



TPEM Remote Client Desktop (TPEM RC DT)

Operating manual

EN

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For TPEM RC DT Version 1.8x

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Competence Level CL1

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1 Introduction to operation

The TPEM Remote Client (TPEM RC) is the software for TPEM visualization on a computer.

The following actions are possible using the TPEM RC:

- For Service:
 - Performing remote diagnostics and remote maintenance on a plant
 - Transferring an authorization profile to a plant
 - Transferring TPEM Update Container to a TPEM USB token
 - Evaluating log files with TPEM Log Viewer
 - Managing data on TPEM USB storage with TPEM USB File Manager
 - Evaluating data from the data export with TPEM Data Viewer
- For the operator:
 - Remote operation and monitoring of a plant
 - Extending authorizations to a TPEM USB token
 - Managing data on TPEM USB storage with TPEM USB File Manager
 - Evaluating data from the data export with TPEM Data Viewer

The remote access is realized via a router, the so-called TPEM Remote Plant Gateway, which represents the interface to the area network in the plant. The TPEM Remote Plant Gateway is installed in the TPEM Control Cabinet.

The remote access to the plant control is established via a secured connection (VPN tunnel).

To authenticate the users at the plant and when accessing remotely, a TPEM USB token is used. To transport data to and from the plant, TPEM USB storage is also necessary.

TPEM USB tokens and TPEM USB storage are encrypted and can only be read or written via TPEM Remote Client.

Neither a TPEM USB token nor TPEM USB storage can be accessed via the Windows File Manager.

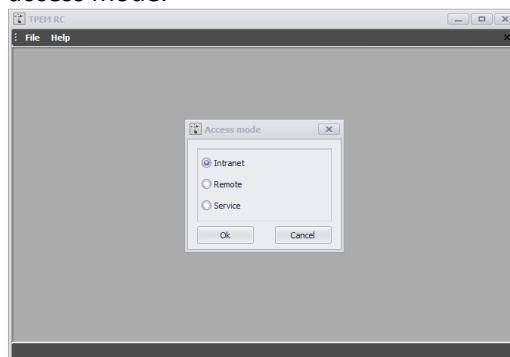
1.1 Starting and exiting TPEM RC

1.1.1 Starting TPEM RC

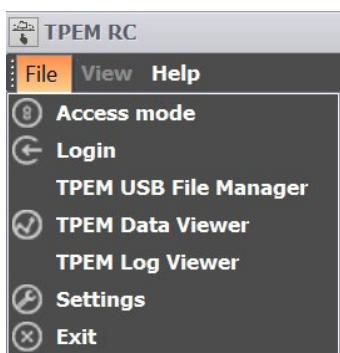
Desktop Shortcut



- Double-click on the TPEM RC Desktop icon on the desktop.
→ When started for the first time after installation, the start screen with the access mode screen appears. Whenever it is accessed again, the software starts in the previously selected access mode.

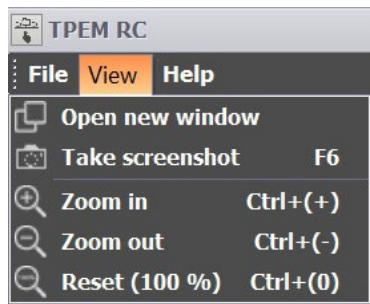


The menu bar with the following menus appears on all screen pages:



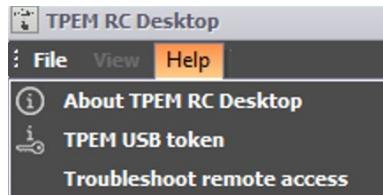
The content of the menu is dependent on the operator's authorization level. The figures in the documentation always correspond to the highest authorization level.

- **File**, with the menu items:
 - **Access mode**
 - **Login**, only available when "Remote access" access mode has been selected
 - **TPEM USB File Manager**, for managing files on TPEM USB storage
 - **TPEM Data Viewer**, for viewing a data export
 - **TPEM Log Viewer**, for viewing log files
 - **Settings**, default settings of the software
 - **Exit**, to exit the software
- **View**, only available when a TPEM screen is visible, or when Intranet profiles are displayed



- **Open new window**, to open another window of the same plant
- **Take screenshot**, to generate screenshots of the current window
- **Zoom**, to enlarge or shrink and reset the screen display

- **Help**, for displaying the software version and information about the TPEM USB token

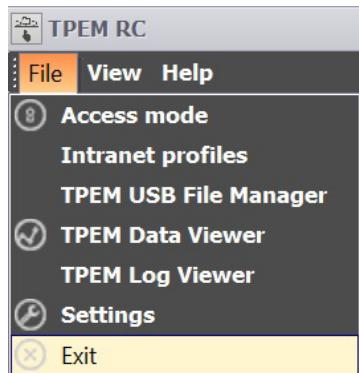


- **About TPEM RC Desktop**, to display the software version
- **TPEM USB token**, for displaying information on the TPEM USB token, for initializing a TPEM USB token and for saving onto the TPEM USB token
- **Troubleshoot remote access**, to perform remote access connection diagnostics and provide results to the support

1.1.2 Exiting TPEM RC

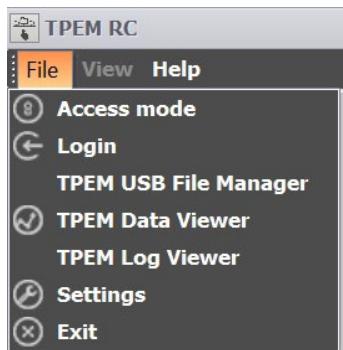
The software can be exited from any page of the screen.

- Select "Exit" in the "File" menu.



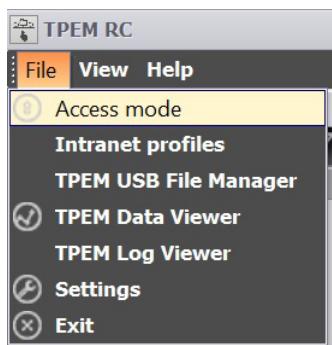
→ The TPEM RC is exited completely.

2 "File" menu



2.1 Access mode

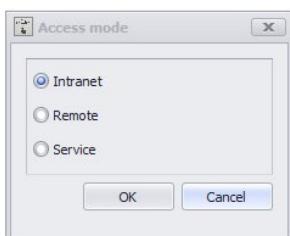
Note: Before the TPEM RC can be used after installation, certain settings have to be made. See section 2.7 Settings, page 44.



Access to the TPEM operating software is always possible directly via the same network from the same IP address area (Intranet), via the service socket on the switch cabinet or via remote access. Multiple users with reading rights can be connected to the plant at the same time, whereas just one user with editing rights can connect to the plant.

2.1.1 Creating / editing an Intranet profile

- Select "Access mode" in the "File" menu
→ The selection screen appears



- Select "Intranet" and confirm by clicking "OK"
→ The menu bar for creating and editing Intranet profiles appears

Intranet profiles				
+ Add / Edit / Delete / Filter / Print / Export / Import				
Plant name	IP address	Port number	Remark	
Landfill 01	172.22.18.139	1443		
Landfill 02	172.22.19.88	443		
Landfill 03	172.22.19.99	443		
Landfill 04	172.22.19.98	443		

→ All created Intranet profiles are displayed and can be edited.

Add: Opens the editing screen for creating new Intranet profiles

Edit: Opens the editing screen for editing created Intranet profiles

Delete: Deletes a selected Intranet profile

Filter: Clicking in the "Filter" area will display an additional line above the list entries. The designation "Filter" changes to "Clear", with which the line can be hidden again.

When the filter is activated, you can search separately by entering a search input in the top cell of each column.

Note:

When searching with "*" at the beginning as a placeholder, the search looks for results that "contain" the search text.

When searching without "*" at the beginning as a placeholder, the search looks for results that "begin" with the search text.

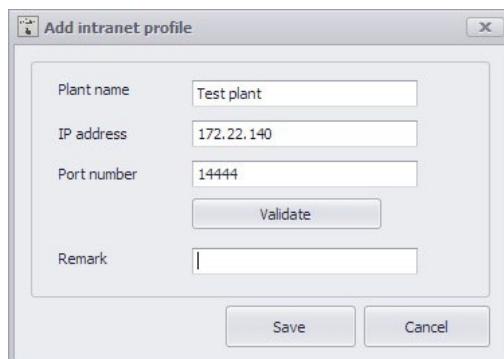
If, for example, you are looking for names that end in "son", you will not find them by entering just "son". Instead, enter "*son".

Print: Prints the list of user gateways after the printer properties are selected.

Export: For exporting the list of user gateways as a json file.

Import: For importing a list of user gateways as a json file

- To create a new Intranet profile: Click "Add"
 - To edit an existing Intranet profile: Click "Edit"
- The editing screen appears



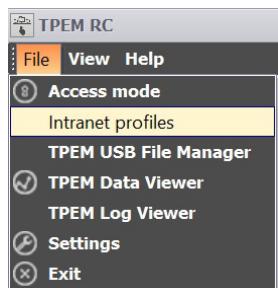
Plant name	Test plant
IP address	172.22.140
Port number	14444
Validate	
Remark	
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	

- Edit the data accordingly
- Click "Save" to save or "Cancel" to cancel the input
- Close Intranet profile window ("x" on the top right)

2.1.2 Connecting to a plant

For access via the "Intranet" the TPEM Remote Client must be executed by a terminal in the same network as the plant, with which a connection is to be established (identical IP address area).

- Select "Intranet profiles" in the "File" menu

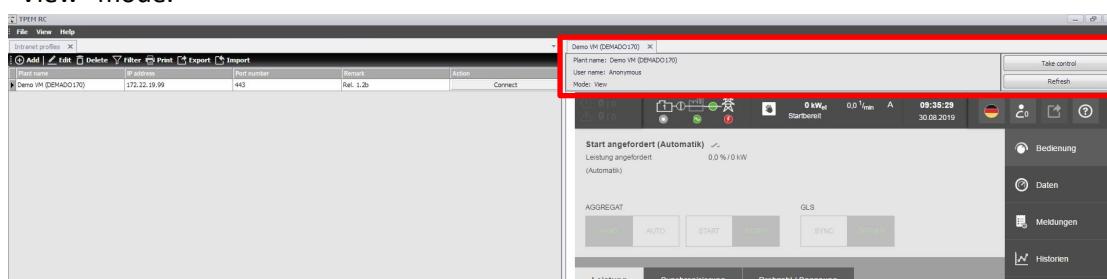


→ The selection screen appears

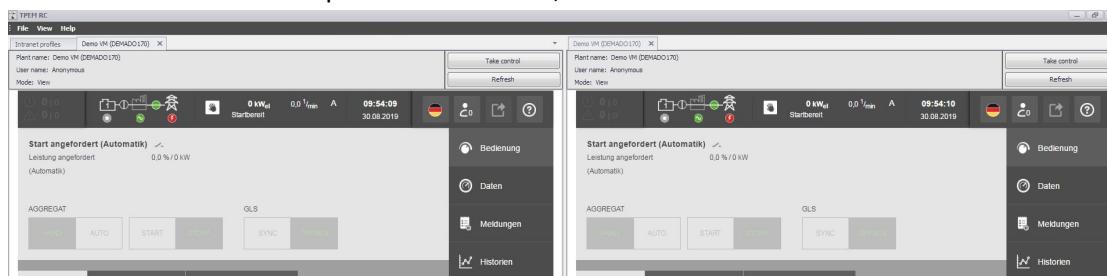
Plant name	IP address	Port number	Remark	Action
Landfill 01	172.22.18.139	443		Connect
Landfill 02	172.22.19.88	443		Connect
Landfill 03	172.22.19.99	443		Connect
Landfill 04	172.22.19.98	443		Connect

- Click to select desired plant
- Access the plant by clicking on the "Connect" button.

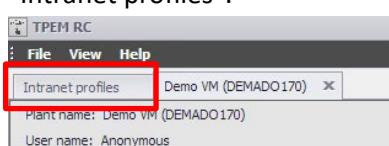
→ The TPEM screen of the plant appears in the "View" mode. Operation is not possible in "View" mode.



If a connection to another plant is established, this is shown on the left.

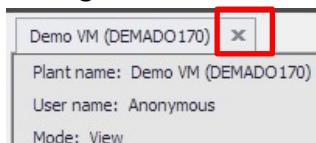


The Intranet profiles display is minimized, but can be displayed again by clicking on the tab "Intranet profiles".



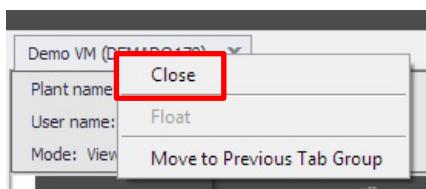
Instead of connecting to another plant, it is also possible to connect to the connected plant a second time. This allows two different views of the same plant to be displayed at the same time.

Closing a view:



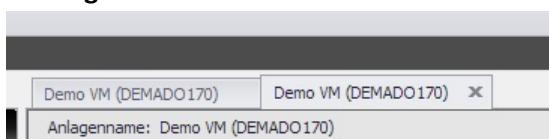
Click on "X" in the tab of the view to close it

or



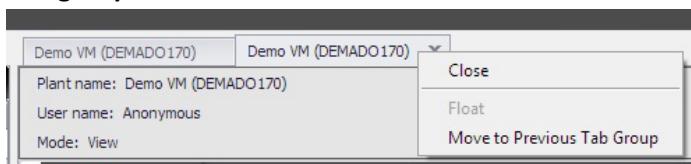
Right-click on the tab to open a menu, then select "Close".

Moving a view:

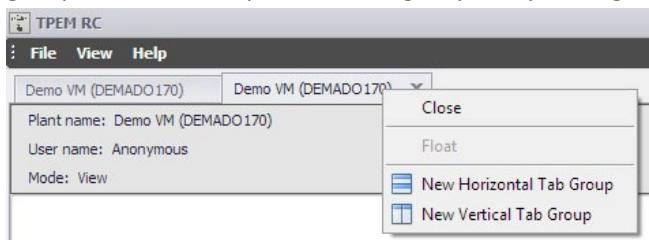


Tabs can be arranged as needed in the tabs bar using Drag & Drop.

Tab groups:



Right-click on the tab to change the display of the tabs by selecting either "Move to next tab group" or "Move to previous tab group", depending on the initial situation.



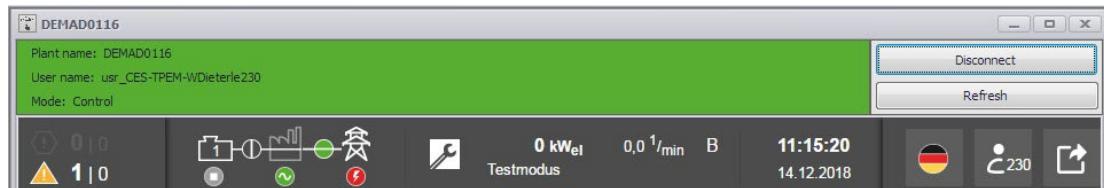
If a view of only one tab is opened, it is possible to select "New horizontal tab group" and "New vertical tab group". Up to six horizontal tab groups can be created.

