MRU AIR fair since 1984 ®
EMISSION MONITORING SYSTEMS

Gas Cleaning System

USER MANUAL

9442EN-GW

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The products described in this manual are subject to continuous development and improvement. We therefore welcome any customer feedback, comments and suggestions regarding our product and its operating instructions that help to improve the product, service or documentation.

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FOR MORE INFORMATIONS ABOUT COMPANY MRU PLEASE VISIT OUR WEBSITE www.mru.eu

Legal information / Copyright notice

Original operating instructions

Version of these instructions: V1.02.EN

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1 Table of contents

2 Introduction and basic conditions

W002

These instructions enable safe and efficient use of the product.

The user must read and understand these instructions carefully before starting work.

The basic prerequisite for safe working is compliance with all the specified safety instructions.

2.1 Where to store the instructions

The instructions are an integral part of the product and must be kept in the immediate vicinity of the product and accessible to personnel at any time.

2.2 General information on the manual

- This manual will enable you to understand and safely operate this MRU analyser.
- Please read this manual carefully.
- Familiarise yourself with the product before using it.
- This analyser may only be used by qualified personnel and only for its intended purpose.
- Please observe all safety instructions and warnings to avoid injury and damage to the device.
- Hand over all documents if you pass the analyser on to third parties.

2.3 Safety signs

These safety instructions are based on the “SAFE principle” and are used throughout this manual:

Symbol

⚠ DANGER Signal word and color

Specific the type and source of the hazard

Specific consequences of non compliance

- ➢ Measures to avoid the hazard

⚠ DANGER

Refers to an imminent danger that will lead to serious physical injury or death if ignored.

⚠ WARNING

Indicates an imminent danger which, if ignored, can lead to serious physical injury, damage to property or death

⚠ CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor injury.

ATTENTION

Indicates a potentially hazardous situation which, if not avoided, may result in damage to the device or its surroundings.

NOTE

Indicates application tips and other particularly important information.

2.4 Symbols

Symbols help to identify a danger and escape that danger. You will find the following symbols in these instructions:

Warning symbol	Figure number	Meaning
	W001	General warning symbol to identify a danger

Mandatory symbol	Figure number	Meaning
	M002	Observe the operating instructions
	M004	Use eye protection
	M008	Use foot protection
	M009	Use hand protection

2.5 General important information for the operator of the measuring device

MRU measuring devices are developed and manufactured in accordance with the applicable standards. Nevertheless, a failure or malfunction of individual device components is possible within the service life of the device. It is the responsibility of the operator to consider and assess the effects of malfunctions on the device and, if necessary, to limit them by taking external measures.

CAUTION

Effects of device malfunctions

Unrecognised effects on the application of the measuring device operator may arise due to device malfunctions.

- ➢ The system operator must assess the effects of device malfunctions and, if necessary, limit them by taking external measures.

Every system operator, user and technician who operates or maintains the device must be aware of the potential dangers associated with the use of the device. These dangers are explained in this manual. The information and instructions in this manual must be observed. Only trained and qualified personnel are authorised to use MRU measuring devices.

CAUTION

Non-compliance with local regulations, provisions and standards

This may result in an inadequate risk assessment.

- ➢ Always ensure that the MRU measuring device is installed and operated in accordance with local regulations, provisions and standards. Hazards must be identified and suitable countermeasures taken as part of a risk assessment.

When using the MRU measuring devices to measure other devices or systems, the manufacturer's documentation of the system or device manufacturer must be observed.

CAUTION

Non-intended use

The warranty becomes void

- Only use the MRU measuring device for its intended purpose and observe the local regulations, provisions and standards. Only use your MRU measuring device within the limits of use specified in the technical data.

2.6 MRU warranty conditions

For the warranty conditions for your analyser, please consult MRU's general terms and conditions.

2.7 Disposal take-back guarantee

MRU undertakes to take back all contaminated parts supplied by us that cannot be disposed of in the "normal" way.

The return delivery must be free of charge for us. Parts containing hazardous substances are: e.g. electrochemical sensors.

2.8 Return of devices

MRU GmbH is obliged to take back all analysers delivered after 13 August 2005 for proper disposal. The device must be returned to MRU with postage prepaid.

2.9 Packaging

Keep the original carton and packing material to avoid damage in transit if you need to return the analyser to the factory.

2.10 Taking back parts containing harmful substances

MRU GmbH undertakes to take back all parts supplied by us that contain hazardous substances and cannot be disposed of in the normal way.

