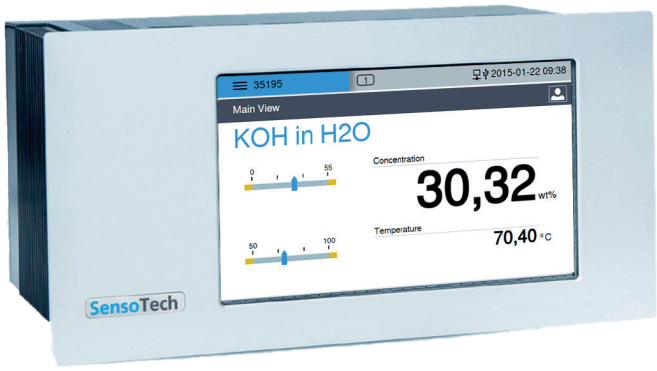
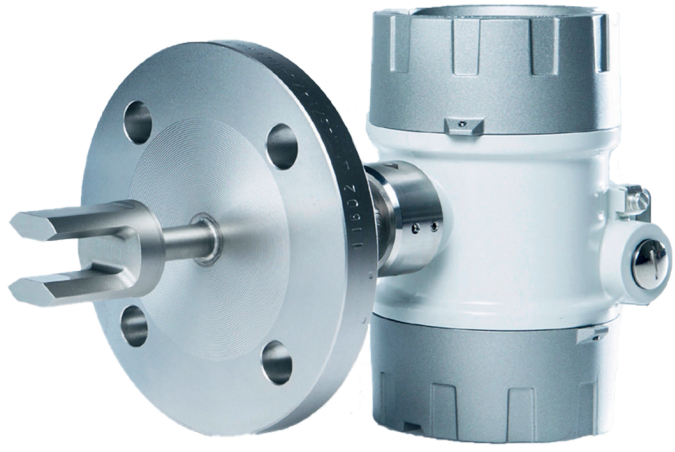
SensoTech

KOH – Electrolyte solution concentration measurement





High durability

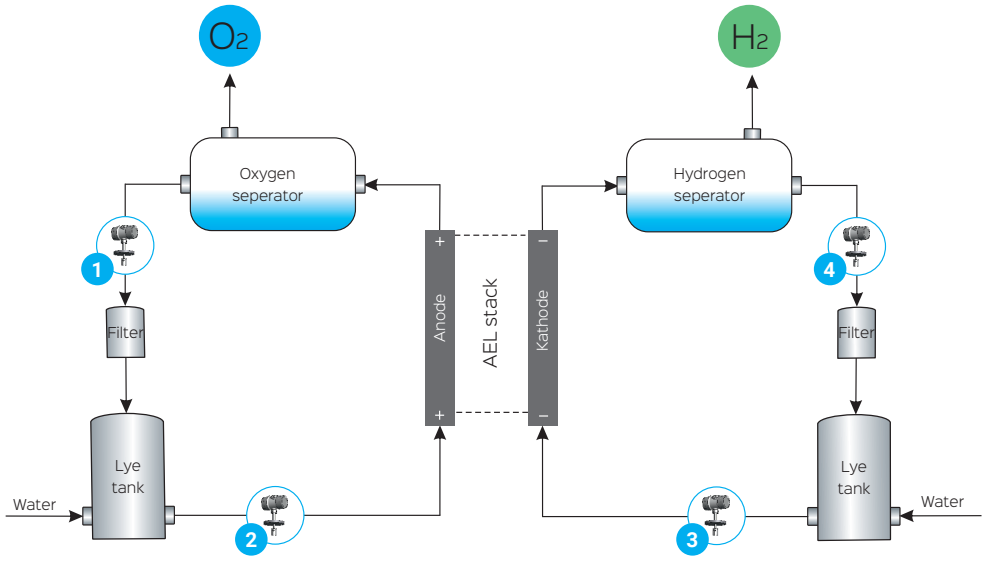
Measuring range
0 - max %

Precise measurement
± 0,05 %

Gas bubble
detection

The importance of renewable energies and their effective storage in the context of global warming is immense. The production of green hydrogen by alkaline electrolysis makes it possible to completely store the energy produced and thus have a reliable energy source available, even under unfavorable conditions. In order to further improve the efficiency of electrolysers, an accurate concentration determination of the electrolyte solution is necessary.