If a plant is to be operated, control of the plant must be established. A connected TPEM USB token with the necessary authorization is required.

- To do this, click the "Take control" button for the desired plant.



→ The "Operation" mode is established.

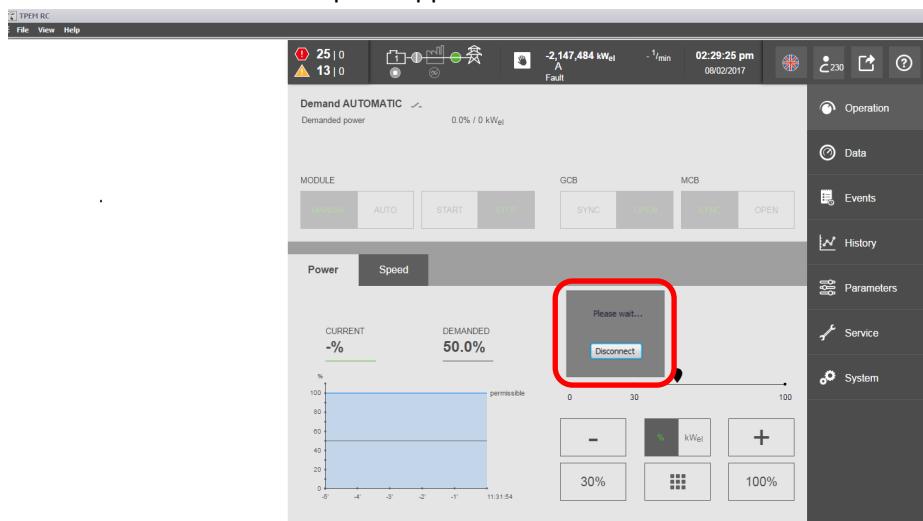


If the plant should no longer be operated, click the "Release control" button.

→ The "View" mode is established.

Intranet is accessed in the control mode with TPEM USB token authentication via the USB interface of the terminal in use:

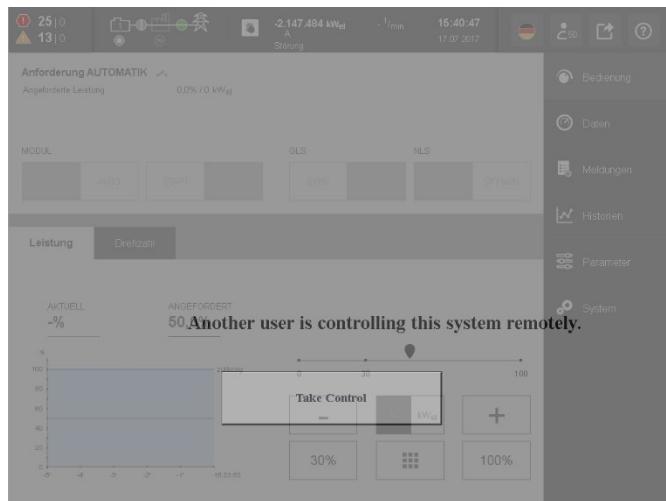
→ The TPEM screen of the plant appears.



→ While the connection to the plant is being established, the message "Please wait..." and the button "Release control" are shown. The process can be terminated by clicking on the button. When the connection to the plant is established, the message and button are hidden.

→ If the plant is already being accessed by another TPEM Remote Client, a connection is not possible. The following message appears: "Another user is accessing the HMI page, closing the application."

→ Once the connection to the plant is established, the following display appears on the touch panel of the selected plant: "Another user is controlling this system remotely" and the button "Take control"



The operator on the plant has the option to exit the control at any time by clicking the "Take control" button. Doing so interrupts remote access.

The following message then appears on the TPEM Remote Client screen: "Local touch panel user has taken the control. The connection will be closed."

If the operator on the plant does not stop the control, operation of the TPEM interface is possible with the TPEM Remote Client in compliance with the authorization level.

In order to interrupt the connection to the plant using the TPEM Remote Client, the following actions are possible:

- Close window of the TPEM screen, close TPEM Remote Client or change the access mode.
 - The connection is interrupted
 - The message "Another user is controlling this system remotely" and the button "Take control" on the touch panel of the plant are hidden.

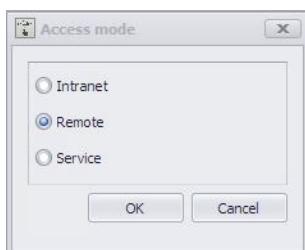
2.1.3 Remote access

To access the system via "Remote", the TPEM USB token of a user with the access rights to the desired plant must be connected to the USB interface of the terminal in use.

Note:

When acknowledging messages on the HMI via remote access, the user performing the action assumes responsibility. Proper operation and regular servicing of the genset can only be ensured on site.

- Select "Access mode" in the "File" menu
→ The selection screen appears



- Select "Remote" and confirm by clicking "OK"
→ The login window opens



See section 2.2 Login, page 24.

After logging in:

→ An overview of all the plants available for the user who is logged in is displayed.

ID	Plant name	Remark	Connected user	Status	Actions
TSBF05013134	HL_2			Online	Connect
TSBF05013136	F&E Test Raum 203			Offline	Connect
TSBF08003125	HL_3			Offline	Connect
TSBF09007069	TEST01		usr_CES-TPEM-PG	Connected	Disconnect
TSBF09007206	TPEM Simulator Trainingscenter MA			Offline	Connect

→ A submenu with further functions is available.

TPEM RC - [Connect]	
File Help	
Reload Export Print Filter Save Remarks	
ID	Plant name
TSBF02012308	***TPEM RPG Container
TSBF05013165	***P33

Reload:

For updating the data connection and screen display.

Export:

For exporting the contents of the list.

TPEM RC - [Connect]			
File Help Reload Export Print Filter Save Remarks			
ID	Plant name	Remark	Co
TSBF020123	***TPEM RPG Container		
TSBF050131	***P33		
ifaTSBF020123	***Endian 4i Testgeraet		
rpg1314009159	***HIL TEM, im Büro		

- Highlight desired objects in the list.
- Click on "Export".
- Select desired data format in the pull-down menu.
- Select desired save location.

Print:

For printing the contents of the list

- Highlight desired objects in the list.
- Click on "Print".
- Select desired printer and save location.

Filter

Clicking in the "Filter" area will display an additional line above the list entries. The designation "Filter" changes to "Clear", with which the line can be hidden again.

When the filter is activated, you can search separately by entering a search input in the top cell of each column.

Note:

When searching with "*" at the beginning as a placeholder, the search looks for results that "contain" the search text.

When searching without "*" at the beginning as a placeholder, the search looks for results that "begin" with the search text.

If, for example, you are looking for names that end in "son", you will not find them by entering just "son". Instead, enter "*son".

Save remarks:

Saves the entries in the "Remarks" column.

ID:

Serial number of the TPEM Remote Plant Gateway

Plant name

Name of the plant

Remark:

Remarks on each plant can be saved here.

Connected users:

Displays the user names of all users currently connected to one of the plants assigned to the logged in user.

Possible status displays:

- Online: Plant is connected to the rendezvous server
- Offline: Plant is not connected to the rendezvous server
- Connected: User is connected to the selected plant

Logged in as: usr_CES-TPEM-PG		
Connected user	Status	Actions
	Online	Connect
	Offline	Connect
	Offline	Connect
usr_CES-TPEM-PG	Connected	Disconnect
	Offline	Connect

Logged in as:

Displays the user name

- Select a plant in the overview and click the "Connect" button.
Connecting to a plant is only possible if the plant is in the status "Online".

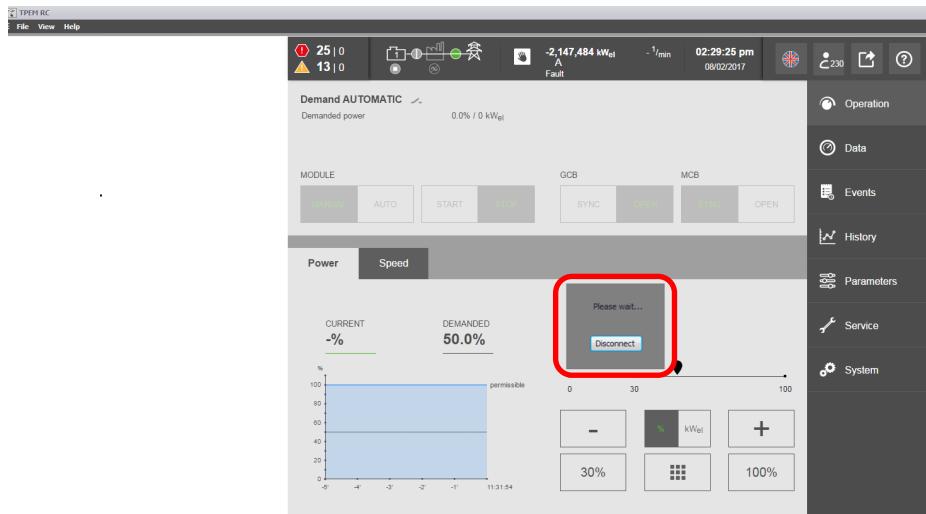
Logged in as: usr_CES-TPEM-PG		
Connected user	Status	Actions
	Online	Connect
	Offline	Connect
	Offline	Connect
usr_CES-TPEM-PG	Connected	Disconnect
	Offline	Connect

→ The status of the plant switches from "Online" to "Connected".

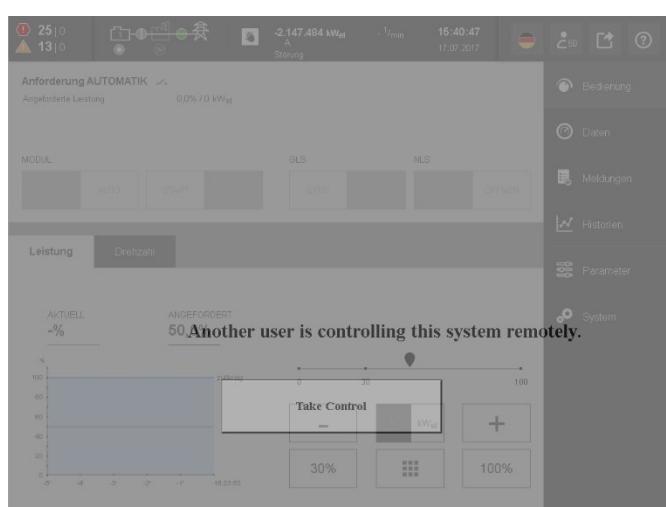
Logged in as: usr_CES-TPEM-PG		
Connected user	Status	Actions
	Online	Connect
	Offline	Connect
	Offline	Connect
usr_CES-TPEM-PG	Connected	Disconnect
	Offline	Connect

→ If a plant is selected that is already being accessed by another TPEM Remote Client, a connection is also possible. See column "Connected users".

→ The TPEM screen of the selected plant appears.



- While the connection to the plant is being established, the message "Please wait..." and the button "Release control" are shown. The process can be terminated by clicking on the button. When the connection to the plant is established, the message and button are hidden.
- Once the connection to the plant is established, the following display appears on the touch panel of the selected plant: "Another user is controlling this system remotely" and the button "Take control"



The operator on the plant has the option to exit the control at any time by clicking the "Take control" button. The connection in Control mode is interrupted and re-opened in View mode. The following message then appears on the screen of the TPEM Remote Client:
 "Local touch panel user has taken the control. The connection will be closed."

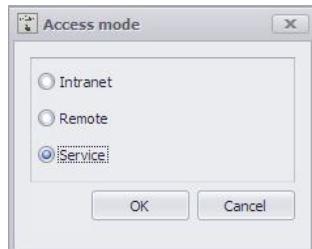
If the operator on the plant does not stop the control, operation of the TPEM interface is possible with the TPEM Remote Client in compliance with the authorization level.
 In order to interrupt the connection to the plant using the TPEM Remote Client, the following actions are possible:

- Close the window of the TPEM screen, close the TPEM Remote Client or change the access mode.
 → The connection is interrupted.
 → The message "Another user is controlling this system remotely." and the button "Take control" on the touch panel of the plant are hidden.

2.1.4 Service

The following conditions must be met for access via "Service":

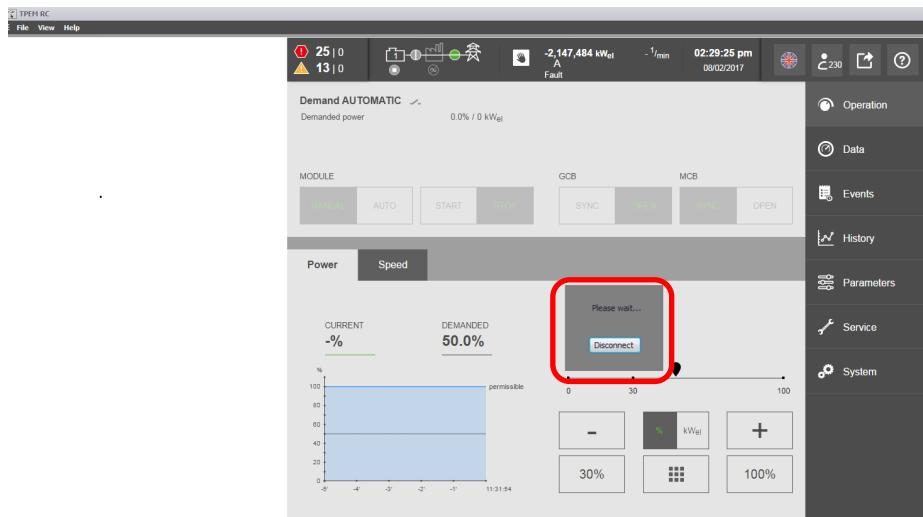
1. A laptop is connected to the switch cabinet service socket via a LAN cable
 2. A corresponding IP address for the network interface has been assigned to the service socket on the laptop (see section 2.1.5 Adjusting the network adapter configuration of the host computer, page 21)
 3. A TPEM USB token with an authorization level of at least 200 is connected to the laptop's USB interface.
- Select "Access mode" in the "File" menu
 → The selection screen appears



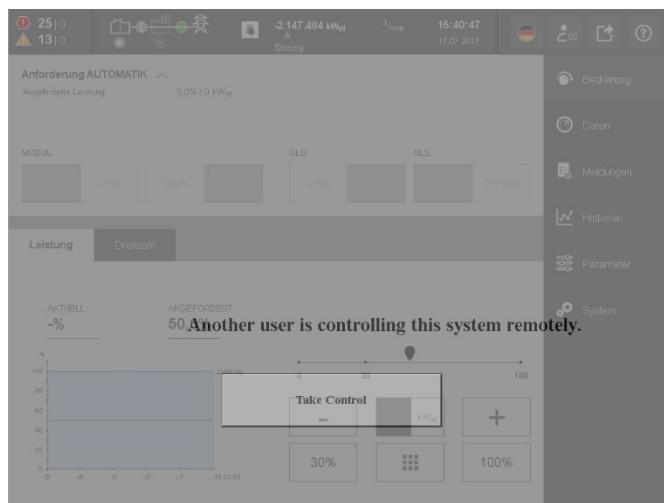
- Select "Service" and confirm by clicking "OK"

No more adjustments to the settings are required, as due to the selection, a permanently saved IP is used and all the entered IPs are ignored in the settings.