Parts containing hazardous substances are e.g. electrochemical sensors, batteries and accumulators.

The return delivery must be free of charge for MRU.

2.11 The company MRU GmbH

From left to right: Production - Sales, administration and development - Customer service

The measuring device is manufactured by MRU GmbH in Neckarsulm-Obereisesheim, a medium-sized company that has specialised in the development, production and sale of high-quality emission analysis systems since 1984. MRU manufactures both standard types and customised special versions.

3 Notes on device and safety

3.1 Instructions on the safe operation of the device

3.1.1 Visual inspection

Before switching on the device, carry out an overall visual inspection of the device and, where appropriate, the optional attachment parts.

CAUTION

Damaged parts

Unstable operating state

- ➢ Do not put the device into operation if it is damaged. Examples of parts which can be damaged by external influences, such as unintentional damage, animal bites or weather influences are:
  - Housing and inspection glass
  - Power supply unit
  - Power supply
  - Gas feed line
- ➢ Protect the device from access by unauthorised persons.

3.1.2 Maintenance work

The faultless operation of your device is only guaranteed with the correct maintenance.

CAUTION

Incorrect maintenance

Unreliability of the device during operation

- ➢ Only carry out maintenance work and repair work that is described in the operating instructions.
- ➢ Only use original spare parts.
- ➢ Only operate the device with the power supply unit supplied.
- ➢ Do not store the device together with solvents, acids or other aggressive substances.

3.2 Qualification

The qualification matrix shows the activities during the life cycle of the device. Each activity is assigned a qualification level,

1. Instructed person: The person has been instructed in their task an informed about the risks and involved in carrying it out.
2. Trained specialist: The person has received training that enables them to fulfil their tasks. They are informed about all the risks involved in their work, are able to recognise risks themselves when carrying out their work and have a suitable switching authorisation.
3. You can contact the MRU service for repairs, calibrations, retrofitting and disposal issues.

Qualification \ Activity	Instructed person	Trained specialist	MRU service
Transport	**X**		
Unpacking	**X**		
Take measurement results	**X**		
Adjust settings		**X**	
Mounting		**X**	
Commissioning		**X**	
Routine maintenance		**X**	
Repair			**X**
Modification			**X**
Decommissioning		**X**	**X**

Qualification matrix

4 Description of services

The gas cleaning system is a mobile case solution for the exhaust gas treatment of measuring gases. The gas cleaning system is equipped with three refillable washer bottles. These bottles can e.g. be filled with diesel as washing medium to extract moisture or tar from the gas flow.

4.1 Intended use

The gas cleaning system serves to scrub tar from the measuring gas and is used between the point of sampling and the analysis device.

Any other use is **not** in accordance with the intended use. MRU is not liable for this. Any guarantee or warranty is void.

Non-compliance with the operating instructions is **not** in accordance with the intended use.

Improper installation and commissioning is **not** in accordance with the intended use.

Improper maintenance or failure to carry out maintenance is **not** in accordance with the intended use.

