



## NGG 60 TOC Gasgenerator

Operating instructions



Version: Version 2; 3/2017

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## 1. Safety:

The safety of this device with regard to the protection of persons, the environment and the material to be worked on is essentially dependent on the behaviour of the person working on the device. Before using the appliance, read the operating instructions carefully and observe the instructions in order to avoid errors and damage caused by them, in particular damage to health.

The product described in this operating manual has left the factory in a safety-related and tested condition. In order to maintain this condition and to achieve proper and safe operation of this product, it must only be used in the manner described by the manufacturer. In addition, the flawless and safe operation of this product requires proper transport, professional storage and installation, as well as careful operation and maintenance.

This operating manual describes how you can put the system into operation, operate it and maintain it.

The device may only be operated by instructed personnel. The mains connection cable and plug must be checked for damage before use. If there is damage, the device must not be connected to the mains. The specified voltage (rated voltage) must correspond to the existing mains voltage. Work on the electrical equipment may only be carried out by qualified electrical engineers in a safe condition (voltage unlocked, power plug pulled).



Only approved original spare parts/accessories may be used. The use of other parts carries unknown risks and must be avoided in any case. The functionality and safety of the device is only guaranteed if the necessary tests, maintenance and adjustment work are carried out by SERALTEC Service für Analysentechnik GmbH or personnel authorized by it.

SERALTEC Service für Analysentechnik GmbH is not liable for any damage to the device if no original spare parts or accessories were used during repairs or parts replacement. In the event of improper use, liability is also excluded.

### 1.1. Warnings

Safety instructions and warnings serve to avert danger to the life and health of users or maintenance personnel or to prevent damage to property. They are highlighted in this instruction manual by the signal terms defined here. They are also marked by warning symbols (pictograms) at the point of their appearance. The signal terms used have the following meanings for the purposes of this manual and the information on the product itself:

	<p><b>Danger</b> Means that death, serious bodily injury and/or significant property damage <b>will</b> occur if the appropriate precautions are not taken.</p>
	<p><b>Warning</b> Means that death, serious bodily injury and/or significant property damage <b>can</b> occur if the appropriate precautions are not taken.</p>

	<p><b>Caution</b> With warning triangle means that minor bodily injury <b>can</b> occur if the appropriate precautions are not taken.</p>
	<p><b>Caution</b> Without a warning triangle means that property damage <b>can</b> occur if the appropriate precautions are not taken.</p>
	<p><b>Attention</b> Means that an undesirable event or condition <b>can</b> occur if the appropriate precautions are not taken.</p>
	<p><b>Hint</b> Is an important piece of information about the product itself, the handling of the product or the part of the operating manual that should be drawn to special attention.</p>

## 1.2. Intended use

Intended use within the meaning of these operating instructions means that this product may only be used for the applications provided for in the technical description and only in conjunction with the third-party devices and components recommended or approved by SERALTEC Service für Analysentechnik GmbH.

The product described in this manual has been designed, manufactured, tested and documented in accordance with the relevant safety standards. If the handling instructions and safety-related instructions described for project planning, assembly, proper operation and maintenance are observed, there are therefore normally no dangers with regard to property damage or to the health of persons.

The flawless and safe operation of this device also requires proper transport, professional storage, installation and assembly, as well as careful operation and maintenance.



### Warning

This device is powered by electricity. After removing the housing or contact protection, certain parts of the device/system become accessible that may be under dangerous voltage. Therefore, only appropriately qualified personnel may carry out interventions on this device. These personnel must be thoroughly familiar with all sources of danger and repair measures in accordance with these operating instructions.



### Warning

The device may only be operated with compressed air 5 – 12 bar. Under no circumstances should the TOC gas generator be operated with flammable or corrosive gases or with other gas mixtures. The device must not be placed and operated in places where flammable or explosive gas atmospheres can form. The device is not splash-proof.

