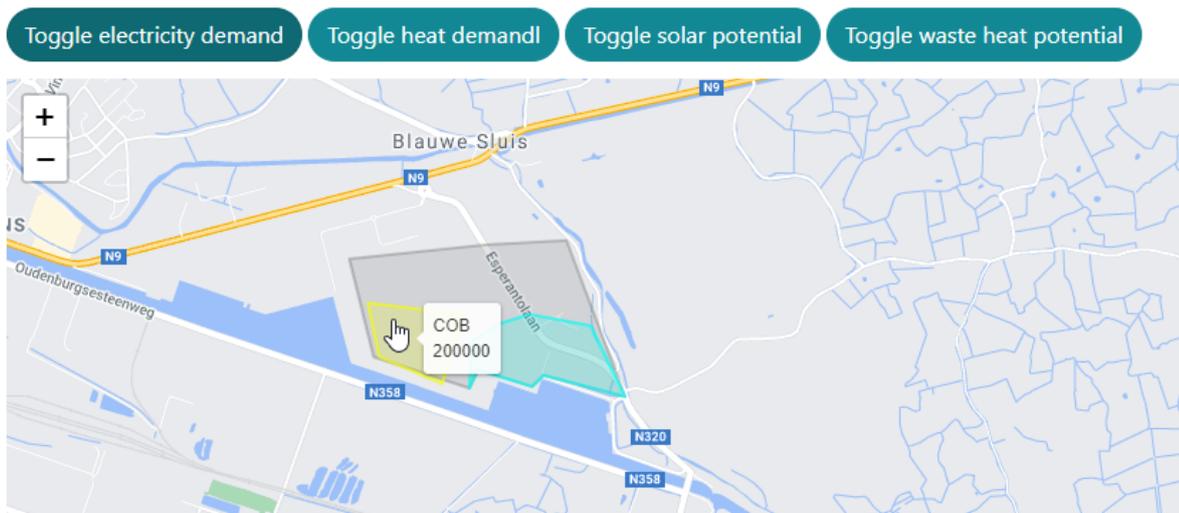
- The estimated grid length is the distance to connect businesses/processes through an integrated pipe network along public roads.

7.6 Synergy maps

At the bottom of the simulation you find a map. The map shows the current electricity and heat demand as well as the potential from solar PV and waste heat. Use one of the four buttons to filter your results and to view each aspect more clearly. The colours indicate the energy intensity of each business.

You can use this map as the starting point for new simulations. For example, if you have identified a cluster of companies with a high electricity demand you could explore linking them to companies with high potential for generating electricity through solar PV. Check our video tutorial for more tips and tricks.

Place your cursor over the map to see the detailed values.



Colofon

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