→ The TPEM screen of the selected plant appears.



- While the connection to the plant is being established, the message "Please wait..." and the button "Release control" are shown. The process can be cancelled by clicking on the button. When the connection to the plant is established, the message and button are hidden.
- If the plant is already being accessed by another TPEM Remote Client, a connection is not possible. The following message appears: "Another user is accessing the HMI page, closing the application."
- Once the connection to the plant is established, the following display appears on the touch panel of the selected plant: "Another user is controlling this system remotely" and the button "Take control"



The operator of the plant has the option to end the remote access at any time by clicking the "Take control" button. By doing so, the connection is interrupted.

The following message then appears on the screen of the TPEM Remote Client:
"Local touch panel user has taken the control. The connection will be closed."

- If the plant is already being accessed by another TPEM Remote Client, a connection is not possible. The following message appears: "Another user is accessing the HMI page, closing the application."
- If the operator on the plant does not exit the control, operation of the TPEM interface is possible with the TPEM Remote Client in compliance with the authorization level.

In order to interrupt the connection to the plant using the TPEM Remote Client, the following actions are possible:

- Close window of the TPEM screen, close TPEM Remote Client or change the access mode.
 - The connection is interrupted
 - The message "Another user is controlling this system remotely" and the button "Take control" on the touch panel of the plant are hidden.

2.1.5 Adjusting the network adapter configuration of the host computer

To connect the laptop to the TPEM Remote Plant Gateway, the laptop must have an IP address from the same address area as the Remote Plant Gateway. If necessary, the IP address of the corresponding network interface must be changed at the laptop for this.

Note:

The description was formulated as an example for a laptop with the Windows 10 operating system. Administrator rights may be required to change the IP address of the laptop.

Taskbar



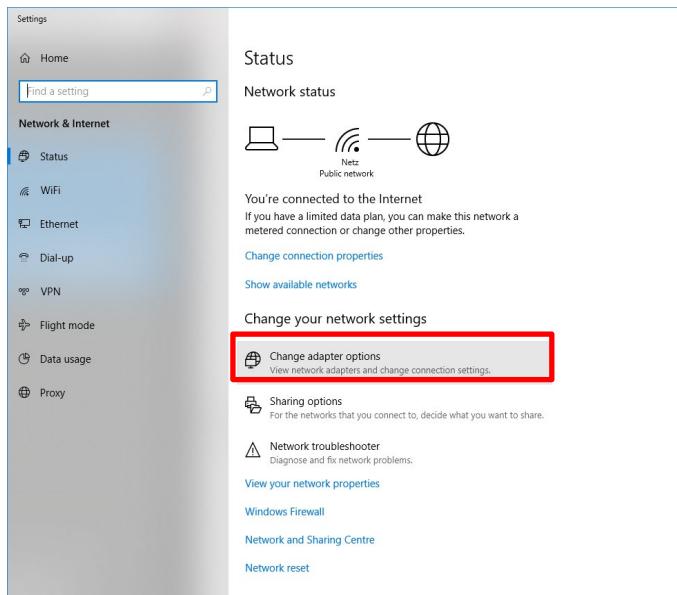
- Click on the "Internet connections" button in the taskbar.

Internet connections selection window



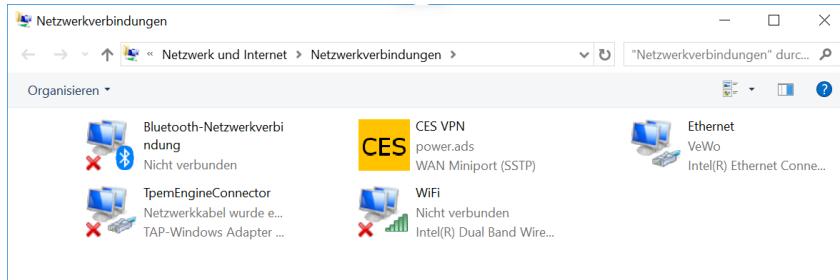
- In the "Internet connections" selection window, click on the "Network & Internet settings" line

Network and Internet selection window



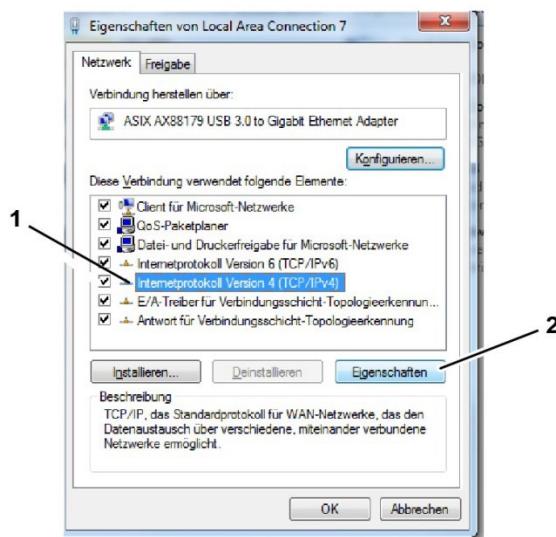
- In the "Network & Internet" selection window, click on the "Change adapter options" line.

Change adapter options in the selection window



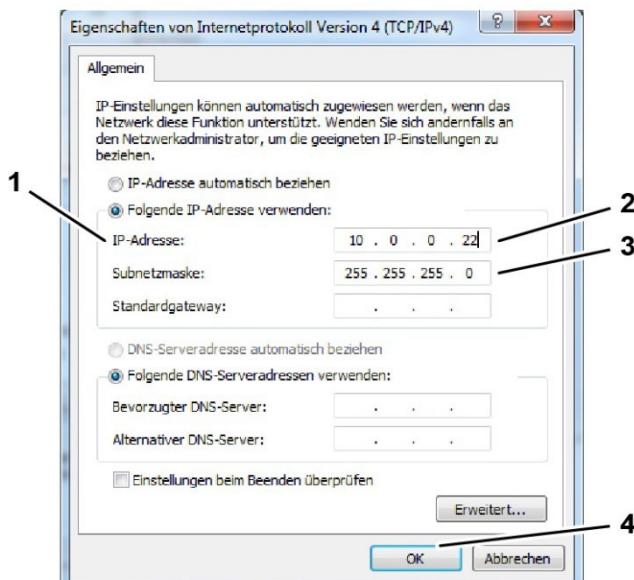
- Right click the "LAN Connection" button or the button of the adapter that has been connected to the service socket.
- Click on "Settings" in the selection menu

Local Area Network Connection Properties selection window



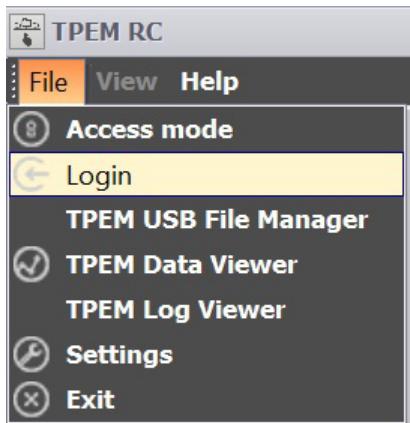
- Select the "Internet Protocol Version 4 (TCP/IPv4)" line (1).
- Click on "Properties" (2) button

Input screen for Internet Protocol Version 4 (TCP/IPv4) Properties



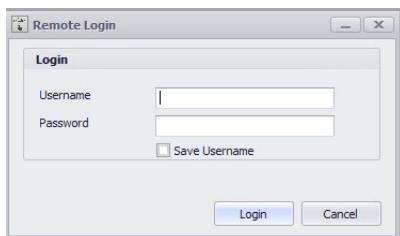
- Select "Use the following IP address" input field (1).
- In the "IP address" input line enter the numerical sequence "10.0.0.22" (2).
- In the "Subnet mask" input line enter the numerical sequence "255.255.255.0" (3).
- Click on the "OK" (4) button

2.2 Login



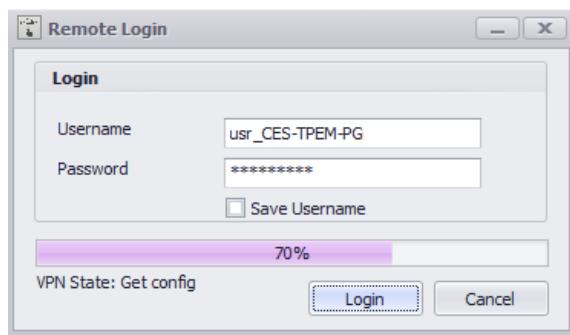
Requirements:

- The "Remote" access mode has been selected. If the "Remote" access mode was selected, the "Login" function will be available in the "File" menu.
 - The login credentials are available. When a user is created to use the TPEM RC, the user will automatically receive an email with the initial login credentials.
 - Select "Login" in the "File" menu.
 - Option: In the "File" menu, select "Access mode", then select "Remote" and confirm with "OK".
- The login window opens



- Enter the login credentials.
Putting a checkmark in the "Save Username" checkbox (clicking) will save the user name for logging in again later.
- Connect TPEM USB token to the USB interface.
- Click the "Login" button.
 - If there is no TPEM USB token connected with at least authorization level 50, the following message will appear: "Connect a valid TPEM USB token and try again." Confirm the message with "OK". Connect TPEM USB token to the USB interface and repeat the procedure.
 - If the TPEM USB token was not issued to the particular user, the following message will appear: "Authorization does not belong to the user." Confirm the message with "OK". Connect TPEM USB token to the USB interface and repeat the procedure.

- If the TPEM RC is still reading the TPEM USB token during login, the following message appears: "TPEM USB token reading in progress. Please wait." Confirm the message by clicking "OK", wait a short time and repeat the procedure.
- The VPN connection to the rendezvous server is established. If the access data do not match the connected TPEM USB token or they are invalid, the following message appears: "Authorization does not belong to the user".



- The progress of the connection (VPN tunnel) is shown by a progress bar.

2.3 Changing the password for remote access

Passwords protect users and their user accounts from being accessed by third parties.

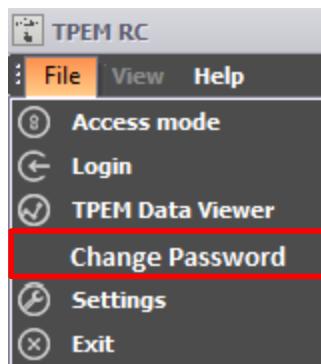
Users receive initial passwords with their user accounts. Initial passwords must be changed when logging in for the first time. If a user forgets their initial password, the user must request a new initial password from Product Service.

Passwords must meet the following criteria:

- Contain at least 12 characters
- Contain at least one number
- Contain at least one uppercase character and one lowercase character
- Contain at least one special character (e.g. #, !, ?)
- Contain different consecutive numbers or characters
(e.g. "user01" instead of "uusseerr0011")

Change password:

- In the "Remote" access mode, log in with the current password.
- In the "File" menu, click on "Change password".



- Enter the current password in the first input field.



- Enter the new password in the second and third input field.
- Select the "Change password" button.

Note: If the current password is incorrect or the new password does not match in the two input fields, the change is considered a failed attempt. After five failed attempts, the user is logged out of the "Remote" access mode.

2.4 TPEM USB File Manager

The "TPEM USB File Manager" function is available for authorization level 50 and above. Either a TPEM USB token with integrated storage or a TPEM USB token without integrated storage plus a TPEM USB storage must be connected to the USB port for a data exchange. TPEM USB tokens with and without integrated storage are in circulation, see graphic.

TPEM USB token with integrated storage	
TPEM USB token without integrated storage	
TPEM USB storage	

The TPEM USB File Manager can be used to manage the following files on TPEM USB storage:

- Authorization profiles for a plant (authorization level 200 and above)

To enable customer-specific authentication at the plant, an authorization profile must be available at the plant. This is a precondition to be able to prepare a plant for user authentication with a TPEM USB token.
Authorization profiles have the ending "tef".
- Parameters for the basic configuration (authorization level 200 and above)

Parameter sets can be imported to facilitate commissioning of a plant. The parameter sets can be exported from plants that are parameterized identically or similarly.
- Error logs

If errors result in the basic configuration with imported parameter sets, an error log is generated. These error logs can be imported to TPEM storage.
- Partial parameter sets after basic configuration (authorization level 200 and above)

Partial parameter sets can be imported to simplify the commissioning of a plant. Currently, only the partial parameter sets of the shunt condition are available. The partial parameter sets can be exported from plants that are parameterized identically or similarly.
- Transfer data exports from a plant to a computer for evaluation with the Data Viewer (authorization level 50 and above)

The exported data such as messages, history, parameters and log files for the software analysis are packaged in an encrypted zip file.
- Screenshots of the TPEM TP of a plant for evaluation on a computer (authorization level 50 and above)
- TPEM Update Container for the software update of a plant (authorization level 200 and above)

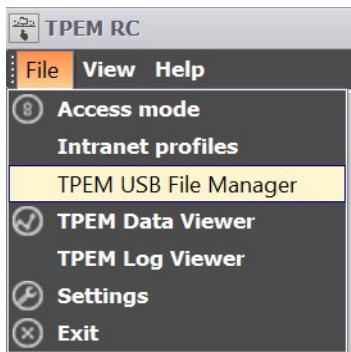
TPEM Update Containers have the ending "ecef".
- PDF files of exported parameters

The exported PDF files of the parameters are packed in an unencrypted zip file.

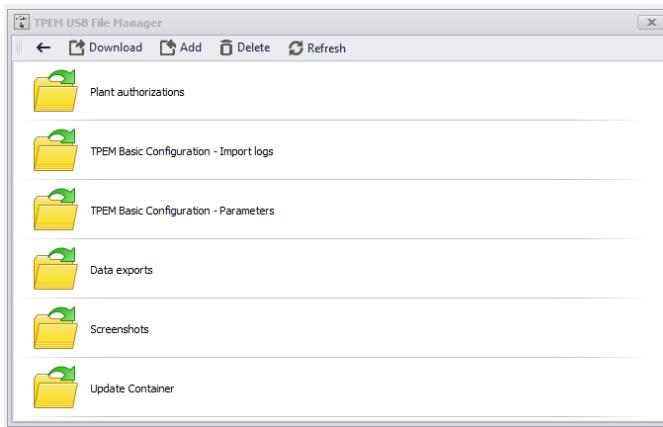


The TPEM USB storage is preconfigured with directories for the corresponding tasks.