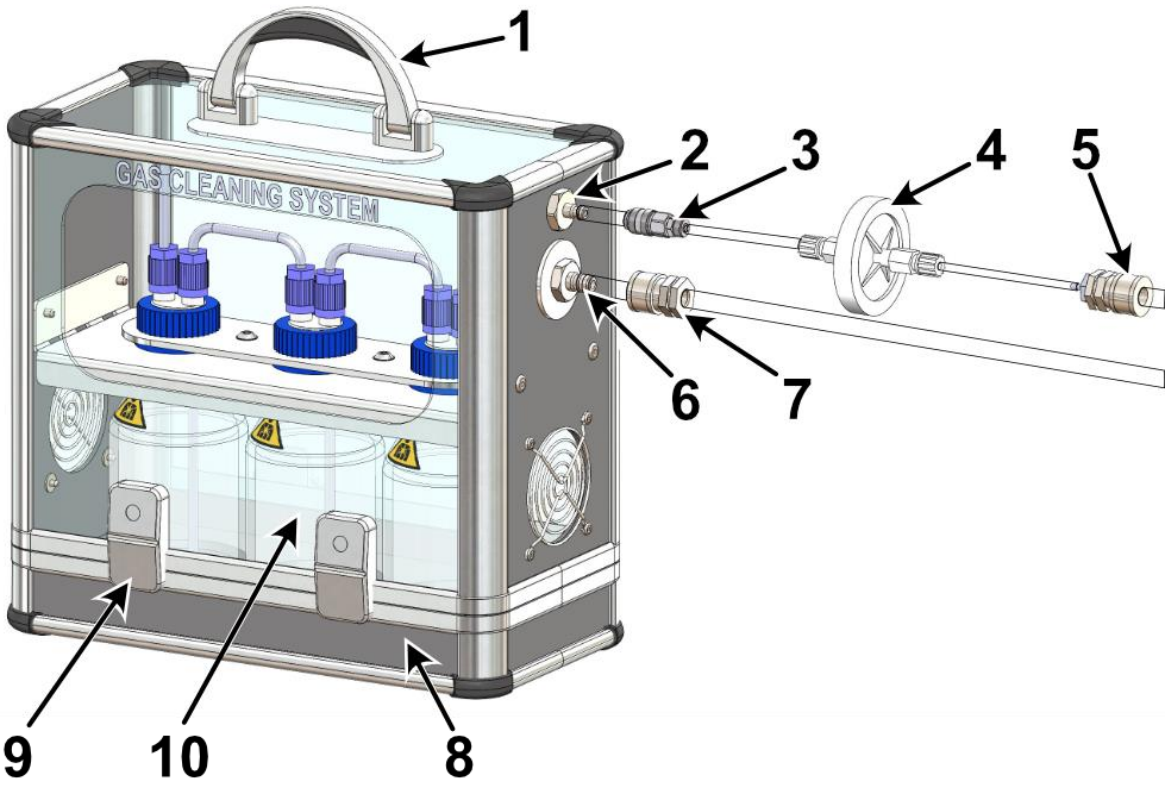
Modifications to the device are not permitted; retrofitting must be carried out in consultation with MRU.

Improper disposal is **not** in accordance with the intended use. Observe the legal regulations of the country in which the device is disposed of.

The device must **not** be used as a safety-determining component whose measurement results could jeopardise the safety of persons, the system or parts thereof.

5 Description of the device

5.1 Control elements of the gas cleaning system



Control elements

#	Description
1	Handle
2	Connection gas outlet
3	Adapter
4	Water stop filter
5	Quick-acting closure gas outlet
6	Connection gas inlet
7	Quick-acting closure gas inlet
8	Service flap
9	Closure service flap
10	Bottles for washing medium

6 Installation MRU measuring device

6.1 Unpacking the device

M008

⚠ CAUTION

Weight of the device

Impact and crushing injuries

- ➢ Always put the device down safely.
- ➢ Unpack the device in a location where you are undisturbed.
- ➢ Observe the weight and the dimensions of the device; in case of doubt, lift the device with two persons or use a lifting device.

▶ Take the packaged device as closely as possible to the intended point of use.

NOTE

Do not unpack the device in ex zones.

▶ Unpack the device. Avoid damaging the filling material.

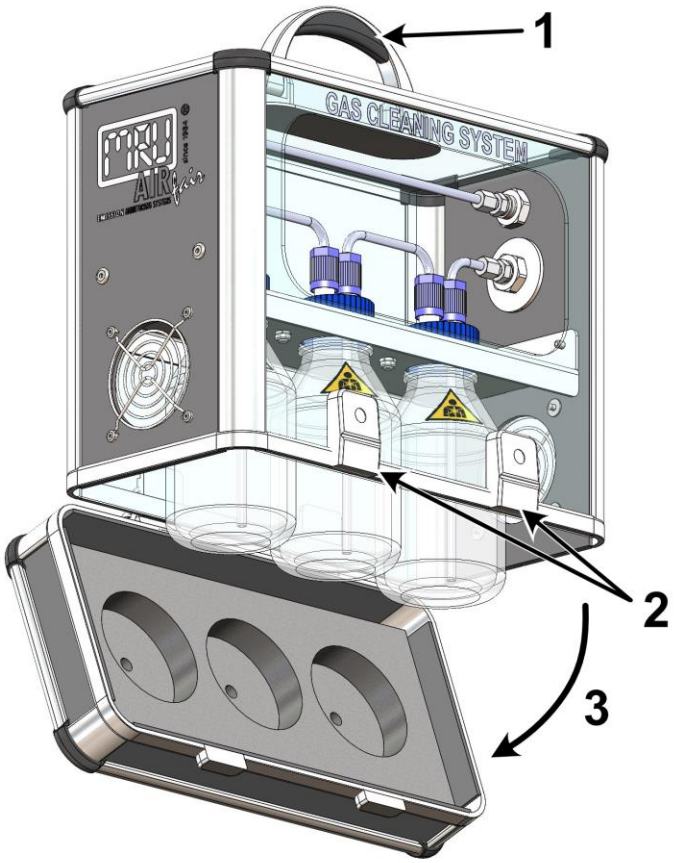
▶ Retain the original packaging so that you can transport the device safely.

