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EZ7900 Series – Toxicity

Additional information

01/2019, Edition 1

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1. Calibrate sensor

Depending on the circumstances the sensor has to be calibrated once every week. Calibration is done with the sensor mounted in the calibration shaft, which is supplied with the Ra-TOX analyzer. To remove the oxygen sensor, turn counter-clockwise to avoid the membrane cap to loosen. Always remove and re-install the oxygen sensor while turning clockwise. Clean the membrane with water and a soft tissue.

There is a little sponge in the calibration shaft. This sponge must be moist. No water drops may be visible. Push the sensor in the calibration shaft. Between the membrane of the oxygen sensor and the sponge a thin layer of water saturated with air is formed. After choosing 'F2 - → - AI - 2X Enter. The electrode amplifier is automatically switched over by the software to percentage-saturation measurement.

As soon as the saturation percentage no longer changes (about 102 %), the function button with the '_' must be pushed to confirm the calibration result. Re-install the oxygen sensor by turning it slightly clockwise in the sensor tube. After re-installing, push again, turning clockwise, to make sure the sensor is tightly fitted.

Note: When no voltage was applied to the sensor during a certain period of time, the electrolyte requires a certain period to polarize; normally this takes 10 to 20 minutes. After renewing the electrolyte it may take up to 20 minutes. The electrolyte in the sensor has to be polarized before calibration can take place. Always remove and re-install the sensor by turning it gently clockwise. It is not allowed to have any air bubbles behind the membrane. If this is the case, then the membrane head has to be refilled with electrolyte.

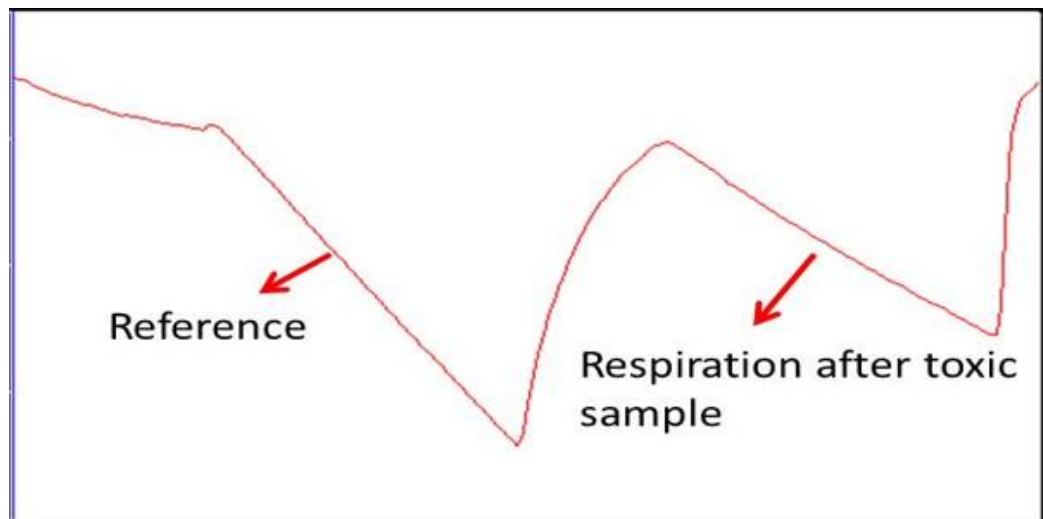
Temperature (°C)	Oxygen solubility (mg/l)
10	11.288
15	10.084
16	9.870
17	9.665
18	9.467
19	9.276
20	9.092
21	8.915
22	8.743
23	8.578
24	8.418
25	8.263
26	8.113

27	7.968
28	7.827
29	7.691
30	7.559

In order to check calibration of the DO-electrode the table above can be used. This table shows the concentration of oxygen in function of the temperature for saturated water free from salts.

2. Graph

Press F3 - Results – DO-sensor – G, to see the graph of the oxygen sensor.



The reference measurement is the tracking of the oxygen consumption of the sludge with a suitable substrate.

For the second part of the measurement, the wastewater is added and the graph shows the effect of the wastewater on the respiration (and thus the oxygen consumption/concentration).

When the final oxygen concentration is higher compared to the reference measurement (meaning reduced respiration/ oxygen consumption), the wastewater has an inhibitory effect on the respiration, indicating the presence of a toxic component.

When both graphs show a similar oxygen consumption, there is no acute toxicity present.

3. Dilution pump

When the oxygen consumption during the analysis is too high (= high respiration), the final oxygen concentration may be too low (<2mg/L), reducing the accuracy of the measurement.

When this situation occurs, it may be required to dilute the sludge in order to reduce the total oxygen consumption during the analysis.

The ideal oxygen concentration in sludge after the aeration step should be between 8 and 10 mg/L. To change the interval of the dilution pump, press F4 – Choose Method Toxicity and Module Analysis. Go to step 17: Dilution Interval and press Edit. Change the activation time of the dilution pump and press accept.