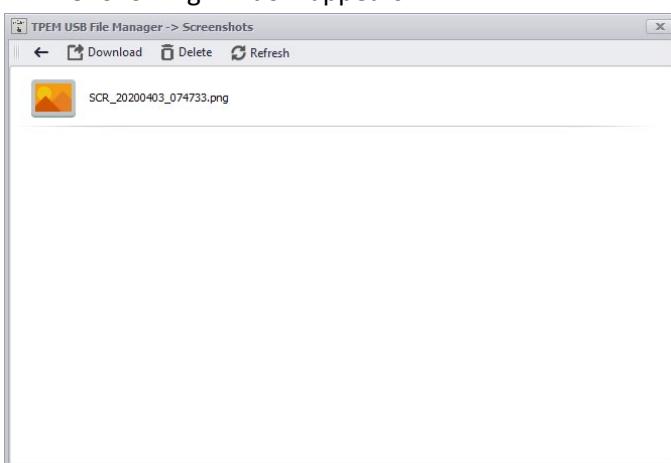
2.4.1 Displaying data saved on the TPEM USB storage



- In the "File" menu, select "TPEM USB File Manager"
 → The following window appears (directories vary according to authorization level):



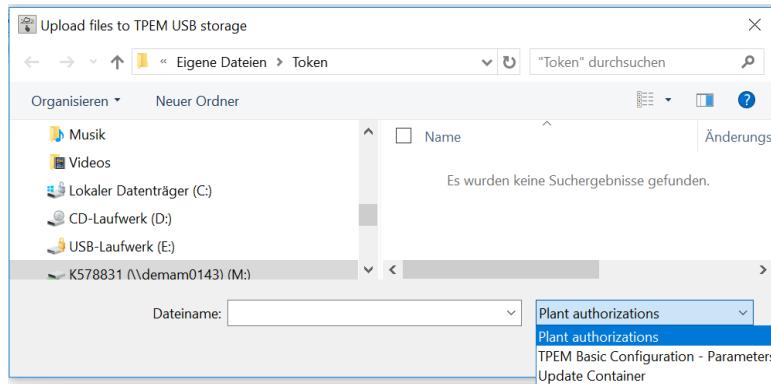
- All directories that are on TPEM USB storage are displayed.
- Open the desired directory by double-clicking, e.g. Screenshots
 → The following window appears:



→ All files are displayed in the corresponding directory. You can click the arrow button in the header to return to the previous level. Depending on which directory is opened, either an "upload" or "download" is possible.

2.4.2 Copying data from the computer to a directory of TPEM USB storage

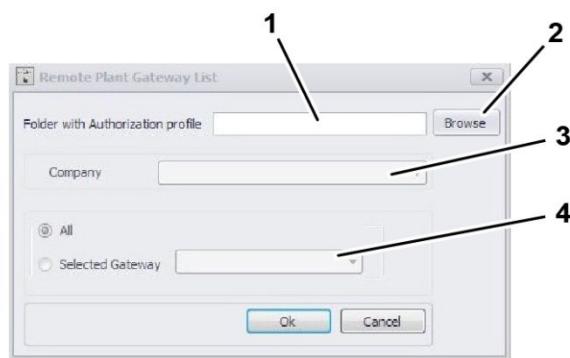
- Click on the "Add" symbol in the header
→ The "Upload files to TPEM USB storage" window is displayed.



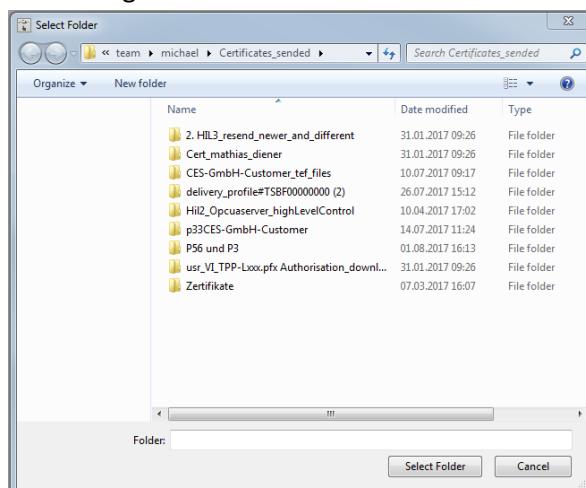
- Select the desired data format in the pull-down menu.
- Search for the file on the computer, click on it and click on the "Open" button

If the "Plant authorization profile" has been selected:

→ The following window appears



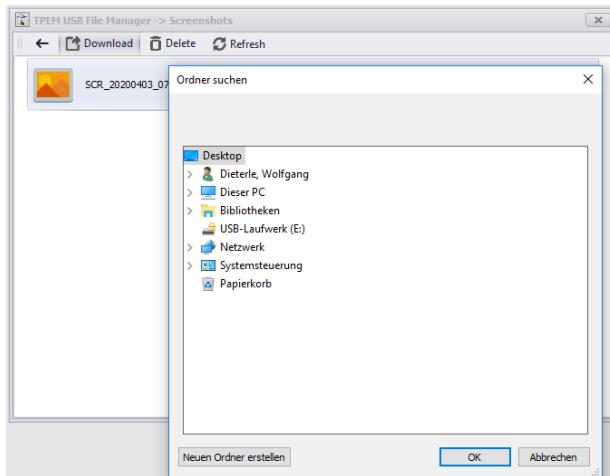
- Click on the "Browse" button (2) and search for the folder in which the desired authorization profile is saved or the desired authorization profiles are saved. Authorization profiles have the ending "tef"



- Highlight the folder and click on the "Select folder" button
 → The folder path appears in the window (1)
 → The pull-down menu (3) shows all companies for which authorization profiles are saved in the folder
- Select desired company in the pull-down menu
 → The pull-down menu (4) displays all gateways for which authorization profiles for the selected company are saved in the folder
- Select whether to download the authorization profile of all gateways or of a particular gateway of the selected company
- Confirm selection by clicking "OK"
 → If the process was successful, the message "Download completed" appears.

2.4.3 Copying data from a directory on the TPEM USB storage to the computer

- Open the desired directory by double-clicking, e.g. Screenshots
 → The following window appears:

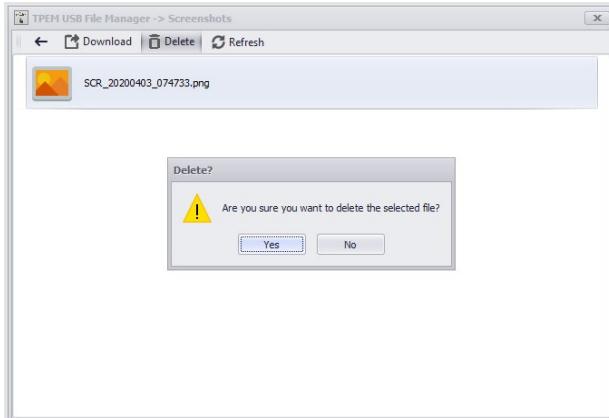


→ All files are displayed in the corresponding directory.

- Click on desired file
- Click on the "Download" symbol in the header
 → The "Search for folder" window is displayed.
- Select desired save location and confirm by clicking "OK"
 → Once saving is complete, the following message appears: "Download completed".

2.4.4 Deleting data from a directory of TPEM USB storage

- Open the desired directory by double-clicking, e.g. Screenshots
→ The following window appears:



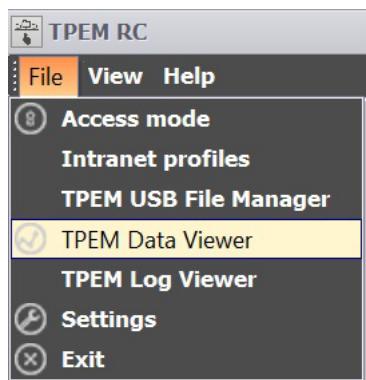
- All files are displayed in the corresponding directory.
- Click on desired file
- Click on the "Delete" symbol in the header
- Answer warning message with "Yes"
→ The file is deleted

2.5 TPEM Data Viewer

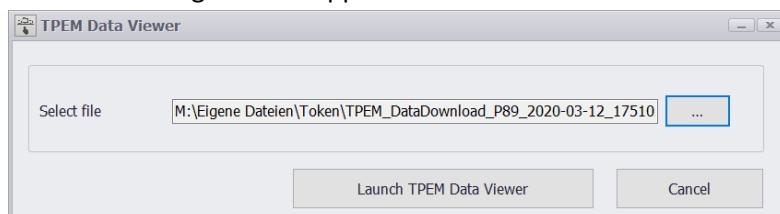
Requirements:

- Only DataDownload files in zip format that have been exported from TPEM can be viewed.
- DataViewer 1.10.0.0 or higher is installed

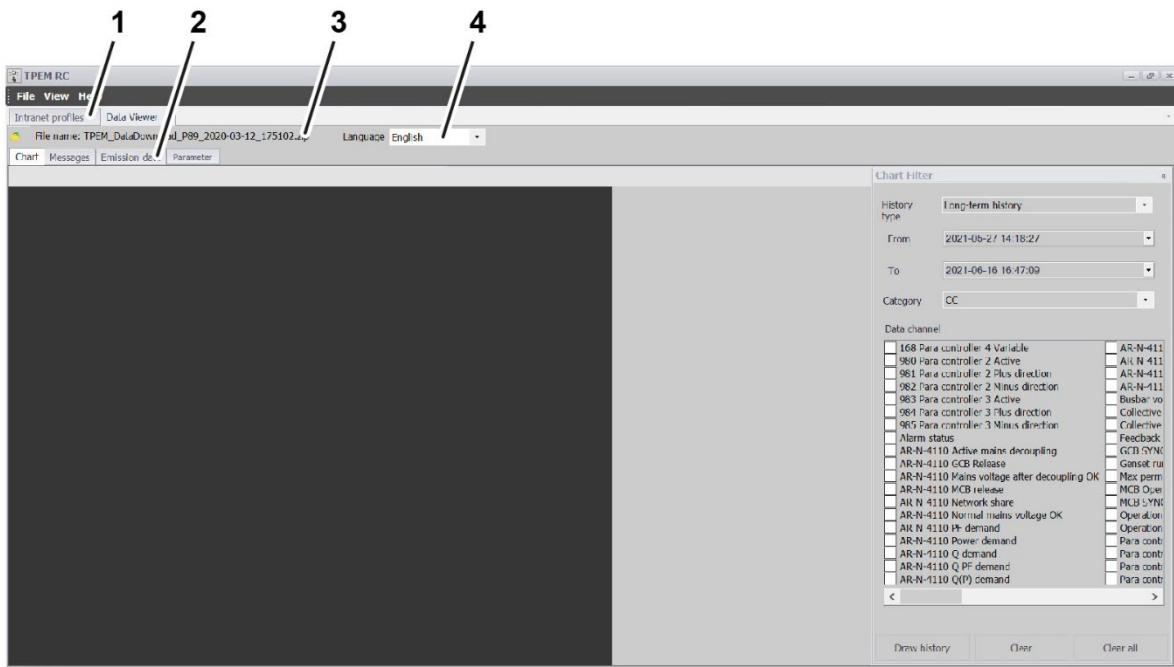
2.5.1 Viewing TPEM Data export



- In the "File" menu, select "TPEM Data Viewer"
→ The following window appears:



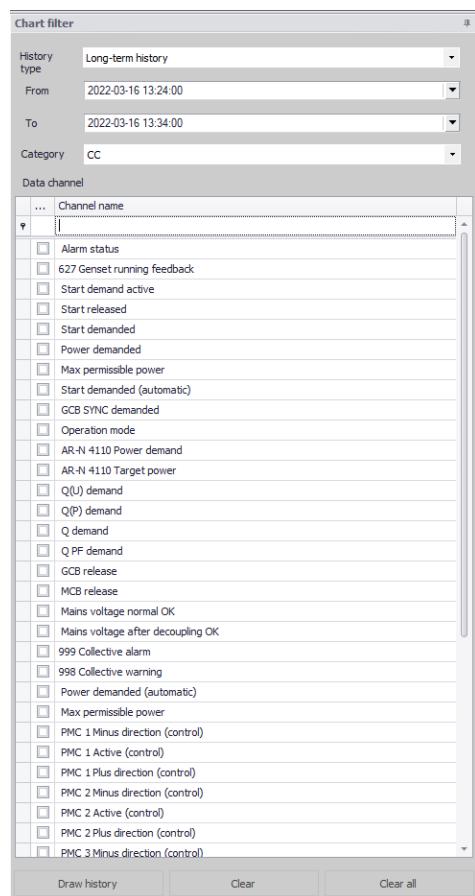
- Open browser, select the desired file of the form "TPEM_DataDownload_Name_YYYY-MM-DD_hh-mm-ss.ZIP" and click on the "Open" button
→ The zip file is displayed:
- Click on the "Launch TPEM Data Viewer" button
→ The start screen of the Data Viewer appears:



- 1 Tab for toggling between the tab groups
- 2 Tab for toggling between the tab groups Chart, Messages and Emission data. The Data Viewer always starts with the Chart data group
- 3 Displays the file name of the selected data download
- 4 Data channels pull-down menu language selection: regardless of the language set in the TPEM Remote Client, the data display can be selected in the Data Viewer. During the data export, the languages German and English, as well as the third language selected on the TPEM TP are always exported and available here

2.5.2 Viewing History

The desired data can be selected in the chart filter and displayed in the chart area.



History type:

The types "Long-term history", "Short-term history" and "Operating cycle" are available in the pull-down menu.

From ... To:

Period for which a data record for a specific history type was created. A period for which the data are to be displayed can be selected within this period.

Category:

The various data categories such as engine or generators are available in the pull-down menu. The data channels available for the selected data category are displayed in Data channel area.

Data channel:

The data channels available for the selected data category are displayed in this area. The data channels that are to be shown in the history are highlighted by clicking on them.

The first line allows searching for data channels in the selected category.

Draw history:

Button to the bottom left of the chart area for displaying the selected data points.

Clear:

The highlighted items in the Data channel area are canceled for the displayed categories.

