Additional recommendations for the service and maintenance of

WITT gas mixer

and

WITT analyser

Issue: 30.11.2015
This issue is not subject to change management

WITT-TECHNOLOGY FOR GASES

1 Table of contents

2 Servicing and maintenance

2.1 Introduction

Most of the service tasks mentioned in the device manuals are straightforward checks, which do not require specifically trained maintenance personnel.
These checks are to identify potential defects and malfunctions early on, and to initiate actions to avert a device failure.

However, many failures are caused by age-related wear and / or by contamination of components. Often it is not possible to pre-empt these problems simply by means of these checks.

In order to further increase the reliability of your device, we recommend carrying out regular maintenance by trained maintenance personnel. During this maintenance, the device needs to be thoroughly examined and cleaned. Worn or damaged parts need to be replaced. After completion of work, the device needs to be checked for leak-tightness.

Additional reliability can be achieved by regular replacement of key operational components, even if that is not strictly necessary as a result of wear and tear.

Please do contact us.

We can tailor a maintenance contract for you, specific to your device and your needs.

Our address is:

WITT-GASETECHNIK GmbH & Co KG
Salinger Feld 4-8
D-58454 Witten
Tel.: +49 (0)2302 89010
Fax: +49 (0)2302 89013

3 Recommendations for maintenance and service plans

Maintenance intervals strongly depend on individual operating conditions.
The intervals given below shall be considered as recommendation which should be shortened or extended as appropriate. This is in the responsibility of the operating company.

☞ ***Important Note!***
Some tests (e.g. the inlet pressure falls below the set min. limit, interruption of the analysis gas flow) will cause an operating state during which the device will announce an alarm/failure and a gas mixer will stop the mixed gas production.
A monitoring centre which monitors the system should be informed before performing such tests.

☞ ***Note!***
The numbers in brackets are the numbers these components usually have in the functional schemes of the devices. Deviations from this statement can be found.

3.1 Gas mixer without consideration of an integrated analyser, if applicable with alarm module

For checking the pressures (inlet pressure Pv, pilot pressure Pm, back pressure Pb / Ph) pressure gauges can be built into the devices.
If pressure transmitters and alarm module are used, the pressures are indicated on the display of the alarm module.

3.1.1 Interval: Every year

Component	What to do	Details / Remarks
Filter **(1,2,3)** of the operating gases	• Cleaning / replacement	• **After first commissioning:** Replace the filter elements after 6 months. Afterwards replace the filter elements on demand, e.g. if the pressure drop at the filter is too high.
Pressure gauges **(4,5,6,17,28)** Pressure transmitter **(7,8,9,29)**	• Functional test	• Check the indicated pressure for plausibility. If necessary connect a reference pressure gauge for test purposes to a suitable connection. • Does the pressure indication react to the change from dynamic (gas flow) to static (no gas flow) state?
Inlet pressure switches **(7,8,9)**	• Functional test	• Check the switching point by lowering the inlet pressure below the set minimum inlet pressure.
Proportional mixing valve / mixing valves **(24)**	• Functional test	• The produced mixed gas must match the measurement of a connected analyser. If necessary, adjust mixing valve.

Component	What to do	Details / Remarks
Dome pressure regulator **(13,14)** and pilot pressure regulator **(15)**	• Functional test	• Watch the pilot pressure for a longer period in static state (no mixed gas production). The pressure must stay constant on proper function. If the pressure increases (max. to Pv) at least one of the both components is defective. First replace the pilot pressure regulator. Afterwards repeat the test. If the pressure still increases also replace or repair the dome pressure regulator. Afterwards repeat the test.
Solenoid valve **(27)** in the mixed gas outlet	• Functional test	• In static state (no mixed gas production, no mixed gas consumption) the receiver pressure (Pb) must not rise (density of the solenoid valves).
Pressure switch **(29)**	• Functional test	• Check the min. / max. receiver pressure during a filling cycle. If necessary adjust the pressure switch.
Alarm module **(81)**	• Functional test	• The alarm module must indicate an alarm after lowering the inlet pressures. • Check the pressure indications.

