

March 29th 2024
Castricum, The Netherlands
Newsletter 2024-Q1

Dear readers,

With this newsletter we like to inform you about our day to day business, current projects, performance characteristics of our products and new product development. Enjoy reading!

Day to day business



Please contact us at info@swapinstruments.com, if you are interested in our products.

The **growth in sales** of our soil Redox probes has also **continued** in 2023. When we started in 2020 most customers were interested in our **analog probes**. Now, this is **shifting towards** our **digital probes** (SDI-12).

The **main advantages** of our digital soil Redox probes are:

- ✓ the **digitalized signal** that is less vulnerable to electromagnetic disturbance from other devices
- ✓ the **ease of connection** to dataloggers with a SDI-12 input. Multiplexers are no longer necessary.

Our digital probes are **now also available in the US** (see the item on **FCC** in this newsletter). Currently, we are **building up stock** to **reduce the delivery times** of these products.

Improved reference electrode



In order to perform **ORP (Redox) measurements**, a Redox electrode must be used in combination with a reference electrode. We offer both **integrated** and **external soil reference electrodes** for ORP measurements. See [REF-12-0-A – SWAP instruments](#) for additional information.

Our reference electrode is a double junction 3 M KCl gel Ag|AgCl reference electrode. Reference electrodes do need **maintenance**. For our reference electrodes this means **refilling** with 3 M KCl gel.

The **maintenance frequency** depends, amongst others, on soil type, soil moisture content and (ground)water table fluctuations. We have **reduced** the maintenance frequency of our soil Redox probe by applying a **microporous polyethylene (MPPE) ring** in our reference electrode. This is the white ring on the photo.

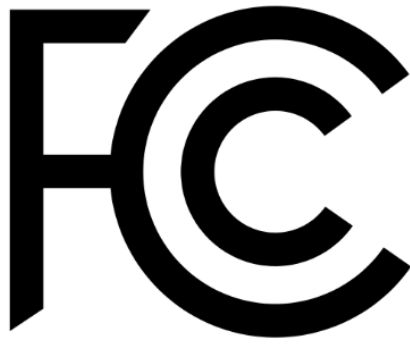


The MPPE ring offers very **good contact** between the reference electrode and the surrounding soil or sediment, with a **minimal leakage** of electrolyte. This results in **very stable measurements**. Depending on local conditions, maintenance frequency now varies between **quarterly to yearly**.

Feel free to contact us at info@swapinstruments.com if you are interested in our improved reference electrode

The **MPPE rings** can also be used in the older models of our soil reference electrodes. The rings are also available separately (**bag with 5 pieces**).

FCC mark



We are **very proud** to announce that our digital soil Redox probes (D type) and our SWAP Wireless Interface (SWI) **passed** the **FCC tests**. These products are now also **available** in **North America**.

The **FCC logo** or the **FCC mark** is a mark employed on electronic products manufactured or sold in the United States which **indicates** that the **electromagnetic radiation** from the device is **below the limits** specified by the Federal Communications Commission and the manufacturer has followed the requirements of the Supplier's Declaration of Conformity authorization procedures.

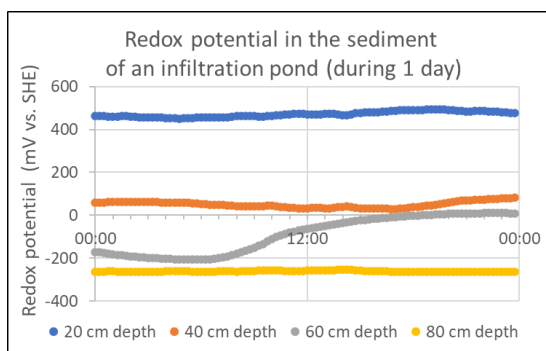
Redox measurements in a drinking water infiltration pond



Water is the basis of **life**. It is **essential** for all living organisms, food production and economic development. The availability of sufficient clean water is a **global priority**.

One of our customers is **KWR**. They **generate knowledge** to enable the water sector to operate water-wisely. Their scientific findings, and the resulting practical innovations, contribute to a **sustainable water cycle**.

Recently, they started a project to study the **effect of Redox conditions** on the **decay of organic micropollutants** in infiltration ponds. Drinking water utilities use **infiltration ponds** in the coastal dune area (see photo) to **purify river water**. River water passes through the banks of the ponds. After infiltration, it is drawn off by extraction wells some distance away from the water body to undergo further purification. Dune infiltration is an important part of the water treatment process to produce drinking water from river water.



Although infiltration ponds are not designed to remove various organic micropollutants, they are very effective in doing so. Drinking water utilities are very interested in this additional benefit. By **optimizing the bank filtration systems**, the load of **organic micropollutants** in the extracted water may be **reduced** even more.

Most likely **Redox conditions** in the sludge layer at the bottom of the infiltration ponds **play an important role** in the **decay of organic micropollutants**. For this reason, **KWR** researchers **started monitoring the Redox conditions** at four depths in the sediment layer below **infiltration ponds** in the dune area that are fed by river water (see graph). The Redox measurements give information about the turnover rate of the oxic surface water into suboxic, anoxic or deeply anoxic groundwater during infiltration and how this controls the decay of organic micropollutants.

Feel free to contact us at info@swapinstruments.com for questions about our products and applications.

If you are interested in our products or if you would like to receive some additional information, please contact us at info@swapinstruments.com or visit our website www.swapinstruments.com.