## 2. Technical description

### 2.1. Applications:

The NGG 60 TOC gas generator is a complete system that produces synthetic air as a carrier gas for all analyzers from in-house compressed air (TOC determination, GC detectors, exhaust gas analyzers). The purchase of the NGG 60 pays for itself after a short time and makes you independent of carbon-dioxide-free synthetic air from pressure cylinders.

### 2.2. Functionality:

The NGG 60 TOC gas generator converts normal compressor air into high-purity synthetic air. First, the compressed air brought to the device is filtered to separate particles, water, and oil droplets. It is then heated to a high temperature (600 °C) to break down all the hydrocarbons in water and carbon dioxide with the help of a platinum catalyst. The CO<sub>2</sub> and H<sub>2</sub>O are removed from the gas by passing it through special molecular sieves. The desorption of the enriched gases takes place by reducing pressure. The gas generator contains two molecular sieve cartridges. One produces the synthetic air, while at the same time the second is regenerated with treated air. At certain time intervals, the mode of operation is reversed so that a continuous flow of gas can be extracted without pressure fluctuations. Before the synthetic air leaves the generator, a fine filtration is carried out to protect the end user from particulate matter. The CO<sub>2</sub> content is reduced to less than 1 ppm and the hydrocarbon content to less than 0.1 ppm.

Various safety devices prevent damage to the device:

- The pre-filter has a self-venting condensate separator.
- The gas flow is limited at the gas inlet, so that overheating or overloading of the molecular sieves is avoided.
- The flow rate at the device outlet is limited, so that only the maximum amount of synthetic air is released in the event of a hose tear at the outlet.
- The electronically controlled furnace has over-temperature protection.
- If the catalytic converter heats up incorrectly above a certain temperature, the heating is automatically switched off.

### 3. Scope of delivery:

The complete scope of delivery includes:

- 1 Piece TOC Gas Generator **NGG 60**
- 1 piece of power cord
- 1 Piece Operating Manual



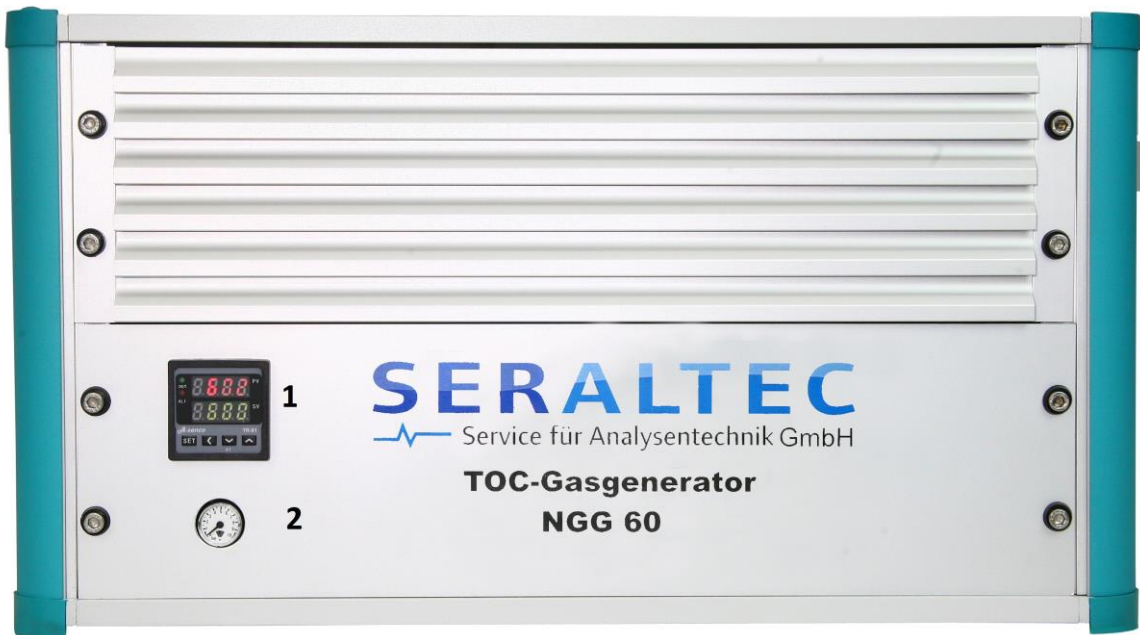
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**Full delivery**