Compared to other measurement systems, LiquiSonic® provides precise analysis and monitoring of the electrolyte solution through ultrasonic measurements with an accuracy of ± 0.05 % over the entire concentration range from 0 % to saturation concentration. The robust plug & play LiquiSonic® sensor design ensures long system life and reduces time-consuming laboratory measurements.

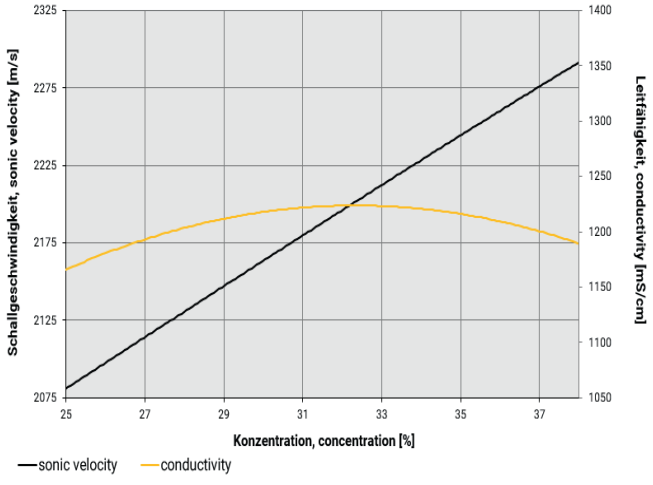


1. Concentration measurement of outgoing electrolyte solution at the oxygen seperator
2. Concentration measurement of incoming electrolyte solution (Oxygen)
3. Concentration Measurement of incoming electrolyte solution (Hydrogen)
4. Concentration measurement of outgoing electrolyte solution at the hydrogen seperator

Advantages of our measurement method

High-precision process monitoring in alkaline electrolysis with the LiquiSonic® Plug & Play System

Exact LiquiSonic® sonic velocity measurement



Efficiency optimization

The concentration of caustic potash is a critical process parameter that influences the efficiency of alkaline electrolysis. This makes process monitoring particularly important in order to convert the current as efficiently as possible. Our system is delivered as plug & play, ensuring easy and fast commissioning.

Compared to the electrical conductivity, our LiquiSonic® provides a clear signal in the entire concentration range from 0 to max %. This is essential, as even small fluctuations in concentration can significantly affect efficiency.

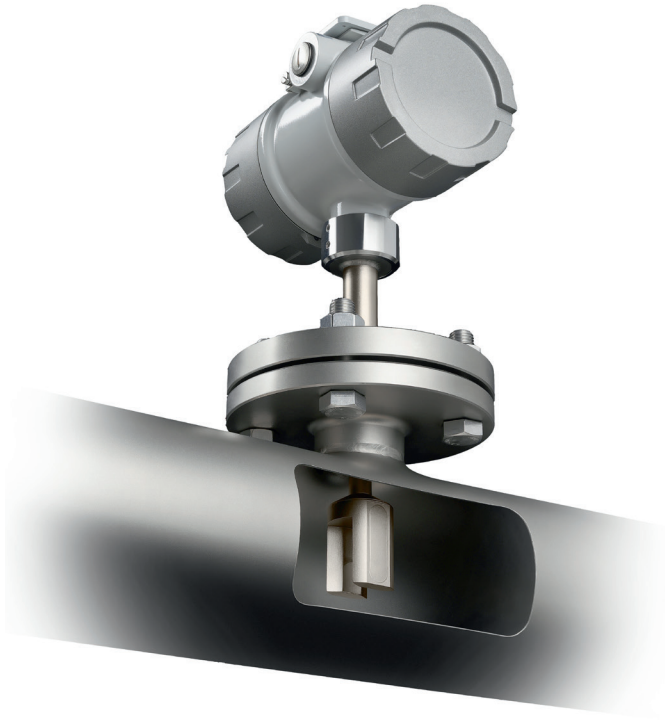
Due to the permanent data logging of our long-life LiquiSonic® sensors, time-consuming laboratory evaluations can be avoided and accuracies of ± 0.05 % can be achieved, resulting in permanently optimal process conditions.

Installation according to your needs

Our LiquiSonic® immersion sensor is the perfect solution for precise measurements of potassium hydroxide in pipe systems. Thanks to our Plug & Play construction, the sensor can be installed directly into your existing system without any complex conversion measures.

The LiquiSonic® Controller 30 allows the connection of up to four sensors, which enables permanent monitoring of the potash lye in several electrolysers with only one controller. Thus, changes can be reacted to quickly.