Clear all:

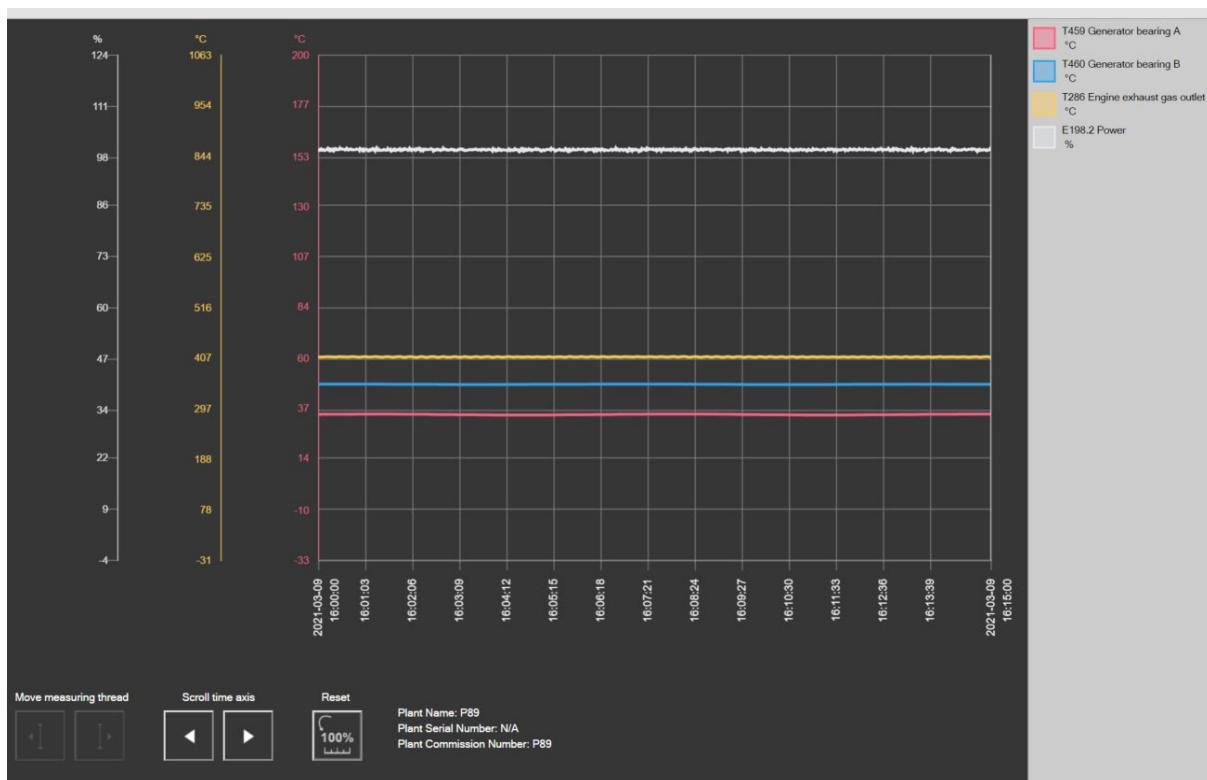
The highlighted items in the Data channel area are canceled for all categories.

Clicking on the "Draw history" button displays the data for the selected period. The data are displayed corresponding to the colors of the legend on the right of the chart.

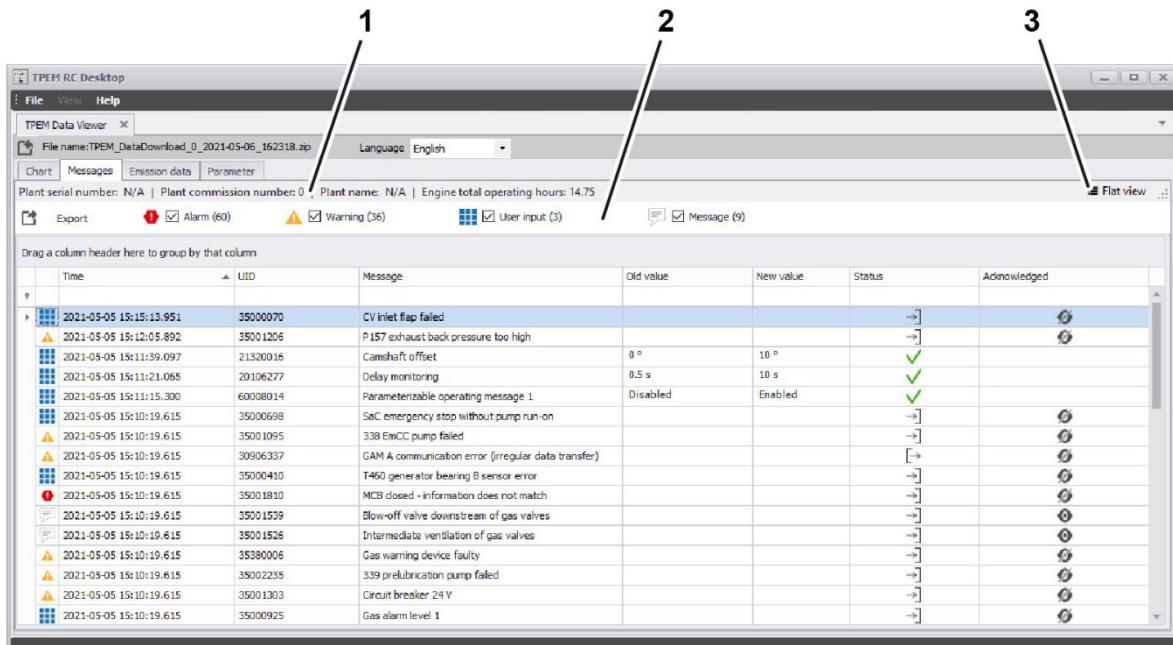
The value scales and navigation are shown in the time axis as described in the TPEM Operating manual document, Operation section, Histories functional group.

Click on the "Draw history" button again to hide the value scales.

To zoom in on an area, hold down the Ctrl key and select the desired area with the left mouse button pressed.



2.5.3 Viewing messages

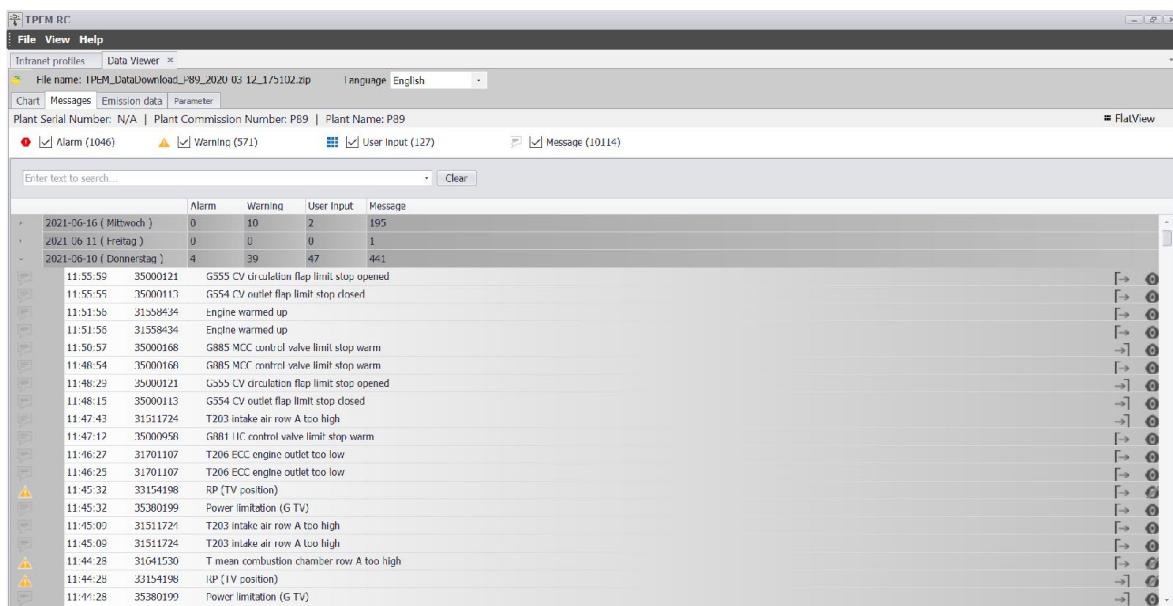


- 1 Data about the plant
- 2 Checkboxes for displaying the various events. The value in brackets after the corresponding event types represents the number of events
- 3 Button for toggling between the overview and the detailed representation (Flat View, Tree View)

All events that occurred in the recorded period can be viewed in the Messages area.

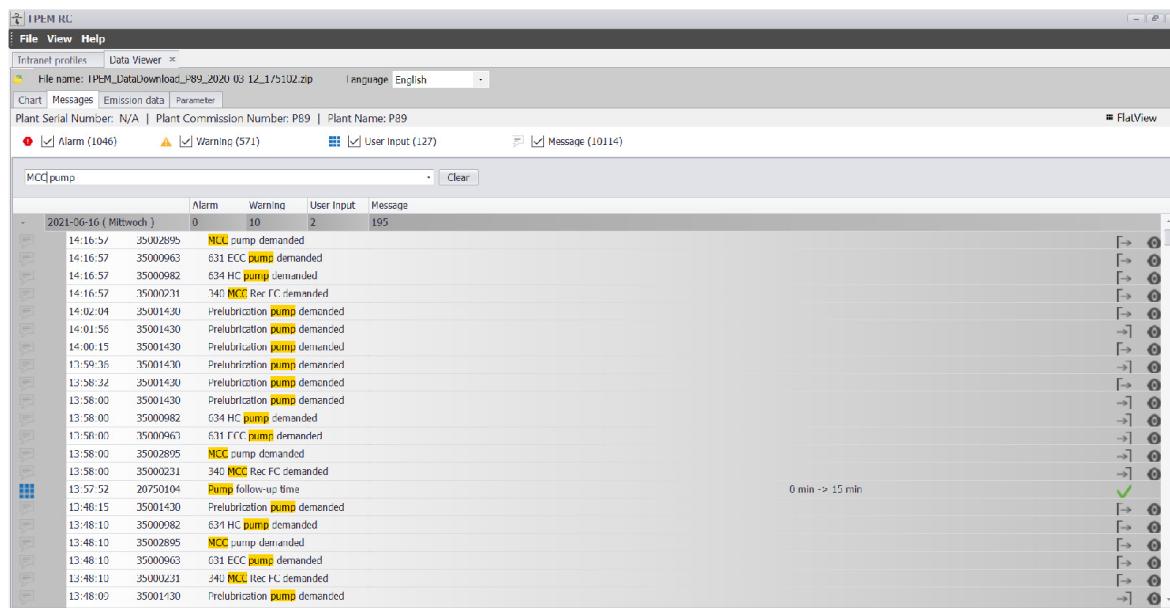
"Tree View" setting:

Displays the number of different events for each displayed date



If the arrow in the first column is clicked for a certain date, all events that took place on the date selected in the checkboxes appear in chronological order.

Search terms can be used to search in all events. By writing the search term in quotation marks, e.g. "MCC pump", you can search for precisely this term.

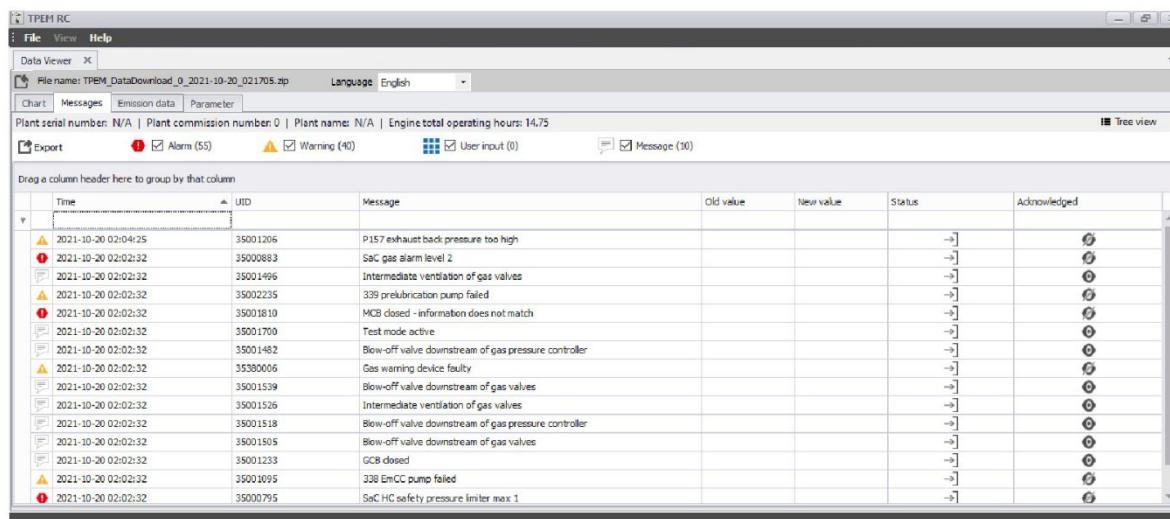


Time	UID	Message	Old value	New value	Status	Acknowledged
2021-06-16 14:16:57	35000963	631 ECC pump demanded				
2021-06-16 14:16:57	35000982	634 HC pump demanded				
2021-06-16 14:16:57	35000971	140 MCC Rec FC demanded				
2021-06-16 14:02:04	35001430	Prelubrication pump demanded				
2021-06-16 14:01:55	35001430	Prelubrication pump demanced				
2021-06-16 14:00:15	35001430	Prelubrication pump demanced				
2021-06-16 13:59:35	35001430	Prelubrication pump demanced				
2021-06-16 13:58:32	35001430	Prelubrication pump demanced				
2021-06-16 13:58:00	35001430	Prelubrication pump demanced				
2021-06-16 13:58:00	35000982	634 HC pump demanded				
2021-06-16 13:58:00	35000962	631 FCC pump demanded				
2021-06-16 13:58:00	35002895	MCC pump demanded				
2021-06-16 13:58:00	35000231	340 MCC Rec FC demanded				
2021-06-16 13:57:52	20750104	Pump follow-up time				✓
2021-06-16 13:48:15	35001430	Prelubrication pump demanced				
2021-06-16 13:48:10	35000982	634 HC pump demanded				
2021-06-16 13:48:10	35002895	MCC pump demanded				
2021-06-16 13:48:10	35000962	631 ECC pump demanded				
2021-06-16 13:48:10	35000231	340 MCC Rec FC demanded				
2021-06-16 13:48:00	35001430	Prelubrication pump demanced				

"Flat View" setting:

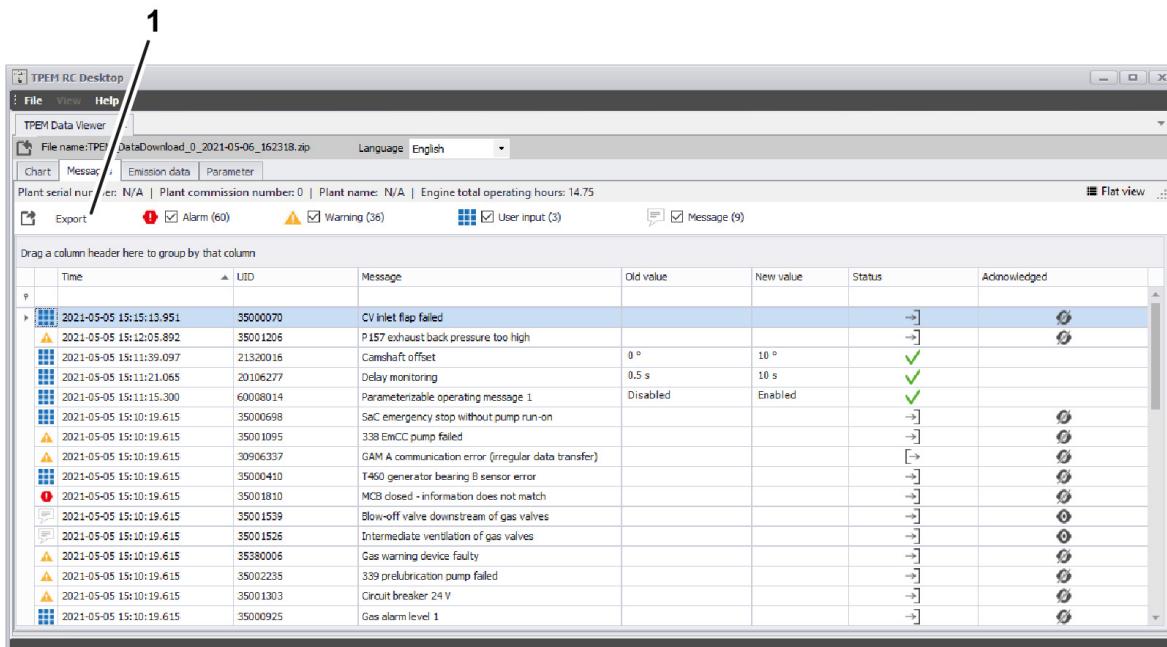
Displays all events selected in the checkboxes.

