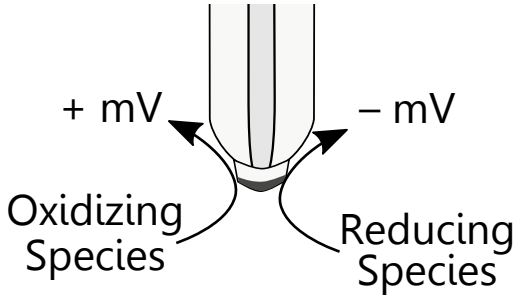
ORP vs Bare Amperometric Sensors

ORP Sensors Measure ALL Electrochemically Active Species

•Oxidation-reduction potential (ORP) sensors are used to measure oxidizing biocides (chlorine, chlorine dioxide, etc.) in many applications.
•Oxidizing biocides kill pathogens via oxidation-reduction (redox) reactions, which result in a flow of electrons.
•ORP sensors quantify this flow of electrons – **any electrochemically active species (dissolved O_2, acid feed, etc.) will affect an ORP measurement!**

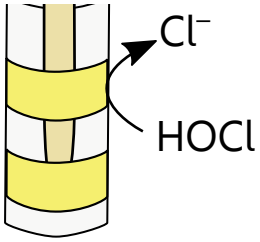
BARE AMPEROMETRIC SENSORS

Zirkon® Redox Universal
ORP



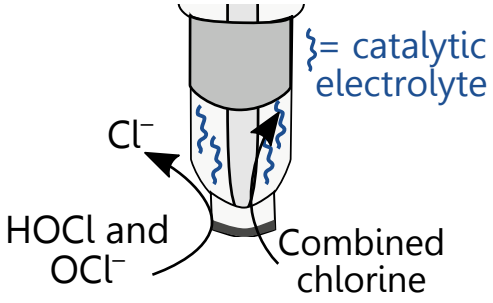
Measurement in **mV**

Zirkon® DIS
Free chlorine



Measurement in **ppm**

Zirkon® DIS Total
Total chlorine



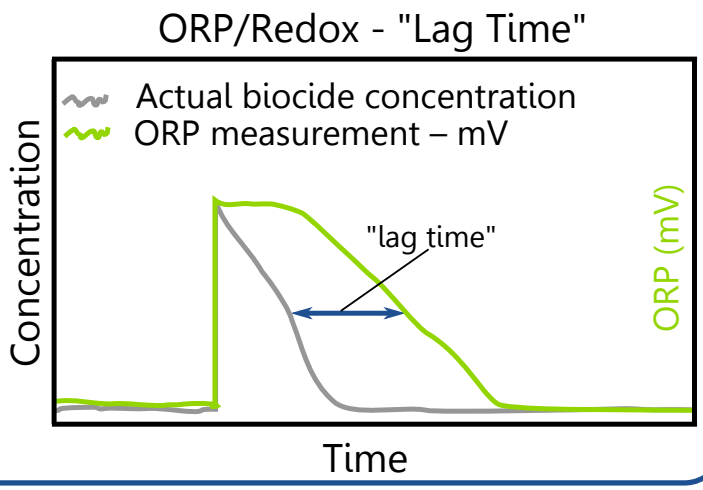
Measurement in **ppm**

Zirkon® DIS and DIS Total Sensors DIRECTLY Measure Biocide

•ORP/redox sensors like the **Zirkon® Redox Universal** (above, left) measure **ALL oxidizing AND reducing species** (biocide, acid, dissolved O_2, etc.), resulting in a measurement in millivolts (mV).
•The **Zirkon® DIS** (above, center) and the **Zirkon® DIS Total** (above, right) sensors measure the reduction of **specific biocides** on their measuring electrodes, resulting in a **free chlorine** or a **total chlorine** measurement in parts per million (ppm).

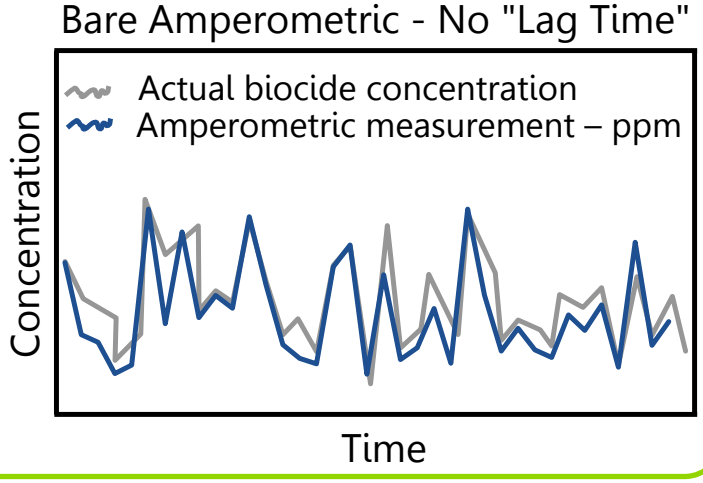
ORP Sensors Have "Lag Time" When Concentration Decreases

•When biocide concentration (gray line) increases, ORP sensor signal (green line) increases.
•When biocide concentration decreases, the ORP sensor's response decreases, but **much slower** than the actual concentration changes.
•This "lag time" of the ORP sensor leads to uncertainty in water safety.



Bare Amperometric Sensors Do Not Have "Lag Time"

•When biocide concentration (gray line) changes, amperometric sensors **quickly respond** with no "lag time".
•Amperometric sensors are **selective** – changes in measurement signal are **directly related** to changes in biocide concentration.
•Fast, selective biocide measurements lead to greater confidence in water safety.



White Paper – Bare vs. ORP

•Want more help on this topic? Scan this QR code to learn more.

READ THE PAPER:
AWT Paper 2021

Kuntze Support Center

•More questions? Check out the Kuntze Support Center.

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