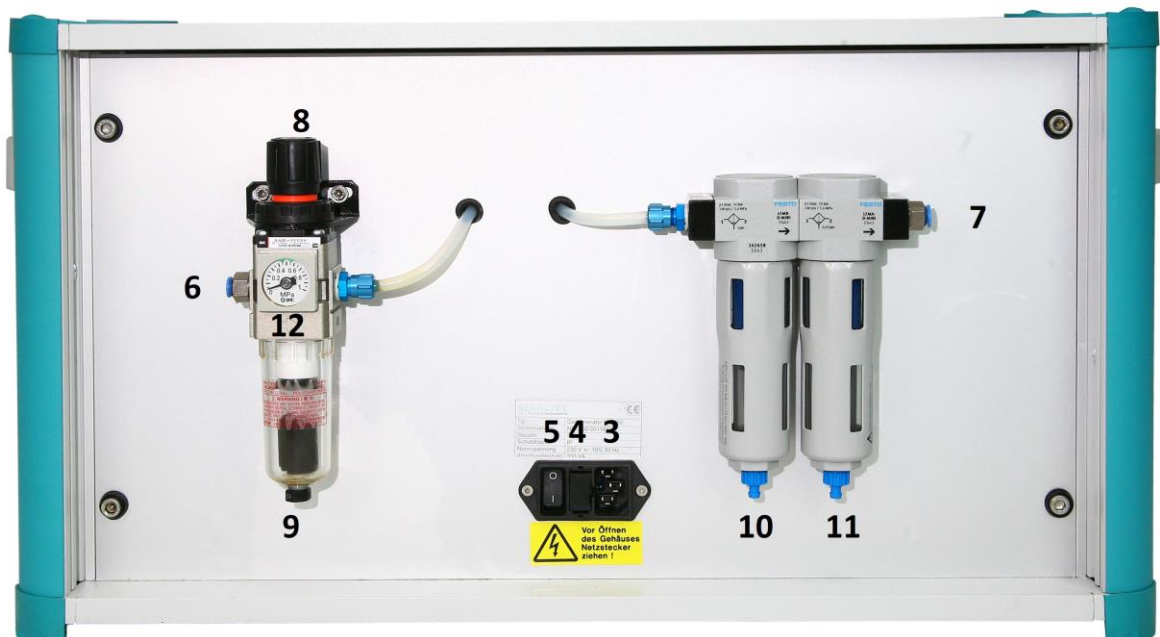
If any of the items listed are missing, contact the manufacturer or supplier immediately. Check the device and its packaging immediately upon receipt for damage in the event of damage in transit.

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4. Pictures:



Front



Back

5. Controls and displays:

<b>1</b>	Thermostat	<b>7</b>	Outlet synthetic air
<b>2</b>	Pressure indicator output	<b>8</b>	Back pressure regulator
<b>3</b>	IEC plugs	<b>9</b>	Automatic condensate drain
<b>4</b>	Holder for fine fuses	<b>10</b>	Manual condensate drain
<b>5</b>	Power switch	<b>11</b>	Manual condensate drain
<b>6</b>	Input compressed air	<b>12</b>	Back pressure gauge

## 6. Operating requirements:

The NGG 60 **TOC gas generator** must be placed on a safe surface, e.g. laboratory bench or stable console.



### Warning

The device must not be placed on its side walls, as this will limit the function of the automatic condensate drain and molecular sieves. An air space of at least 20 cm should remain free in front of and above the device so that the waste heat generated by the device does not cause heat accumulation.

### Caution

The installation site must be free of corrosive and heavily contaminated ambient air.

## 7. Commissioning:



### Warning

Certain parts of the device are under dangerous voltage. Before switching on the device, the housing must be closed and grounded.



### Warning

The device may only be operated with compressed air 5 – 12 bar. Under no circumstances should the TOC gas generator be operated with flammable or corrosive gases or with other gas mixtures. The device must not be placed and operated in places where flammable or explosive gas atmospheres can form. The device is not splash-proof.