▶ Check the delivery for completeness.

7 Commissioning of the MRU measuring device

7.1 Preparing the device for the measurement

In this chapter you learn how to prepare the gas cleaning system for the measurement.



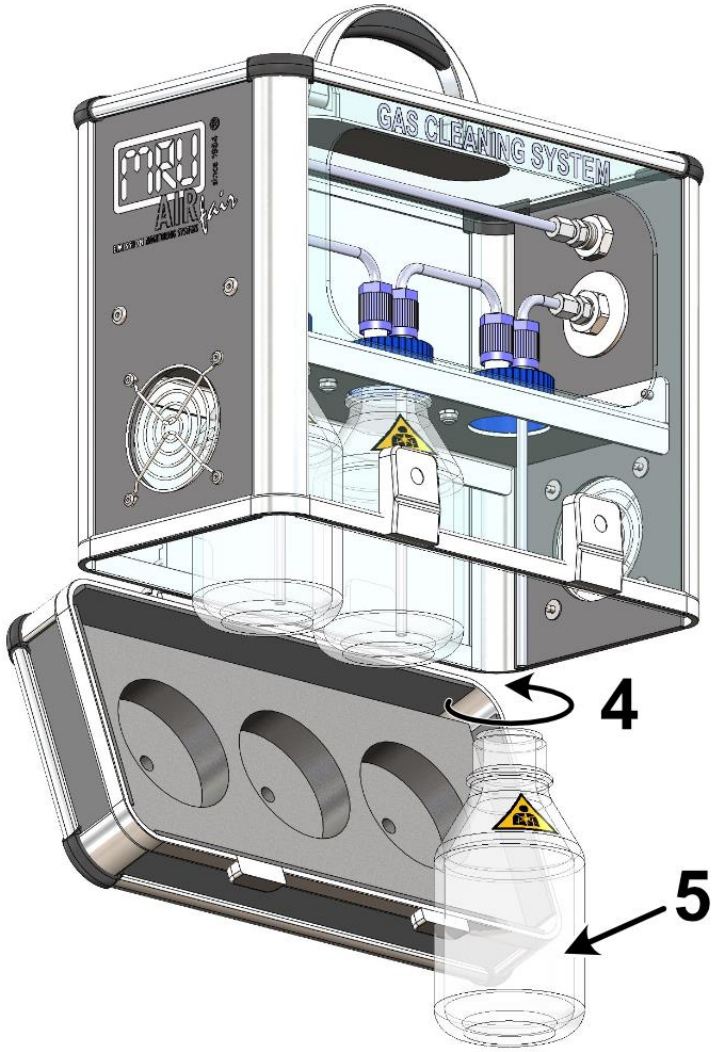
Opening the gas cleaning system

#	Description
1	Handle
2	Closure left and right
3	Bottom flap

▶ Lift the gas cleaning system by the **handle (1)**.

i If possible, suspend the gas cleaning system on a safe fastening means.

▶ Opening the **closures (2)** opens the **bottom flap (3)**



Unscrewing the washer bottle

#	Description
4	Screw connection washer bottles
5	Washer bottle

▶ **Unscrew (4)** the **washer bottle (5)**.

W071

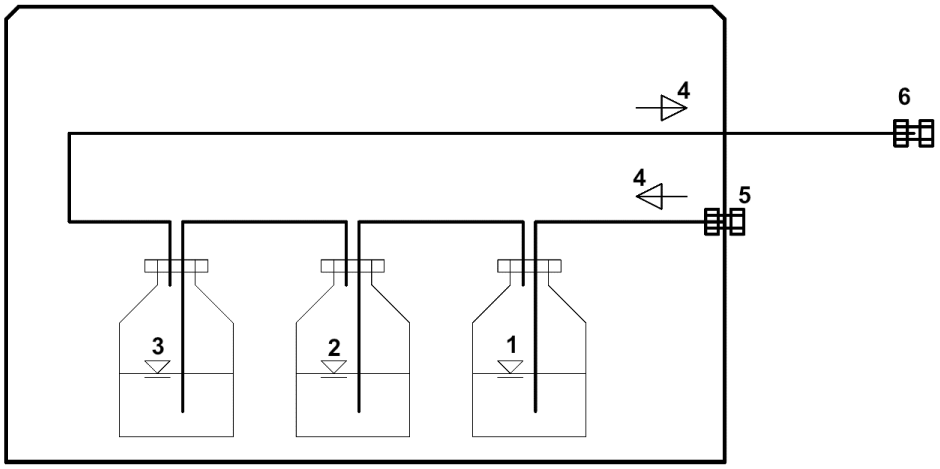
⚠ CAUTION

Substances hazardous to health

Health hazards for the user

- ➢ Please observe the product data sheet for the washer medium. Take all protective measures prescribed to protect the user.

