



Analysis App

# GESTRA TRAP*test* VKP

**Version 3.3.0.5** 



Instructions for Use **850839-00** 

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#### **Foreword**

PC app for analysing and documenting steam trap tests with the GESTRA TRAPtest VKP system.

The following symbols are used in these instructions for use.

Symbol	Meaning
Î	NOTE These tips contain additional information, e.g. about cost-efficient use of the equipment.
	ATTENTION These comments contain important information on the correct use of the equipment.

#### **Compatibility**

Data collector: VKPN 42 (Ex)

Data: TRAP test VKP, version 3.3.0.5, import \*.VKP and \*.XLS (97-2003) files

#### **Notes on installation**

■ Back up the data before uninstalling older versions.

#### **Attention**

Data from previous installations is not kept.

- Earlier versions of TRAP*test* VKP must be uninstalled beforehand via the Windows Control Panel.
- Using the supplied data cable, connect the VKPN 42/VKPN 42 Ex data collector to a USB port on your computer.
- The installation file is available as a .zip file on the Gestra homepage at "https://www.gestra.com/resources/pages/product-registration". To access it, register your equipment and fill in the forms.

#### Attention

Pay attention to the information in the README.txt.

The VKPN 42 data collector does not have to be connected during installation.

Run setupw.exe to begin installation.

The full installation has several parts:

- USB driver (required for the VKPN 42 (Ex) data collector)
- DotNet Framework
- Database software (MS SQL server 2014 Express LocalDB)
- TRAP*test* VKP analysis app
- Following successful installation, you can choose your language in the "Tools/Settings" menu.
- Before you start working with this program, you must select metric or US units.
  - → Tools/Settings menu

#### Attention

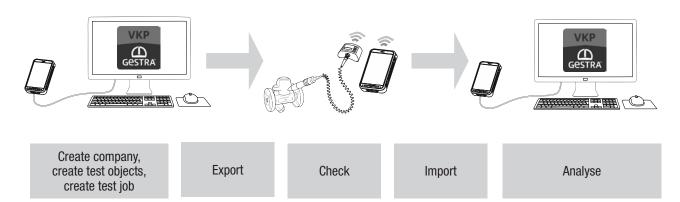
Changing the units does not affect existing data; existing temperature and pressure values are not converted.

#### **First steps**

There are two options for checking test objects (steam traps):

- Normal check, a test prepared on the computer and organised via test jobs
- Quick check, a rapid test requiring no preparation on the computer

#### **Normal check**

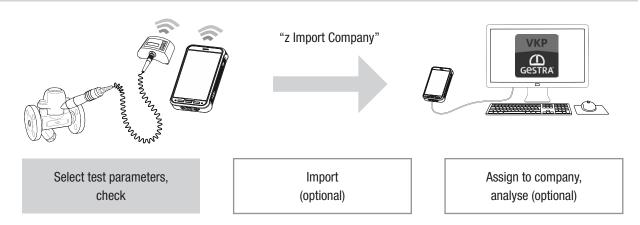




#### Note

To perform a normal check of test objects (steam traps), you must first create a company in the TRAP*test* VKP app. In this company, create all the necessary test objects and one or more test jobs. Test jobs contain the test objects that are to be tested.

#### **Quick check**





#### Note

In the quick check, a test object (steam trap) can be tested immediately. The test results can be transferred to the computer and the data further processed.

#### **First steps**

#### **Checking settings**

#### Attention

Select the units and further settings options before using the app, to prevent errors. Set the units in the PC app that you also wish to use in the data collector.

→ Tools/Settings menu

#### Setting the language of the data collector (VKPN)

Select Tools/Settings/Language and select your desired language. If the selected language is not available in the VKP 42 software, English will be used.



#### Data collector (VKPN) settings when transferring data for the first time

#### Transferring data to the PC app via USB

When you are transferring data for the first time, enable USB debugging so that the connected PC/laptop can be verified.

Data transfer must then be restarted.