**Warning**

When it comes to electrical installation, the following must be observed:

The respective country-specific standard for the construction of high-voltage systems with a nominal voltage of less than 1000 V.

Failure to comply with this provision may result in death, bodily injury and/or property damage.

The TOC gas generator is delivered ready for operation. Remove the caps from the compressed air inlet (5) and the synthetic air outlet (6) and store them. Connect the power cord to the socket (2). Make sure that your mains voltage matches the supply voltage of the device (230 VAC, 50 Hz). First, connect the compressed air (5 – 12 bar) (5) and your consumer to (6). After switching on the generator, the target and actual temperature appear on the temperature controller. After a warm-up phase of a few minutes, the working temperature of 600 °C must be reached and the generator is ready for operation.

When first commissioned or after a long period of downtime, the TOC gas generator needs up to 24 hours to fully regenerate its CO<sub>2</sub> and H<sub>2</sub>O separators.

**8. Decommissioning:**

To turn off the TOC gas generator, press the power switch (4) and cut off the compressed air supply. To completely release the pressure in the device, the hose must be removed from the outlet (6). Within about 5 minutes, the pressure is completely reduced. In case of prolonged decommissioning, remove the compressed air line, close the inlet (5) and the outlet (6) with the supplied sealing caps.

**9. Compressed air:**

The back pressure regulator is limited to 6 bar at the factory and corresponds to the optimal working pressure. To compensate for any pressure fluctuations from the supply line, your compressed air supply should have an output of at least 7 bar (maximum 12 bar).

If the minimum pressure of 5 bar cannot be applied, the back pressure regulator must be adjusted on the control knob (7) (approx. 1 bar less than the applied pressure), whereby 4 MPa (equivalent to 4 bar) on the pressure gauge (11) is the minimum of correct operation. To adjust the inlet form, the black rotary knob (7) of the back pressure regulator must first be pulled up to release it from its lock. By turning the knob, the pressure is readjusted. Once adjusted, the button should be locked back in place by pressing it down until it clicks into place.

**Caution**

The back pressure regulator must not be set higher than 6 bar

**10. Flow:**

The NGG 60 is limited to a maximum gas flow of **60 NI/h** at 6 bar inlet pressure.

**11. Safety in case of malfunctions:**

**11.1. Power failure:**

In the event of a power failure, the device has no function. If compressed air continues to be present at the device during a prolonged power failure, the absorber cartridges are overloaded, so that regeneration times of up to 24 hours must be expected.

**11.2. Gas failure:**

The device is insensitive to gas failure.

**11.3. Hose tears:**

If the compressed air hose breaks off, a check valve prevents hot gases from escaping at the device entrance. The TOC gas generator is emptying. The pressure of work collapses.

In the event of a hose tear at the outlet, the flow is limited to 60 NI/h. The device is not damaged.

**11.4. Furnace defect:**

If the target temperature is no longer reached due to a defect in the heating winding or the thermocouple, the furnace unit is automatically switched off. However, the switching of the molecular sieves is retained, so that synthetic air continues to be produced without prior heat treatment. If the compressed air contains hydrocarbons, these may penetrate to the output of the generator.

**12. Maintenance and servicing:**

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**Warning**

This device is powered by electricity. When electrical equipment operates, certain parts of these devices are inevitably under dangerous voltage.

Improper connection of the auxiliary power improperly carried out maintenance work or non-observance of the warnings can therefore result in serious bodily injury and/or property damage.

The flawless and safe operation of this device requires proper transport, professional storage, installation and assembly, as well as careful operation and maintenance.

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**Warning**

When working with toxic gases, it must be ensured that no harmful concentrations can occur at the workplace. If the gas connection is improperly, there can be a risk of accidents due to toxic, flammable or explosive gases.

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**Warning**

Before opening, the device must be disconnected from the mains on all poles.