▶ Fill the washer bottle with washer medium as specified in the table below.



Filling capacity and flow rate

#	Description
1	Washer bottle 1 filling capacity 500 ml
2	Washer bottle 2 filling capacity 300 ml
3	Washer bottle 3 filling capacity 200 ml
4	Flow rate 60 l/h
5	Connection gas inlet
6	Connection gas outlet

▶ Screw the **washer bottles (5)** back into the **screw connections (4)** and close the **bottom flap (3)**.

W028

⚠ CAUTION

Washer media is distributed inside the device

Leaking washer medium can promote a fire.

- ➢ Close the washer bottles tightly.
- ➢ Check the fit of the washer bottles before using the appliance.
- ➢ Remove any leaking washer media immediately.

✔ The gas cleaning system is prepared for the measurement.

W028

⚠ CAUTION

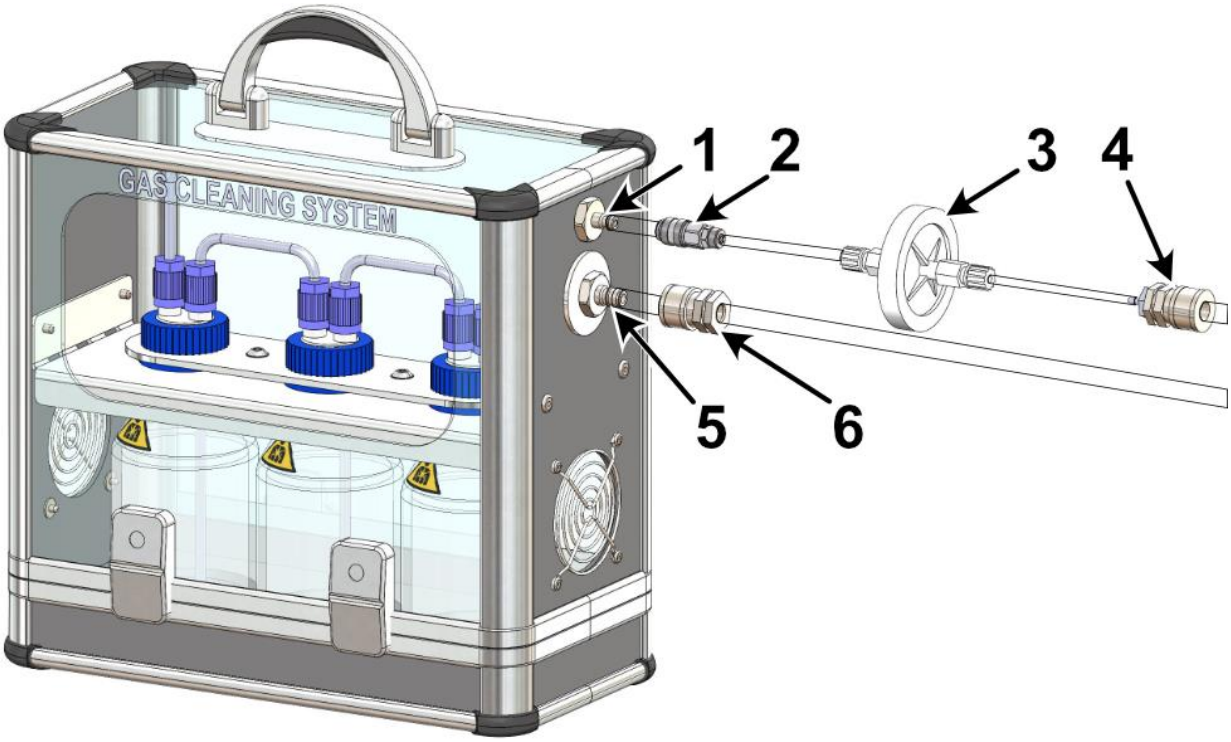
Diesel gets into the pipes and drips from the gas cleaning system

Leaking washer medium can promote a fire.