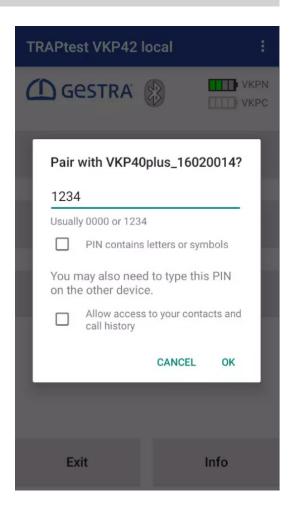


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# **First steps**

#### Transferring data to the Com box via Bluetooth

If you are asked to enter a password when connecting via Bluetooth, enter "1234".

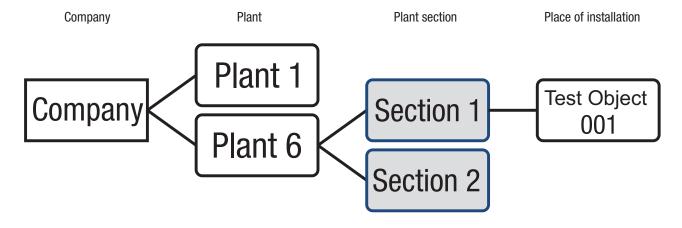


#### **Companies - Layout**

Companies are databases containing all details on test objects, test jobs, test personnel, results and analyses.

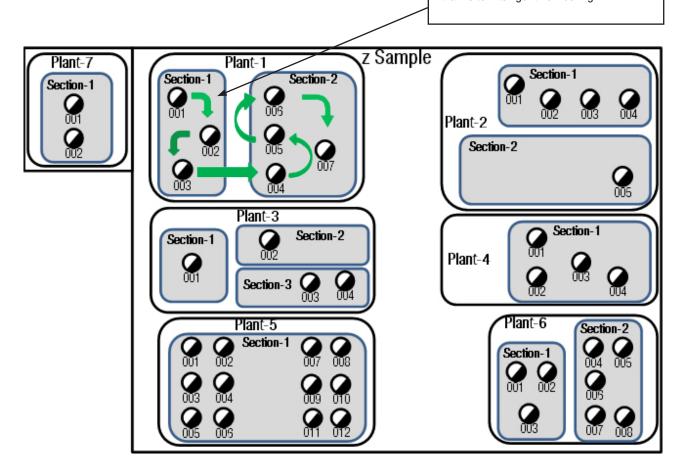
#### **General hierarchical layout**

The following comprehensively describes the address of a test object:



#### Resulting spatial layout of "z Sample" company

Example of ideal route during the test, thanks to intelligent numbering.



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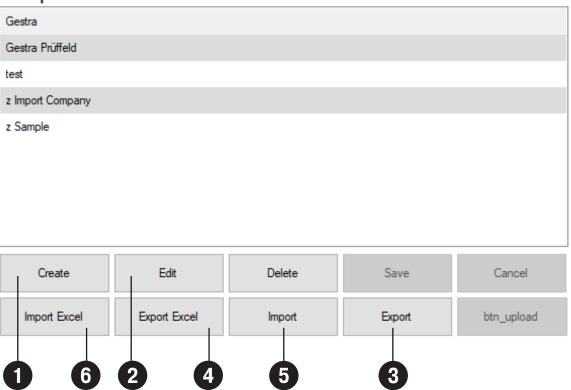
# **Companies - Layout**