Our LiquiSonic® immersion sensor reliably measures the concentration range of 20 to 40 %, which is typical for alkaline electrolysis, and the common process temperatures of 50 to 85 °C. Furthermore, even a temperature of 120 °C is no challenge for our measuring system.



Revolutionary interference reduction for gas bubbles

SensoTech's innovative LiquiSonic® measurement method redefines accuracy in sound velocity measurement. Our unique sensor design allows a sound signal to be transmitted through the liquid and precisely captured on the opposite side of the sensor head. This advanced method is crucial for the accurate determination of KOH concentration, even under demanding conditions.

In critical applications such as electrolysis, the presence of gas bubbles can challenge conventional measurement systems. Even tiny gas bubbles in the potassium hydroxide solution can lead to distortions in the sonic signal, which without proper reduction would lead to erroneous measurement results. Such errors often go unrecognised, which affects the reliability of the data.

SensoTech has therefore optimised the sensor design specifically for the challenges posed by gas bubbles. Our technology goes one step further and integrates sophisticated signal processing based on state-of-the-art AI methods. This innovation makes it possible to effectively compensate for interference from gas bubbles, which could otherwise significantly affect the measurement result. The result is a signal refined by advanced algorithms that provides the user with precise and reliable information about the KOH concentration.

Rely on SensoTech's expertise for precise measurement results, even under the most demanding conditions.

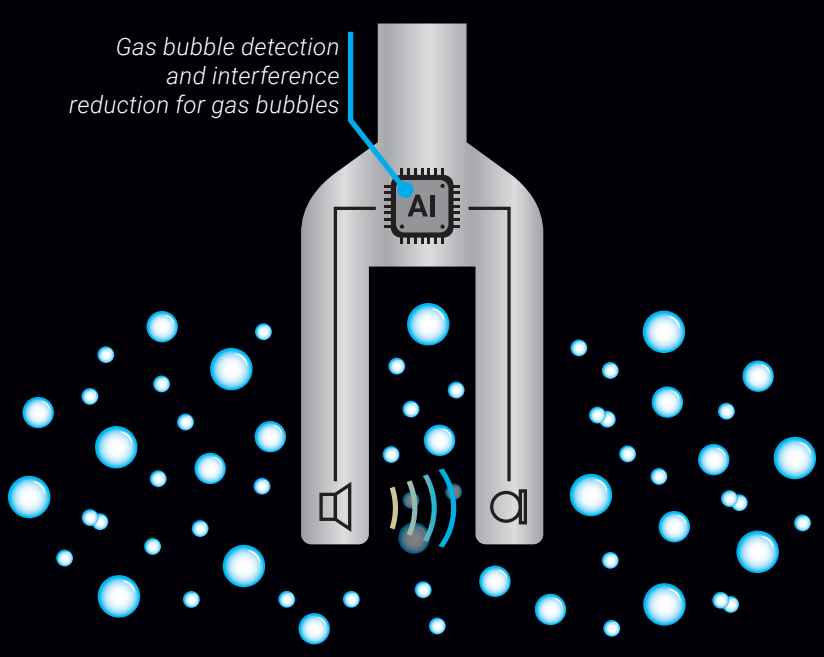
Innovative gas bubble detection

SensoTech presents a special function of its LiquiSonic® sensors that has been developed for the measurement and quantification of gas bubbles in potassium hydroxide solution. This technology is particularly important in the field of alkaline electrolysis.

The measurement method utilises the changes in the sound signal caused by gas bubbles in the potassium hydroxide solution. These changes are analysed and interpreted with the help of AI technologies. The presence and quantity of gas bubbles are visualised in a special unit, with a value of zero indicating the absence of gas bubbles. Increasing values, on the other hand, signal an increasing amount of gas bubbles.

This technology is characterised by its reproducibility, which means that similar amounts of gas bubbles provide comparable values. This property is particularly advantageous for monitoring and controlling electrolysis processes.

The ability to effectively quantify gas bubbles in potassium hydroxide solution is a significant advance in the monitoring of alkaline electrolysis. It makes it possible to precisely assess the process status and recognise potential irregularities. Anomalies, for example in electrolysis stacks or gas separators, can be identified at an early stage, allowing faults to be diagnosed and rectified quickly. This capability contributes significantly to increasing process efficiency and reducing down-time. With this advanced technology, users can better understand and optimise the condition of their electrolysis processes.



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