- ➢ Only operate the device upright.
- ➢ Remove any leaking washer media immediately.

8 Operation

8.1 Connection of the gas cleaning system



Control elements

#	Description
1	Connection gas outlet
2	Adapter
3	Water stop filter
4	Quick-acting closure gas outlet
5	Connection gas inlet
6	Quick-acting closure gas inlet

Proceed as follows to connect the gas cleaning system to your device:

PREQUISITE:

☑ The gas cleaning system is ready for operation.

☑ The device to which you wish to connect the gas cleaning system is switched off.

STEPS:

▶ Attach the hoses of the **water stop filter (3)** between the **quick-acting closure gas outlet (4)** and the **adapter (2)** ein.

▶ Connect the **adapter (2)** to the **gas outlet connection (1)**.

▶ Connect the **quick-acting gas inlet (6)** to the **gas inlet connection (5)**.

i Pay attention that the connections engage neatly and can no longer be released without pulling back the locking mechanism.

You have installed the gas cleaning system.

8.2 Use of washer media

Commercial diesel or hydrogen peroxide are recommended as washer medium.

⚠ CAUTION

Incorrect use of chemical substances

Health damage to the user of the gas cleaning system.

- ➢ Please observe the product data sheet of the washer medium.

CAUTION

Falsche Nutzung Chemischer Substanzen

Damage to the gas cleaning system or the connected device

- ➢ When using other washer media, make sure that the washer media do not damage the materials of the gas cleaning system and of the device connected to it.

8.3 Gas connections

Clean the gas connections if liquid escapes from the connections when coupling or uncoupling the gas cleaning system from the connected device.

W028

⚠ CAUTION

Brandfördernde Stoffe

Washer medium that has leaked from the quick-acting couplings can promote fire.

- ➢ Remove the leaked washer medium immediately after using the quick-acting couplings.
- ➢ Do not continue to use the gas cleaning system if one of the quick-acting couplings is leaking. Have the device repaired at your MRU Service Centre.

9 Maintenance of the MRU measuring device

Maintenance work	Point in time	Executed by
Check washer medium fill level and soiling	Every time before commissioning	User of the gas cleaning system
Check gas connections and clean where necessary	Every time before commissioning	User of the gas cleaning system
Check that the washer media bottles are firmly seated in the thread of the connection to the pipework	Every time before commissioning	User of the gas cleaning system
Replace washer medium	In case of visible soiling	User of the gas cleaning system
Check water stop filter	Every time before commissioning	User of the gas cleaning system
Replace water stop filter	In case of visible soiling or annually during maintenance of the basic device	MRU Service Centre
Check screw connections of lines for tightness and damage	Annually during maintenance of the basic device	MRU Service Centre

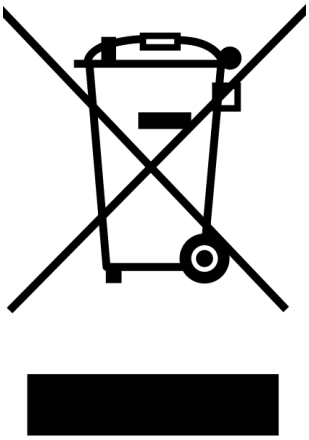
10 Decommissioning

Irrespective of the device version, the following steps must be taken before decommissioning:

- ▶ Evacuate all remaining analysis gases from the device.
- ▶ Rinse the device with nitrogen or ambient air.
- ▶ Dispose of the device in a professional manner. Observe the legal conditions at the place of disposal of your device.

  i Information on the disposal of your device can be obtained from your MRU Service Centre. Parts containing hazardous substances, such as electrochemical sensors, batteries or rechargeable batteries can be sent back to MRU. The return shipment must be free of charge for MRU.

The appliance must not be disposed of with household waste.



You can find the WEEE registration number in the imprint under www.mru.eu.

11 Technical data

Description	Specification
Dimensions (LxWxH) mm	380x200x410
Weight (kg)	4.7
Washing medium	Diesel (recommended) / hydrogen peroxide
Material of vessel	Borosilicate glass
Pressure drop (against atmosphere, filled with water)	30 hPa (60 l/h)

12 Photo credits

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13 Customer service, service centres

MRU customer service can be contacted by telephone, fax and email:

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To find your nearest **MRU service centre** for your **MRU products**, please visit our website:

https://www.mru.eu/service/regionale-servicestellen/