# Tabular layout of "z Sample" company

Company	Plant	Plant section	Place of installation
z Sample	Plant-1	Section-1	001
z Sample	Plant-1	Section-1	002
z Sample	Plant-1	Section-1	003
z Sample	Plant-1	Section-2	004
z Sample	Plant-1	Section-2	005
z Sample	Plant-1	Section-2	006
z Sample	Plant-1	Section-2	007
z Sample	Plant-2	Section-1	001
z Sample	Plant-2	Section-1	002
z Sample	Plant-2	Section-1	003
z Sample	Plant-2	Section-1	004
z Sample	Plant-2	Section-2	005
z Sample	Plant-3	Section-1	001
z Sample	Plant-3	Section-2	002
z Sample	Plant-3	Section-3	003
z Sample	Plant-3	Section-3	004
z Sample	Plant-4	Section-1	001
z Sample	Plant-4	Section-1	002
z Sample	Plant-4	Section-1	003
z Sample	Plant-4	Section-1	004
z Sample	Plant-5	Section-1	001
z Sample	Plant-5	Section-1	002
z Sample	Plant-5	Section-1	003
z Sample	Plant-5	Section-1	004
z Sample	Plant-5	Section-1	005
z Sample	Plant-5	Section-1	006
z Sample	Plant-5	Section-1	007
z Sample	Plant-5	Section-1	008
z Sample	Plant-5	Section-1	009
z Sample	Plant-5	Section-1	010
z Sample	Plant-5	Section-1	011
z Sample	Plant-5	Section-1	012
z Sample	Plant-6	Section-1	001
z Sample	Plant-6	Section-1	002
z Sample	Plant-6	Section-1	003
z Sample	Plant-6	Section-2	004
z Sample	Plant-6	Section-2	005
z Sample	Plant-6	Section-2	006
z Sample	Plant-6	Section-2	007
z Sample	Plant-6	Section-2	008
z Sample	Plant-7	Section-1	001
z Sample	Plant-7	Section-1	002

#### **Companies - Data processing**

# Companies



#### **Companies**

1	Create a new company.
2	Rename the existing company.

#### Data backup

3	Save a complete company along with all test objects, test jobs, test personnel, test results and test curves.
Excel® export	
4	Save the most important data, test objects and most recent test result as an Excel file.

#### **Data entry**

5	Create a complete company from the backup file.
Excel® import	
6	Import the most important data and test objects into an existing company.

The Excel® file must have the same format as the Excel® file from the Excel export. New test objects are added, existing test objects are not imported.



#### Note

To ensure you use an Excel® file with the correct format:

Either change an existing file or create the new company with a test object, then run the Excel® export and adapt the content in this file.

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#### **Companies - Data processing**

#### **Data entry**

#### Note the following for the columns:

A-F must be present

#### **Attention**

#### G, H contain formulas, do not overwrite them!

The content of these cells is updated straight away or when the file is saved, depending on your Excel® settings in Options/Formulas/Calculation Options.

#### I, J are not imported

**K** is optional. A pressure is entered here, so the operating temperature of the test object is included in the results during the test. If these cells remain empty, only a cold/not cold test is performed during the test.

#### L-0 are optional

#### R, S are not imported



#### Note

Max. 5,000 test objects (rows) are permitted

#### Adding new steam trap models

Via test objects in the "Type designation" input field

#### Attention

To make sure that no unnecessary new designations are created, please always search for the desired model first in the "Type designation" field.

- 1. Create a new test object in the desired company.
- 2. Enter your desired steam trap designation in the "Type designation" field.
- 3. Select the function type and manufacturer.
- 4. Enter further details about the test object.
- 5. To finish click Save.