The events can be sorted correspondingly in ascending or descending order by clicking in the "Time", "UID" or "Message" title cell.



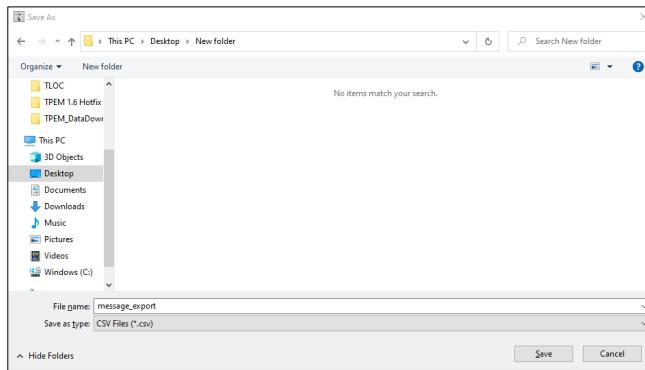
Time	UID	Message	Old value	New value	Status	Acknowledged
2021-10-20 02:04:25	35001206	P157 exhaust back pressure too high				
2021-10-20 02:02:32	35000883	SaC gas alarm level 2				
2021-10-20 02:02:32	35001496	Intermediate ventilation of gas valves				
2021-10-20 02:02:32	35002235	339 prelubrication pump failed				
2021-10-20 02:02:32	35001810	MCB closed - information does not match				
2021-10-20 02:02:32	35001700	Test mode active				
2021-10-20 02:02:32	35001482	Blow-off valve downstream of gas pressure controller				
2021-10-20 02:02:32	35380006	Gas warning device faulty				
2021-10-20 02:02:32	35001539	Blow-off valve downstream of gas valves				
2021-10-20 02:02:32	35001526	Intermediate ventilation of gas valves				
2021-10-20 02:02:32	35001518	Blow-off valve downstream of gas pressure controller				
2021-10-20 02:02:32	35001505	Blow-off valve downstream of gas valves				
2021-10-20 02:02:32	35001233	GCB closed				
2021-10-20 02:02:32	35001099	338 EmCC pump failed				
2021-10-20 02:02:32	35000795	SaC HC safety pressure limiter max 1				

2.5.4 Exporting messages



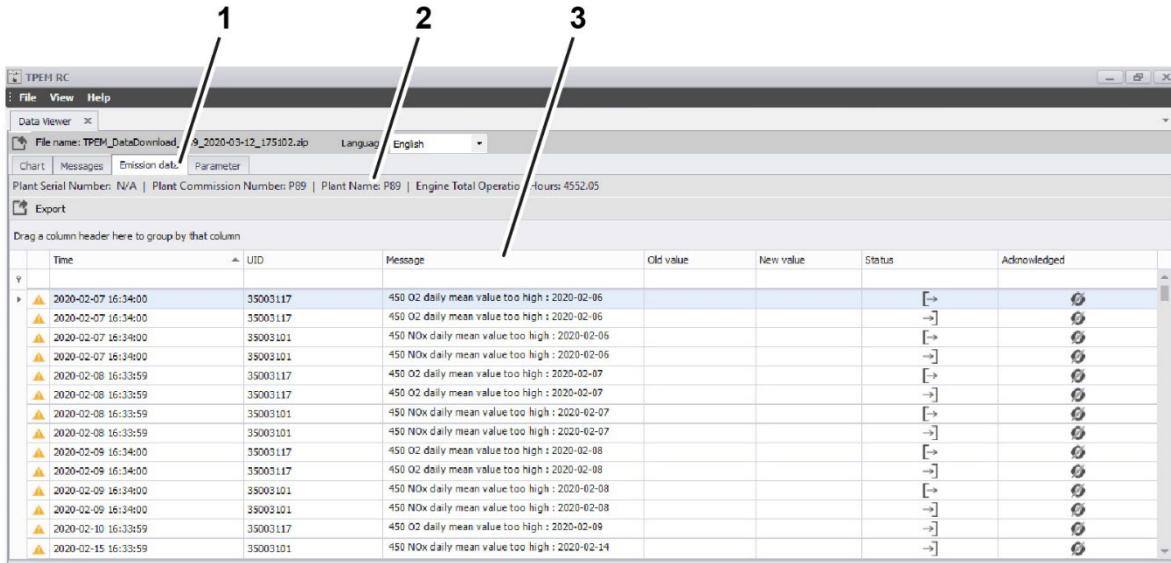
Messages can be exported as a CSV file by clicking the "Export" button (1).

- Select the "Export" button (1).
- The "Save as" window is displayed.



- Select desired save location and confirm by clicking "Save".

2.5.5 Viewing emission data

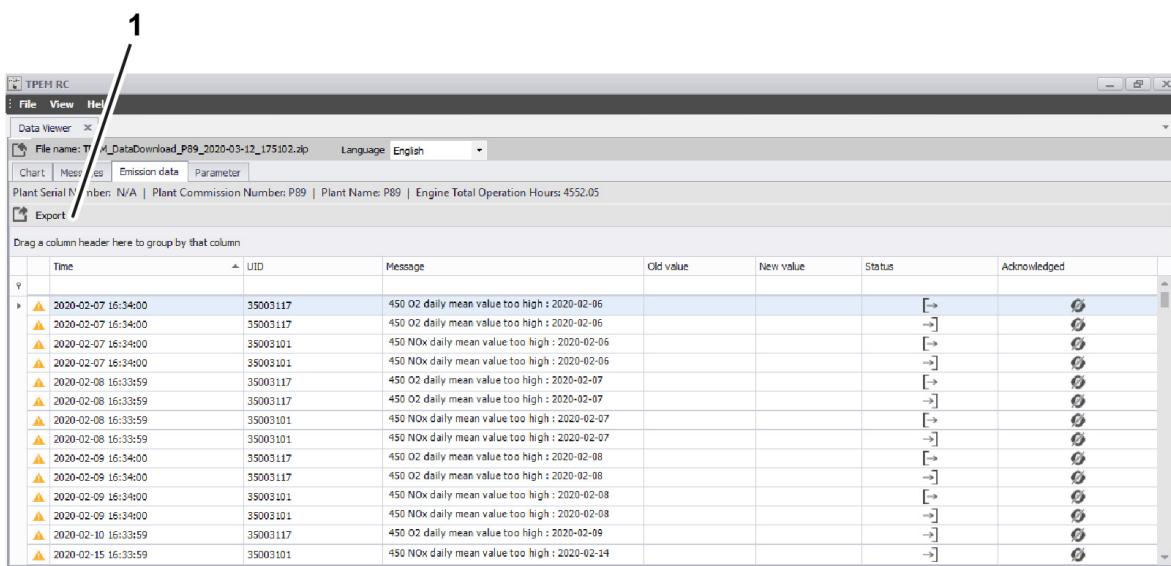


1. Emission data tab
2. Data about the plant
3. Table with emission data

Displays all events relating to emission data.

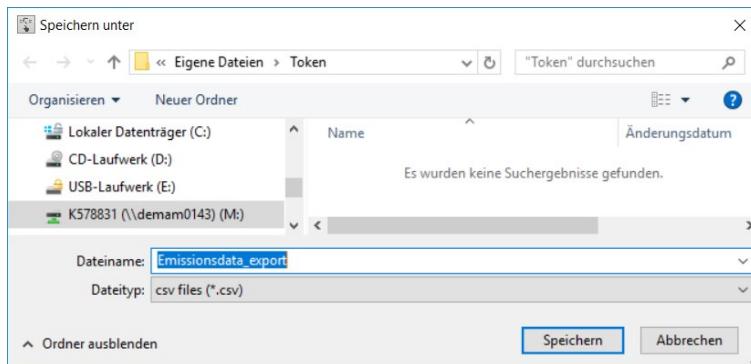
The events can be sorted correspondingly in ascending or descending order by clicking in the "Time", "UID" or "Message" title cell.

2.5.6 Exporting emission data



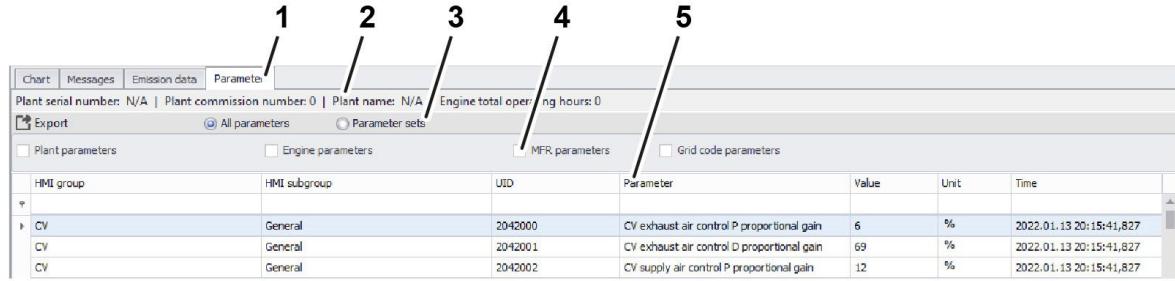
The emission data can be exported as a CSV file by clicking the "Export" button (1).

- Select the "Export" button (1).
- The "Save as" window is displayed.



- Select desired save location and confirm by clicking "Save".

2.5.7 Viewing parameters



HMI group	HMI subgroup	UID	Parameter	Value	Unit	Time
CV	General	2042000	CV exhaust air control P proportional gain	6	%	2022.01.13 20:15:41,827
CV	General	2042001	CV exhaust air control D proportional gain	69	%	2022.01.13 20:15:41,827
CV	General	2042002	CV supply air control P proportional gain	12	%	2022.01.13 20:15:41,827

1. Parameters tab
2. Data about the plant
3. Option field for filtering by all parameters or by desired parameter sets
4. Checkboxes for filtering by desired parameters
5. Table with parameters

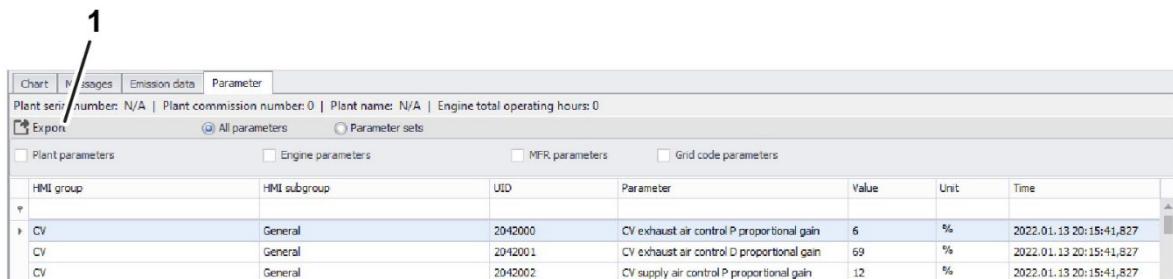
The "Parameters" tab (1) shows the parameters of a plant exported from TPEM. The parameters can be assigned to the plant via the information on the plant (2). The information on the plant (2) includes the serial number, commission number, plant name, and total engine operating hours.

The parameters can be displayed completely with the option "All parameters" (3) or filtered with the option "Parameter sets" (3) and the checkboxes (4). By clicking in the title cells (5), the parameters can be sorted in ascending or descending order. The parameters can be displayed in English, German and the third language set on the HMI.

The following information on the parameters is available via the title cells (5):

- HMI group
- HMI subgroup
- UID
- Parameters
- Value
- Unit
- Time

2.5.8 Exporting parameters

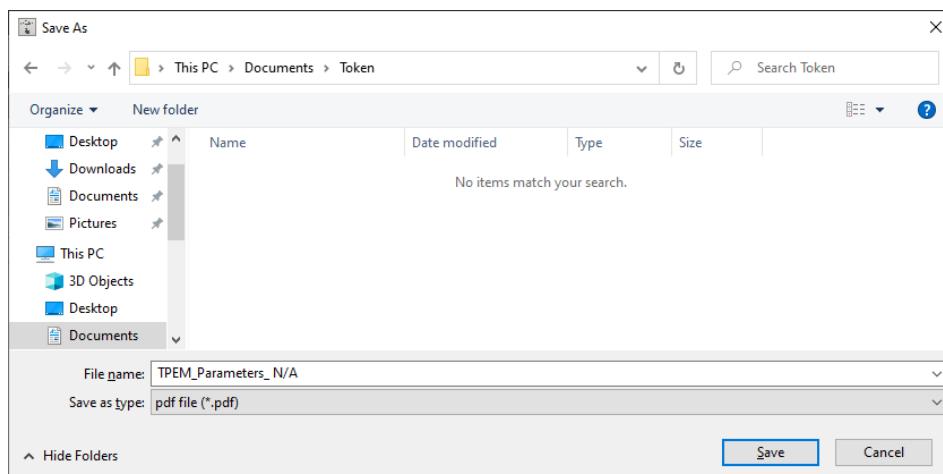


The screenshot shows the software's parameter management screen. At the top, there are tabs for Chart, Messages, Emission data, and Parameter. The Parameter tab is active. Below the tabs, there is a message bar stating "Plant serial number: N/A | Plant commission number: 0 | Plant name: N/A | Engine total operating hours: 0". There are two buttons: "Export" (highlighted with a large '1') and "All parameters" (radio button). Below these are checkboxes for "Plant parameters", "Engine parameters", "MFR parameters", and "Grid code parameters". The main area is a table with the following data:

HMI group	HMI subgroup	UID	Parameter	Value	Unit	Time
CV	General	2042000	CV exhaust air control P proportional gain	6	%	2022.01.13 20:15:41,827
CV	General	2042001	CV exhaust air control D proportional gain	69	%	2022.01.13 20:15:41,827
CV	General	2042002	CV supply air control P proportional gain	12	%	2022.01.13 20:15:41,827

The "Export" button (1) can be used to export the filtered parameters as a PDF file.