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**12.1. Condensate drains:**

At regular intervals (every three months), the filter cartridges on the back of the device should be checked for condensate accumulation. If condensate is in the ultrafine filtration stage on the right, it can be removed via the manual condensate drains (**9, 10**) by opening the screw connections for a short time. Accumulations in the left filtration unit are automatically drained via (**8**).

**12.2. Filter cartridges:**

The service life of the filter cartridges depends decisively on the contamination of the input air. The filter cartridges should be changed when the flow rate drops below an acceptable level. To change the filters, the device must be disconnected from the mains. **Note that the device must no longer be pressurized before the spare parts are replaced.** Turn the metal protective baskets counterclockwise. Then unscrew the filter inserts and replace them with new ones. The cartridges cannot be cleaned by rinsing because the solid particles settle in the depth of the filter and not on the surface. To clean the metal protective baskets, please only use water, benzine or soapy water (max. 60 °C).

The pore size of the individual filters is different. Make sure that the individual filters are placed in the right place (left: largest pore width, right: smallest pore width).

**12.3. Combustion reactor/ catalyst:**

The combustion reactor with the catalyst filling should be replaced every two years by authorized specialists from SERALTEC Service für Analysetechnik GmbH.

**13. Possible errors and remedies:**

<b>Error</b>	<b>Cause</b>	<b>Remedy</b>
Automatic condensate drain <b>(8)</b> does not close	Compressed air flow that is too low	Open the air supply abruptly or <b>(8)</b> close it briefly
Insufficient cleaning effect	Power failure	Temperature controller without display: Disconnect the mains plug, check the mains fuses <b>(3)</b> and the mains supply
Target temperature is not reached	Thermocouple or furnace defective	Contact Customer Service
Insufficient cleaning effect	Long downtime of the device	Let the device regenerate for about 24 hours
Permanent noise due to escaping air	Internal leakage	Notify Customer Service
Too little or no gas flow	Compressed air failure	Check the external compressed air supply



**For all other operational disruptions, please contact:**

**SERALTEC Service für Analysetechnik GmbH Gleiwitzer Straße 9  
58454 Witten**

**Phone: +49 (0)2302 185 39 40**

**Fax: +49 (0)2302 707 02 08**

**[www.seraltec.de](http://www.seraltec.de)**

**Mail: [service@seraltec.de](mailto:service@seraltec.de)**

**14. Warranty:**

The warranty period of the **NGG 60** TOC gas generator is 12 months from the date of delivery for proper functioning. The warranty for this product from SERALTEC Service für Analysentechnik GmbH extends to material defects and manufacturing defects.

Warranty claims do not apply in the event of improper use and damage caused by a fall, heat or other external influences.

Devices that do not work properly can be repaired or replaced free of charge during the warranty period. Repairs are usually covered by a 90-day warranty period, unless the remaining warranty period is longer. The more favourable deadline for the customer always applies.

Excluded from the warranty are all malfunctions and damage caused by the user, such as contamination, faulty electrical connection, dropping, etc.

For the restoration of devices that have been sent in for warranty repair, but for which a warranty claim does not exist or only partially exists, the repair costs will be invoiced accordingly.

SERALTEC Service für Analysentechnik GmbH bears the shipping costs for outgoing shipments with equipment and parts that are exclusively warranty services, unless otherwise agreed in advance.

**Expiration of the warranty**

The user is prohibited from opening the device without consulting SERALTEC Service für Analysentechnik GmbH. Failure to do so will void the warranty.

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**15. Specifications:**

Dimensions (W x H x D):	60 x 31 x 32 cm
Weight:	approx. 18 kg
Electrical connection:	230 VAC, 50 Hz
Power consumption:	max. 300 VA
CO <sub>2</sub> content:	< 1 ppm
Hydrocarbon content:	< 0.1 ppm
Pressure dew point:	< -70 °C (approx. 1 ppm)
Max. Flow Rate:	60 NI/h
Inlet pressure:	5 – 10 bar
Pressure drops in generator:	approx. 0.3 bar
Heat-up time:	approx. 15 minutes
Connections (input/output):	Compression fitting 6 mm A.D.