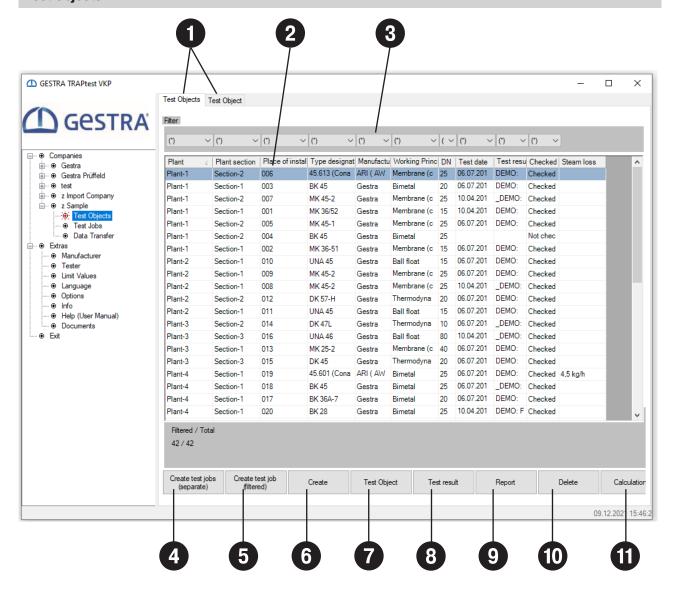
#### **Using Excel®**

- 1. Open the table that was received via Excel export.
- 2. Add the manufacturer to the "Manufacturer" table if this is missing.
- 3. Add the desired model to "SteamTraps" column A, fill in columns B + C via the dropdown list or change the sorting order.
- 4. The new model is now available in the dropdown list in column F of the "VKP Testobjects" table, in the order entered in 2.

#### Transferring data between the PC and data collector

- 1. The USB port is used.
- 2. Connect the data collector to the PC via the data cable. With VKP 42 (Ex), the USB port is recognised automatically if the necessary drivers are installed.
- 3. Run "Data Transfer" on the data collector.

#### **Test objects**



1	Toggle between the list of test objects and a detailed view of individual test objects. You can also double-click on a test object in the list.
2	Sort alphabetically and adjust the column width. Filter width is adjusted on reboot.
3	Filters available for selection.
4	Automatically create individual test jobs for each plant/plant section combination from all test objects visible in the table (pay attention to the filter).
5	Create a test job from all test objects visible in the table (pay attention to the filter).
6	Create a test object.
7	Detailed view of the test object.
8	Results of tests performed on the selected test object.
9	Print object list, various report forms are available for selection. → Tools/Settings
10	Delete the selected test object.
11	Calculate the loss of steam.

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# **Test objects**

A test object (steam trap) must be clearly described using the following data:

Plant / Plant section / Place of installation / Type designation / Location / Function type / Manufacturer.

#### **Attention**

This designation may only be used once in a company.

Entering a value for upstream pressure is recommended. Then, the operating temperature of the test object is included in the results during the test. This gives the test clear added value. If this field remains empty, only a cold/hot test is performed during the test.

#### Attention

If the entered and actual pressure figures differ significantly, this can lead to incorrect results.

All other fields are optional and are used for a detailed description.

Ta is the most recently measured temperature of the test object.

#### **Test jobs**

Here you can create test jobs in the Test Objects or Test Jobs menu and manage them in the Test Jobs menu. One test job must contain at least one and a maximum of 2500 test objects.

The max. number of test jobs is also 2500.



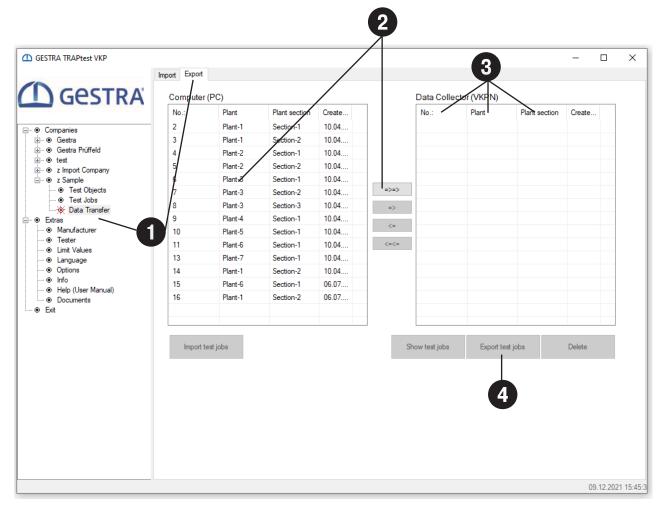
#### **Note**

Test jobs are not available in the special "z Import Company" company.