- Select the "Export" button (1).
- The "Save as" window is displayed.



- Select desired save location and confirm by clicking "Save".

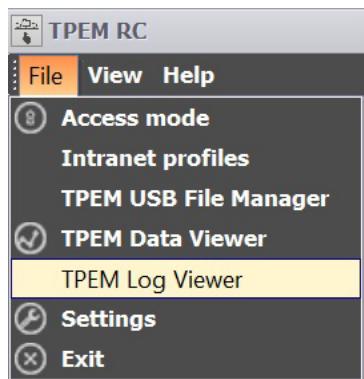
2.6 TPEM Log Viewer

Note:

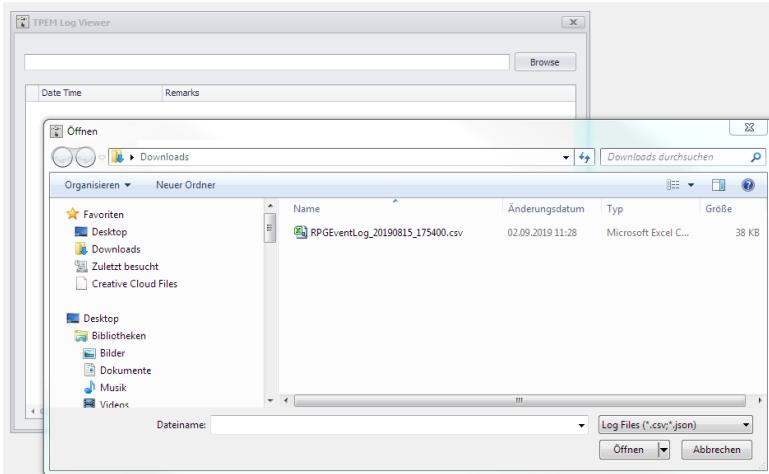
The "TPEM Log Viewer" function is available for authorization level 200 and above.

Requirements:

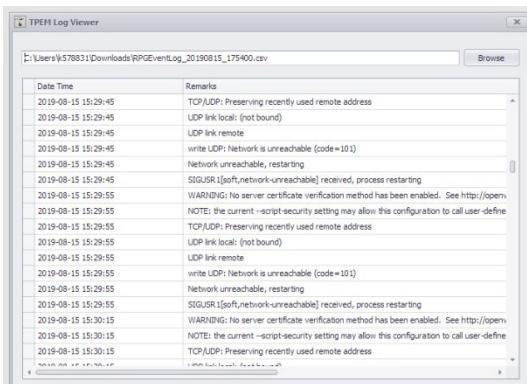
- Only log files in CSV format that have been created using the RPG configuration tool can be viewed.



- In the "File" menu, select "TPEM Log Viewer"
 → The following window appears:

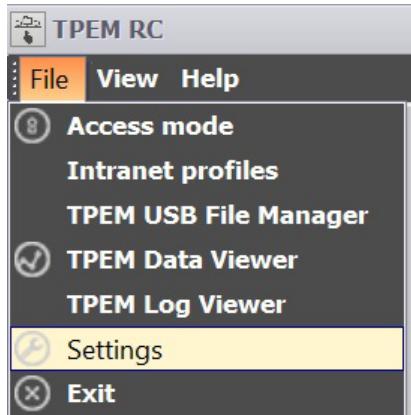


- Select the desired log file and click on the "Open" button
 → The log file is displayed:

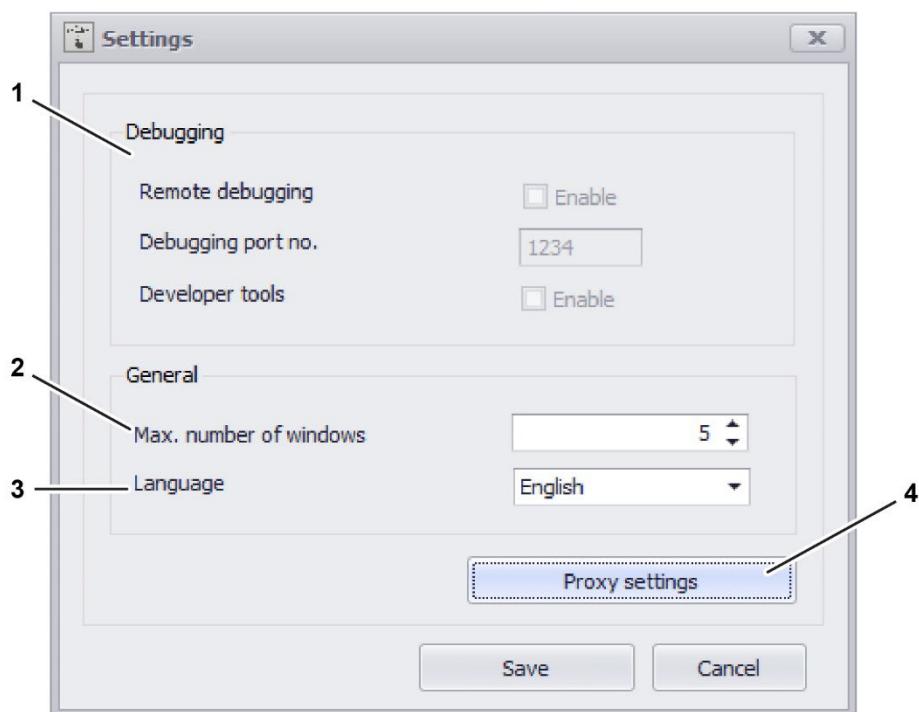


2.7 Settings

The settings must be set accordingly after installation.



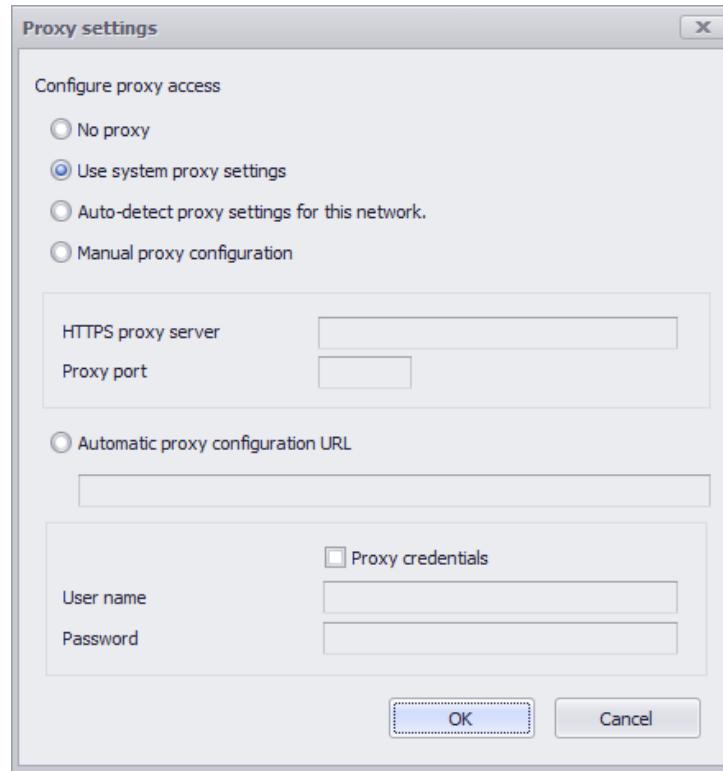
- Select "Settings" in the "File" menu
→ The input window appears



Notes on filling out the input screen:

- 1 **Debugging:** Editable by developer only
- 2 **Max. number of windows:** Preselection of the maximum number of on-screen windows that can be open at the same time. The maximum number of screen windows is 10.
- 3 **Language:** Pull-down menu for language selection.

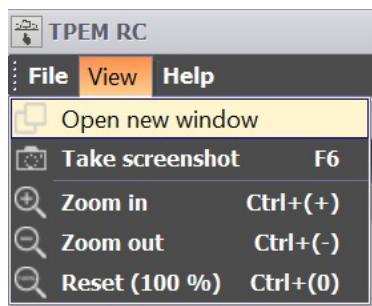
- 4 **Proxy settings:** If proxy settings are to be used. The proxy settings apply only to the TPEM Remote Client.



1. **No proxy:** The TPEM Remote Client does not use a proxy.
2. **Use system proxy settings:** The TPEM Remote Client uses the proxy settings of the system.
3. **Auto-detect proxy settings for this network:** TPEM Remote Client automatically searches for already used web proxy within the computer network.
4. **Manual proxy configuration:** TPEM Remote Client uses the manually entered proxy settings of the proxy server and proxy port. If needed, the **Proxy credentials** checkbox can be checked and the user name and password can be entered.
5. **Automatic proxy configuration URL:** The TPEM Remote Client starts an automatic setup script (e.g. WPAD or PAC) which is accessible at the manually entered URL. If needed, the **Proxy credentials** checkbox can be checked and the user name and password can be entered.

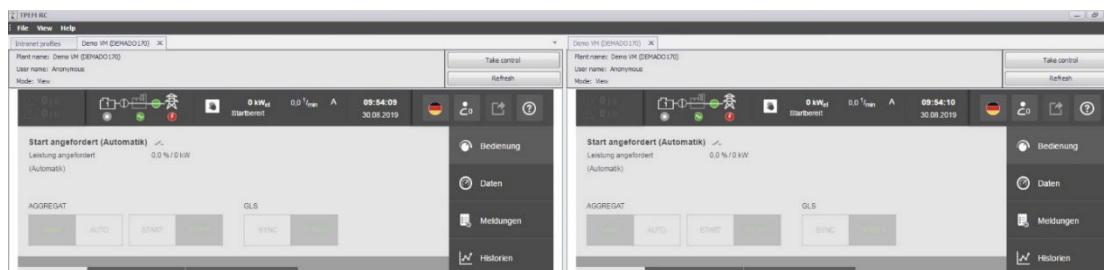
3 "View" menu

3.1 Opening a new window

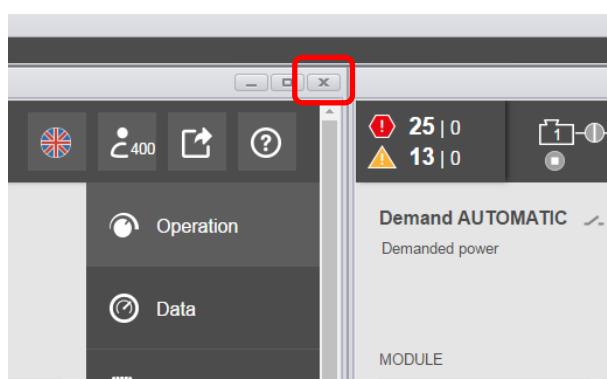


- Select "Open new window" in the "View" menu
→ Another window of the same plant is opened.

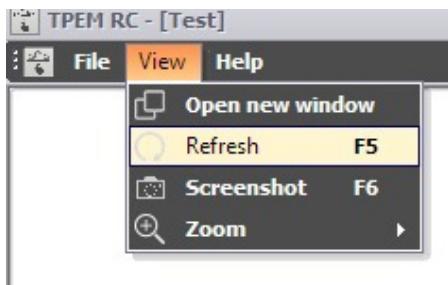
The maximum possible number of screens can be configured in the "Settings" submenu under "General". See section 2.7 Settings, page 44.



Individual subwindows, in which TPEM is displayed, can be closed using the Close button (x) in the top right of the header line.



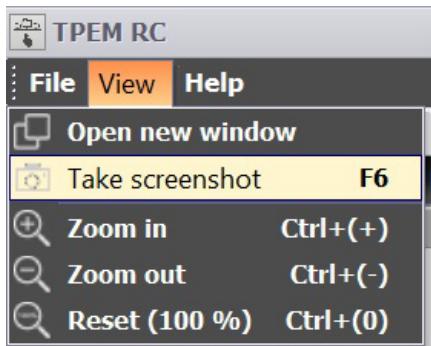
3.2 Refreshing



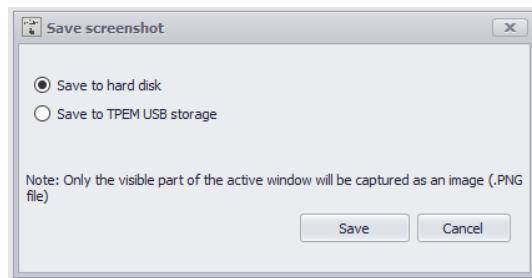
- In the "View" menu, select "Refresh" or press the "F5" key
→ The connection to the server is reestablished and the screen display is reloaded. If several windows are opened in parallel in the TPEM RC, the window currently active is reloaded.

Note: If the screen display is "frozen", "Refresh" can be useful.

3.3 Screenshot

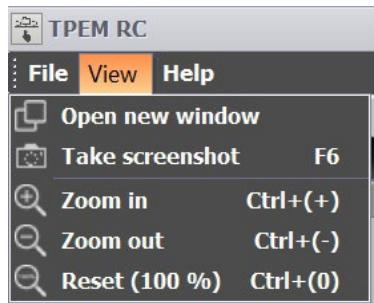


- In the "View" menu, select "Take screenshot" or press the "F6" key
→ The following window appears



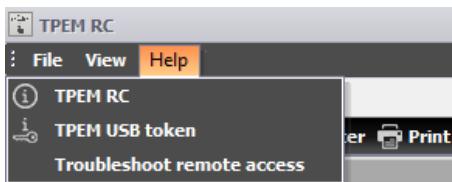
- Select "Save to hard disk", or
 - Select "Save to TPEM USB storage"
 - Specify the save location and complete the process by clicking "Save"
- Note:** Only the visible part of the active window is recorded as an image in png format.