3.1.2 Interval: Additionally every 2 years

Component	What to do	Details / Remarks
Solenoid valve **(27)** in the mixed gas outlet	• Cleaning, if necessary exchange	• Depending on type and load. Replacement at least every 5 years.
Non return valves **(10,11,12, 111)**	• Cleaning, if necessary exchange	• Depending on pollution and state. Replacement at least every 5 years.
Back-up battery of the alarm module **(81)**	• Exchange	• After removing the frame and the front cover of the alarm module the back-up battery (3 V Li-Mn, Type: CR 2032) is accessible. Note: On continuous operation of the gas mixer an exchange every 5 years is sufficient.

3.1.3 Interval: Additionally every 3 years

Component	What to do	Details / Remarks
Pressure switch **(29)**	• Checking, if necessary exchange	• Depending on load. Replacement at least every 5 years.

3.1.4 Interval: Additionally every 5 years

Component	What to do	Details / Remarks
Dome pressure regulator **(13,14)**	• Exchange	• Exchange the parts which are integral part of the “dome pressure regulator maintenance set”.
Pilot pressure regulator **(15)**	• Exchange	• Earlier if CO_2 is used as pilot gas.

3.1.5 Interval: Always after workings at corresponding connections

Component	What to do	Details / Remarks
Gas connections	• Check the connections and pipes for leaks to atmosphere	• –

3.2 Analyser / analyser integrated in gas mixer

3.2.1 Interval: Every year

Component	What to do	Details / Remarks
Filter in the inlets of analysis and calibration gases	• Checking, if necessary exchange	• Note: During exchange of filters the correct function and indication of the pressure regulators, pressure gauges and pressure transmitter in the analysis and calibration gas supply to the measuring cell can be checked.
Pressure regulators with manometers in the inlets of analysis and calibration gases	• Functional test	• Start a full automatic calibration manually. Fluctuations in the indication (static / dynamic), e.g. during calibration, should be noticeable. The indicated dynamic pressure should match with the specifications in the Technical Data. The static pressure can be up to 0.5 bar higher.
Solenoid valves in the analysis and calibration gas paths	• Functional test	• Check the solenoid valves during a manually started full automatic calibration. Watch the LEDs of the solenoid valves and of the relays which trigger the solenoid valves.
Flow switch / difference pressure transmitter for monitoring the analysis gas flow	• Functional test	• Lower the analysis gas inlet pressure by means of the pressure regulator ⇒ Reaction: Flow alarm. Afterwards set the dynamic inlet pressure back to the value given in the Technical Data, respectively first check / exchange the filter named in the first point of this table.
Pressure transmitter for pressure compensation	• Functional test	• Without analysis gas flow the measured pressure must be near atmospheric pressure.
Gas Control (GC …) control **(82)** / **PA** analyser	• Functional test	• Generally pay attention to unusual behaviour during operation of the GC50 (e.g. calibration, selecting the service menu etc.). • Alarm reaction must be observed on deliberately induced defective conditions.
Analog and digital output signals	• Checking	• If the digital and analog output signals lead through the device are processed in any way their proper function must be checked.

Component	What to do	Details / Remarks
Analysis cells	• Checking	• Check whether the output signals of the analysis cells are within the allowed range. If not the offset and span setting of the analysis cells must be adjusted by a qualified service technician.
Piping	• Checking	• If necessary exchange.

3.2.2 Interval: Additionally every 2 years

Component	What to do	Details / Remarks
Back-up battery of the Gas Control (GC …) **(82)**	• Exchange	• –
First solenoid valve **(48.1)** in the analysis gas path	• Exchange	• –

3.2.3 Interval: Additionally every 3 years

Component	What to do	Details / Remarks
All other solenoid valve in the analysis and calibration gas paths	• Exchange	• –

3.2.4 Interval: Additionally every 5 years

Component	What to do	Details / Remarks
Pressure regulators in the analysis and calibration gas paths	• Exchange	• –

3.2.5 Interval: Always after workings at corresponding connections

Component	What to do	Details / Remarks
Gas connec-tions	• Check the connections and pipes for leaks to at-mosphere	• –