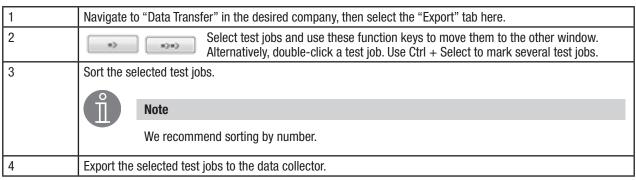
#### Exporting test jobs from the PC to the data collector

To export data, follow the steps in the section on "Transferring data between the PC and data collector". If the "Data Transfer" button on the data collector is not yet enabled:

■ Enable Data Transfer/USB debugging on the data collector, and data can now be exchanged

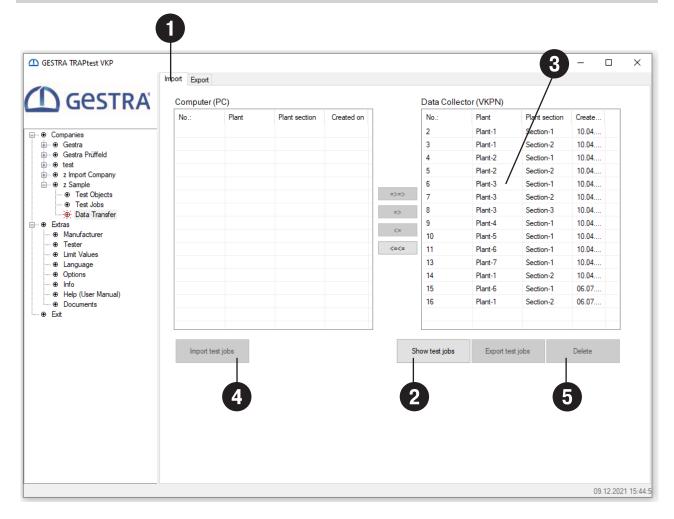


Before transferring data to the data collector, start "Data Transfer" and check your settings → Tools/Settings



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#### Importing test jobs from the data collector to the PC



Before transferring data to the data collector, start "Data Transfer" and check your settings → Tools/Settings

1	Navigate to "Data Transfer" in the desired company, then select the "Export" tab here.		
2	View the test jobs on the connected data collector.		
3	Select test jobs and use these function keys to move them to the other window.  Alternatively, double-click a test job. Use Ctrl + Select to mark several test jobs.		
4	Import the selected test jobs from the data collector.		



#### Note

The data transfer of test job 9999 can only take place in the special "z Import Company" company. Quick checks are stored in test job 9999.

#### Deleting test jobs from the data collector

5 Repeat steps 1-3 and delete selected test jobs in step 5.

#### Steam trap test



#### Note

To perform a normal check of test objects (steam traps), you must first create a company in the TRAP*test* VKP app. In this company, create all the necessary test objects and one or more test jobs. Test jobs contain the test objects that are to be tested. This is not absolutely necessary if you are testing test objects using the quick check.

→ Steam trap test → special "z Import" company

You can select the following on the data collector (VKPN) to check test objects:

#### **Test jobs**

Create these in advance and export them to the data collector.

After the test objects in the company have been checked, the partially or fully completed test jobs are exported. You can also complete tests missing from a test job after export, and then export the test job again.



#### Note

Only test results that are not yet available are imported to the relevant company. If a test object from the same test job is tested a second time in one day, the first test result is overwritten. However, test results from a test object which are obtained on the same day and come from different test jobs are presented as separate test results with the same date (they cannot be sorted by time).

#### **Quick check**

A rapid test of a test object. You do not need to set up a test job or create a company. Once saved, tests performed in this way are assigned a serial number and saved in the test job with number 9999. They can be imported to the special "z Import Company" company.



#### Note

If you wish to use these test results in a company later on, compile all the necessary data on the test objects. You can find forms for compiling this data in the

→ Tools/Documents menu.

#### Special company "z Import Company"

This company is already available when the TRAP*test* VKP app is installed. Here, you can import:

- Test jobs from unknown companies
- Test jobs from known companies. These are imported directly to the companies
- Quick checks, test job number 9999

Test objects from imported test jobs can be assigned to an existing test object of a company.