3.4 Zoom



- In the View menu:
 - **Select "Zoom in" or press the keyboard shortcut "Ctrl" and "+":**
The highlighted screen area is magnified.
 - **Select "Zoom out" or press the keyboard shortcut "Ctrl" and "-":**
The highlighted screen area is made smaller.
 - **Select "Reset (100 %)" or press the keyboard shortcut "Ctrl" and "0"**
The magnification of the screen is reset to 100 %.

4 "Help" menu



4.1 Displaying software version

- In the "Help" menu, select "TPEM RC"
 → The "About TPEM RC" window appears
Note: The displayed screenshot is an example. It is **not** updated with a new version of the software.

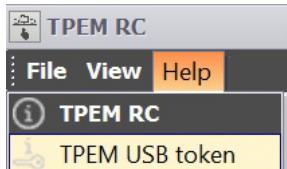


4.2 TPEM USB token

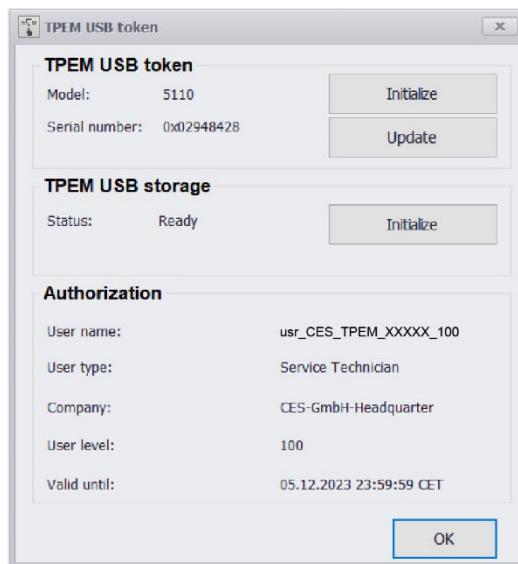
4.2.1 Viewing the TPEM USB token

The "TPEM USB token" window provides information and functions for TPEM USB tokens. For example, it is possible to check the validity of user authorizations and, if necessary, update them.

- Connect TPEM USB token to a USB interface.



- Select "TPEM USB token" in the "Help" menu.
 → The "TPEM USB token" window appears.



The "TPEM USB token" window shows the following information:

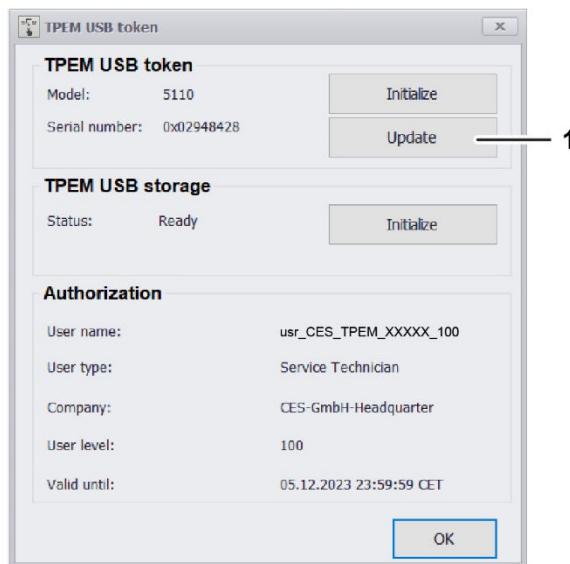
Information	Value and description
Status	Ready: The TPEM USB storage is ready for use. Not Initialized: The TPEM USB storage is not ready for use. The TPEM USB storage must be initialized. Initialization is performed automatically during the first connection to the TPEM Remote Client or TPEM TP. Not Connected: No TPEM USB storage is connected to the USB interface. Unknown Error: The TPEM USB storage is not ready for use. An unknown error needs to be fixed with assistance from Support.
User type	The following user types are possible: <ul style="list-style-type: none"> Service Technician Customer Dealer
Authorization level	The authorization level shows the access authorization that exists until the validity of the TPEM USB token has expired.
Token valid until	Date and time after which the TPEM USB token loses the access authorizations on it.

4.2.2 Updating the TPEM USB token

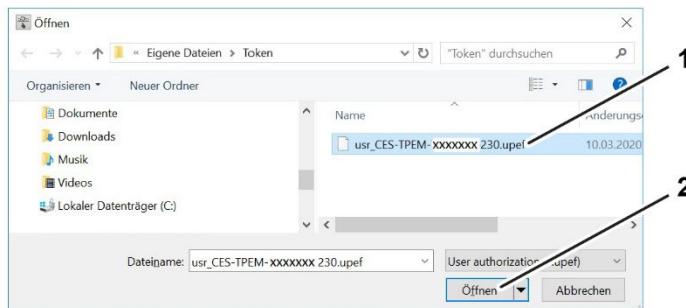
- To update the validity of the user authorizations on a TPEM USB token.
- To temporarily copy higher access authorizations to a TPEM USB token.

Requirements:

- The authorization file received by email is saved on the computer.
- The "TPEM USB token" window is open (see chapter 4.2.1 Viewing the TPEM USB token, page 50).
- Click the "Update" button (1).



→ The Windows File Manager appears.



- Select the desired authorization file (1).
→ Authorization files have the ending "upef".
- Click on the "Open" button (2).
→ The authorization file will be copied to the TPEM USB token.
→ If the process was successful, the following message appears: "TPEM USB token has been updated successfully. For the changes to take effect, disconnect the TPEM USB token and connect again."
- Confirm the message by clicking "OK".

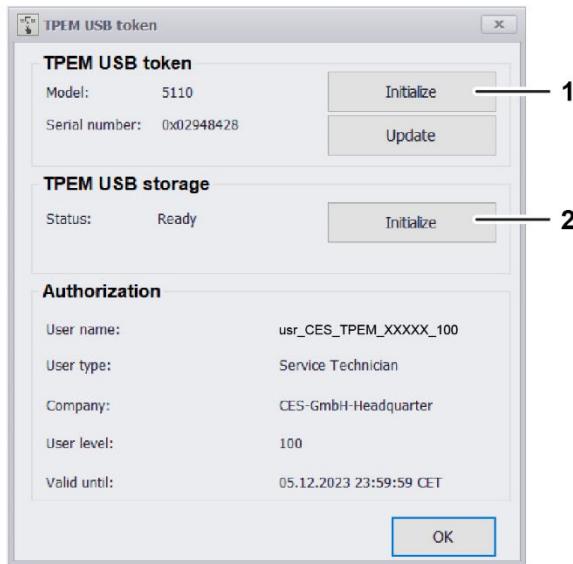
4.2.3 Initializing the TPEM USB token and TPEM USB storage

The TPEM USB token and the TPEM USB storage are initialized automatically when used for the first time. The initialization takes place in the background.

If an error occurs when using the TPEM USB token or the TPEM USB storage, they can be initialized manually and independently of one another. The data are deleted during initialization. Initialization of the TPEM USB token also deletes the authorization file, and authentication is not possible.

Requirements:

- The "TPEM USB token" window is open
(see chapter 4.2.1 Viewing the TPEM USB token, page 50).



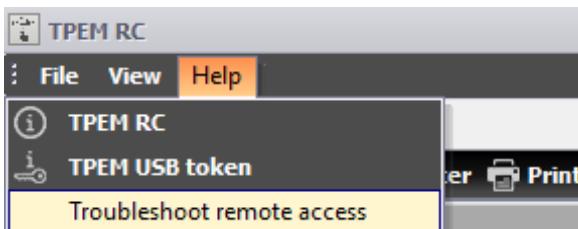
- Click the "Initialize" button (1, 2) to initialize the TPEM USB token (1) or the TPEM USB storage (2).
 - When the TPEM USB token is initialized, the following message appears:
"Initialization will delete all information on the TPEM USB token. Do you want to continue?"
 - When the TPEM USB storage is initialized, the following message appears:
"Initialization will delete all information on the TPEM USB storage. Do you want to continue?"
- Confirm the message by clicking "OK".
 - The initialization will proceed.
 - If the initialization of the TPEM USB token was successful, the following message appears: "TPEM USB token initialization completed successfully."
 - If the initialization of the TPEM USB storage was successful, the following message appears: "TPEM USB storage initialization completed successfully."
- Confirm the message by clicking "OK".

4.3 Remote access troubleshooting

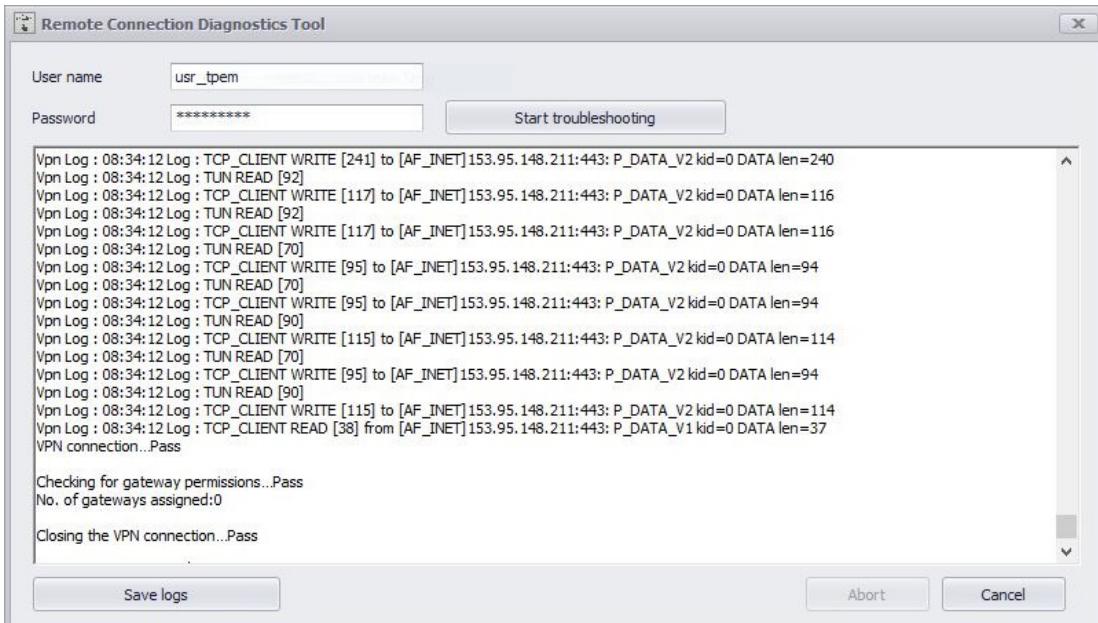
TPEM Remote Client can check the remote connection during remote access with connection diagnostics. During the connection diagnostics, the TPEM Remote Client performs several tests and displays the result in the diagnostics window.

If there is a problem with the remote access, remote access troubleshooting can be performed to determine the cause of the problem and provide information about the problem to the support. Perform remote access troubleshooting:

- In the "Help" menu, click "Troubleshoot remote access".



- Enter user name.



- Enter password.
- Click the "Start troubleshooting" button.
- Option:** Save log file:
 - Click the "Save logs" button.
 - Select file path in the File Manager.
 - Click the "Save" button.

Option: Click the "Cancel" button to end troubleshooting.

5 Setting up TPEM RC

5.1 Software system requirements

- Supported operating systems:
 - Windows 10 - Education, Pro or Enterprise edition
- PowerShell V3.0
- .net framework V4.5.1

Note: TPEM Remote Client does not support Windows 7, Windows 8 and Windows 8.1 as of TPEM Release 1.7. TPEM Remote Client can still be installed and used at your own responsibility.

5.2 Hardware system requirements

Hardware	Minimum requirement	Recommended
Processor	1.5 Ghz	-
Main memory	2 GB	4 GB
Hard disk space	512 MB	1 GB
Screen resolution	1042*768	1920*1080

5.3 Windows Services

During the installation of TPEM Remote Client and TPEM Data Viewer, Windows services are installed and started. Windows services are necessary for proper functioning of TPEM Remote Client and TPEM Data Viewer.

The network adapter "TpmEngineConnector" is required to establish a secure connection via the internet.

Can be found under Control Panel --> Network & Internet --> Network Connections

The service "TPEM.Desktop.TokenService" is necessary for token functions.

The service "TPEMDesktopService" is necessary for remote logins.

The Windows service "DataviewerRestoreService" loads data into charts.

5.4 IP addresses

The TPEM components TPEM RPG, TPEM RVS, TPEM TP and TPEM Remote Client communicate with each other via defined IP addresses. The IP addresses must be reserved in the Intranet and VPN tunnel for the TPEM components. If the IP addresses are used by other devices, the communication of the TPEM components may be disturbed. For example, TPEM Remote Client may receive data from other devices or fail to receive data from TPEM components, which may result in errors.

The following IP addresses must be reserved for the communication of the TPEM components:

IP address	Description
100.64.0.0/10	TPEM HMI virtual address range
10.0.0.0/24	TPEM network area
10.10.0.0/16	OpenVPN tunnel udp
10.40.0.0/16	OpenVPN tunnel tcp
10.20.0.0/16	OpenVPN tunnel tcp new. IP address for backup.
10.30.0.0/16	OpenVPN tunnel udp new. IP address for backup.

5.5 Installing TPEM RC

Requirements:

- User has local administrator authorization for installation and uninstallation.
- User has read/write permissions to the C:\ProgramData\Caterpillar\TPEM RC\ drive.
- User has read/write permissions to the USB ports (TPEM USB storage, TPEM USB token).

- User has read/write permissions to routing entries in the routing table.
- Computer has an internet connection for remote access from TPEM Remote Client to plants.
- Computer allows access to the following internet address for remote access to plants:
<https://rem-portal.caterpillar-energy-solutions.de>
- Computer allows access to systems with the IP series
 - 100.64.0.0/10
 - 10.0.0.53/24
- The TAP adapter "TPEMEngineConnector" must not be used by other OpenVPN connections except the TPEM Remote Client.

Executing the installation:

- Save the installation file received by e-mail on the local computer.
- Click on the installation file "TPEM RC/Desktop_vxx.exe".
- Prepare installation by double clicking on the installation file
→ The entry screen for Administrator authorization appears
- Enter data for Administrator authorization
→ The installer screen appears
- Click on "Next" button
→ The installation starts
- If the message appears that the installation was successful: Click on "Close" button
→ The installation screen disappears, the installation is finished.

Before the TPEM RC can be used after installation, certain settings have to be made (see Chapter 2.7 Settings, page44).

6 List of abbreviations

DEV	Developer
RVS	Rendezvous Server
TPEM	Total Plant and Energy Management
TPEM RC DT	TPEM Remote Client Desktop
TPEM RPG	TPEM Remote Plant Gateway
TPEM TP	TPEM Touch Panel