#### Note

Test objects from quick checks can be imported to a company later on. To do this, first create a company with all the desired test objects, then assign the test objects one by one. To assign test objects, you can select a company. The function type is then compared, and only test objects with the same function type are available for assignment.

#### Special company "z Sample"

This company is already available when the TRAPtest VKP app is installed.

This company provides an example of data structure and designation in a company.

#### **Tools menu**

#### Manufacturer

Create, change or delete manufacturers of test objects.

#### **Attention**

You can only delete manufacturers that are not used in any company.

#### **Test personnel**

Create, change or delete test personnel.

#### **Attention**

You can only delete test personnel that are not used in any company.

#### **Limit values**

View limit values for the individual function types.

For "Thermodynamic", the value is the limit frequency of operations (per minute); all other values are noise limit values (based on the noise scale of the data collector).

#### Language

Select the desired language. Click on the language in the window.

Setting up a new language



#### Note

If fields are empty, the app uses the English terms.

Changing the languages in a language table



#### **Note**

You cannot change an active language in the table, only inactive ones.



#### Note

Always complete your entry in a field with Enter.

#### Export, Import

Select all languages or one, the currently active language.



#### Note

Change individual pieces of text by right-clicking, if this option is enabled.

→ Tools/Settings/Miscellaneous

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#### **Tools menu**

#### **Settings**

#### Miscellaneous

- Print graphics in high resolution to improve the quality of test curves and reports.
- Edit the designation by right-clicking directly on the text that you wish to edit.
- Compress the database to reduce the volume of data after a company has been deleted.

#### Units

Switch units.

#### Attention

Values are not converted.

#### Report Option

You can select, modify and create different report layouts.

#### Currency

Here, you can select or add any currency you wish.

#### Maintenance

■ Import/export the steam trap database, save the error log, restore display settings.

#### **Data Transfer**

Use this for fault analysis if there are problems with transmission between the data collector and the analysis app.

# Miscellaneous ✓ Print graphics in high resolution ☐ Right-click changes designation



#### Units

•	Metric
0	US units

#### Report options

0	Standard
•	User defined
0	Create/Edit

#### Data Transfer

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	\VKP40plus\data

# © EUR € ○ USD \$ ○ YTL YTL Maintenance Import types (ProData) Export types (ProData)

Save log file

Reset standard display

#### Info

Version number of the app

#### Help

Instructions for use

#### Documents

Helpful documents

# **Evaluation logic table**

Bimetallic, membrane (capsule), inverted bucket

	Saturated steam temperature T <sub>S</sub>									
Noise/temperature ratio	Not available				Available					
Tuuo	≤ 40°C		≥ 40°C		≤ 40°C		$40^{\circ}\text{C} \le \text{T}_{a} \le 0.4 \times \text{T}_{s}$		$0.4 \times T_S \leq T_a$	
0 ≤ noise ≤ LV		Cold	OK			Cold	BC		OK	
LV ≤ m ≤ MAX,	FN: Yes	FN: No	_		FN: Yes	FN: No	FN: Yes	FN: No		_
below TV	Cold	Check	OK		Cold	Check	ВС	Check		0K
LV ≤ m ≤ MAX	FN: Yes	FN: No	FN: Yes	FN: No	FN: Yes	FN: No	FN: Yes	FN: No	FN: Yes	FN: No
Steam tracer Steam line	Cold	Check	FN	Not OK	Cold	Check	BC	Check	FN	Not OK
Heat exchanger			Check							Check

#### Ball float

	Saturated steam temperature T <sub>S</sub>							
Noise/temperature ratio	Not av	ailable		Available				
	≤ 40°C	≥ 40°C		≤ 40°C	$40^{\circ}\text{C} \le \text{T}_{a} \le 0.4 \times \text{T}_{s}$	$0.4 \times T_S \leq T_a$		
0 ≤ noise ≤ LV	Cold	0K		Cold	BC	OK		
$LV \le m \le MAX$ , below TV	Cold	OK		Cold	ВС	ОК		
$LV \le m \le MAX$	-	FN: FN: Yes No		_	-	FN: Yes	FN: No	
Steam tracer Steam line	Cold	FN	Not OK	Cold	BC	FN	Not OK	
Heat exchanger		Check					Check	

#### Thermodynamic

Ratio of strokes, noise/temperature	Saturated steam temperature T <sub>S</sub>							
	N	Not available			Available			
noico/temperature	≤ 40°C	≥ 40°C		≤ 40°C	$40^{\circ}\text{C} \le \text{T}_{a} \le 0.4 \times \text{T}_{s}$	0.4 ×	Γ <sub>S</sub> ≤ T <sub>a</sub>	$0.9 \times T_S \leq T_a$
$f = 0, m \le TV$		OK			BC	OK		
f ≤ LF0	Cold	OK Not OK		Cold		OK		
f≥LF0						Not OK		
$f = 0, m \ge TV$		FN: Yes	FN: No			FN: Yes	FN: No	
	Cold	FN	Not OK	Cold	BC	FN	Not OK	Not OK

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# **Evaluation logic table**

# **Abbreviations**

Abbreviation	Meaning
TV	Threshold value. Value below which the steam trap is closed and is tight to steam.
LV	Mean noise limit value
m	Mean noise
LF0	Limit frequency of operations per minute
f	Strokes, opening/closing cycles
Ta	Temperature measured at test object
T <sub>S</sub>	Saturated steam temperature (calculated from service pressure)

# Test results and recommended action

Test result	Meaning	Cause	Recommended action
OK	In order The steam trap shows no loss of steam. No banking-up of condensate was detected.	-	None.
Not OK	Loss of steam The steam trap shows a loss of steam. With the GESTRA TRAP <i>test</i> app, you can calculate the amount of steam loss and CO <sub>2</sub> emissions.	Steam trap does not close fully, regulator is worn.  Dirt, rust, deposits or particles are preventing full closure that is tight to steam.	Repair or replace the equipment.  Clean, repair or replace the equipment.
BC Banking-up of condensate The measured temperature is much lower than the target temperature. This is probably due to unwanted banking-up of condensate.		Differential pressure at the equipment is too low or even negative. If the upstream pressure (steam side) is lower than the back pressure (condensate side) and no non-return valve is used, condensate can flow back through the steam trap into the steam system.	Increase the upstream pressure, discharge the condensate into a condensate line at low pressure.  Use a non-return valve downstream from the steam trap, if operating conditions involve intervals with negative differential pressure.
		Damaged or worn regulator.	Repair or replace the equipment.
		Dirt or deposits are adversely affecting the equipment.	Clean the equipment and dirt trap or replace the equipment.
		Condensate temperature is much lower than the saturated steam temperature (extreme supercooling of condensate).	None.
Cold	Cold	Process/equipment is not in operation.	None.
	The measured surface temperature of the equipment is below 40°C.	Equipment is shut off.	Open the stop valves and check that the equipment's condensate line is in good order.
THEIR IS DEIOW 40	Differential pressure at the low or even negative. If the (steam side) is lower that (condensate side) and no used, condensate can flo	Differential pressure at the equipment is too low or even negative. If the upstream pressure (steam side) is lower than the back pressure (condensate side) and no non-return valve is used, condensate can flow back through the steam trap into the steam system.	Increase the upstream pressure, discharge the condensate into a condensate line at low pressure. Use a non-return valve downstream from the steam trap, if operating conditions involve intervals with negative differential pressure.
		Damaged or worn regulator.	Repair or replace the equipment.
		Dirt or deposits are adversely affecting the equipment.	Clean the equipment and dirt trap or replace the equipment.
		Low condensate temperature due to the type of drainage process, e.g. draining a gas pipe (compressed air, N2, fuel gas) with a UNA Simplex ball float steam trap.	None.

# **Test results and recommended action**

Test result	Meaning	Cause	Recommended action		
FN	Foreign noise The test result is adversely affected by foreign noise.	The ultrasonic signal is distorted by other components, e.g. turbines, pumps, valves, steam traps.	Use an additional, suitable test procedure to assess equipment status, determine the temperature profile and pressure on the		
The condition of the steam trap cannot be clearly assessed.		Condensate flowrate or differential pressure is too high, test curve is far above limit value or even at the max. limit of the ultrasonic scale (seen as a flat line without any variations of signal).	steam side.  Practice preventive maintenance at reasonable intervals.		
Check (for the "Heat exchanger" location only)	Check required The equipment test produced a high ultrasonic signal.	A high ultrasonic signal was measured, which was very probably not caused by loss of steam. A high ultrasonic reading in the test is provoked by a very high condensate flowrate or very high differential pressure.	If the steam trap is discharging a large volume of condensate or is working with high differential pressure (>20 bar/300 psi), no action is required.  Use an additional, suitable test procedure to assess equipment status, determine the temperature profile and pressure on the steam and condensate sides.  Practice preventive maintenance at reasonable intervals.		
Comment	Comment on the test object Comments are indicated by a preceding "_" e.g.: _Test object removed _Gasket not OK.	A comment was added for the test object during the test. With some comments, an additional test is possible. The test curve is used solely for documentation, not for showing the results.	Take action in response to any comments.		

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#### **Troubleshooting**

#### **Error identification**

The following options are available for analysing and eliminating the causes of errors.

#### **■** Error messages:

These contain information on the error. This information or a screenshot can be used for troubleshooting.

#### ■ For data transfer between PC/laptop and data collector:

→ Select Tools/Options/Save File and select the storage location.

With each data transfer, a file is then saved that can be used for troubleshooting.

#### **■** TRAP*test* app event log:

→ Click Tools/Options/Maintenance, click Save Log and save the file.

A VKP event log file is saved, which can be used for troubleshooting.

#### **■** Windows Event Log:

- → Type Eventywr.exe into the Windows Command Prompt field
- → Windows Logs/Application
- → Right-click, Save All Events As
- → Enter the filename and save the file as \*.evtx

A Windows event log file is saved, which can be used for troubleshooting.

# Troubleshooting

# **Troubleshooting table**

Rebooting the program can often help with problems, e.g. if settings or the language have been changed.

Error	Cause	Action
Installation problems	Operating system files, Dot.net version outdated, version < 4.6.2.	Install Windows updates. Install the required setupW.exe version 4.62 of TRAP <i>test</i> installation file.
Error message on startup: "VKP50UIFramework is not reacting"	Error reading from database	Close the program then reboot it. If the error persists, use the Windows Control Panel to uninstall:  "MS SQL server 2014 Express LocalDB", then install Local DB from TRAP <i>test</i> installation file once again.
After the Excel® import, the message: " xx objects imported, yy objects not imported" appears	Status message on the import of test objects. This message is shown every time an Excel® import takes place	Remarks: Test objects that are already present are not imported again. Test objects with a different core designation are recognised as new and added to the company. Changes to optional test object data are therefore not included in an import.
No data is transferred between the data collector and the computer.	The data collector is not properly connected to the computer.	Connect the data collector to the computer via the correct data cable.
	Necessary drivers or software are not correctly installed	Correctly install the necessary drivers or software from TRAP <i>test</i> installation file.
	VKP 42: USB driver not correctly installed	Connect the VKPN 42 (Ex) data collector, make sure that the data collector is recognised in Windows, then repeat installation of the TRAP <i>test</i> app/USB driver.
	The apps on the data collector and on the computer are not compatible.	Make sure that the apps on the data collector and the computer are compatible. Contact the manufacturer.
	The wrong company is selected on the computer for data transfer. A message to this effect is shown on the computer.	In "z Import Company", check the test jobs that are saved in the data collector. Select the correct company. If necessary, import the tests to "z Import Company".
	Test jobs on the data collector and test jobs on the computer have different definitions.	Make sure that the test jobs on the data collector and on the computer have identical definitions. Do not change any test jobs once they have been exported to the data collector. If necessary, import the tests to "z Import Company".

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