

Oxygen sensor for hydrogen (combustible gas) applications: Zirconium vs Electrochemical

It is imperative to know the cross sensitivity of the oxygen sensor that is to be used. Knowing beforehand, the environmental gases and the chemical composition is important. This will help eliminate any erroneous reading and possibly contaminating your sensor, which could affect its performance and shorten the life of the sensor.

The most abundant element in the world is hydrogen, it is critical to the industrial processing of chemical compounds, methanol and ammonia and it is being developed into becoming the lead source for energy in the future. As the opportunity of using hydrogen in the chemical industry and other industries continue to grow, the need to monitor and measure the oxygen levels in these processes are also growing.

The zirconium oxygen sensor is a fast responding sensor perfectly suited for high temperature applications. It can measure the oxygen levels in the low ppm range and up into the % range and has a long-lasting life. Because the **zirconium sensors** operate at a high temperature, its design is **not suited** to be used in combustible gas, such as **hydrogen**. The testing in hydrogen will result in lower oxygen reading than the true oxygen level. The **electrochemical oxygen sensor** is **best suited** for this type of **hydrogen gas** application, there is no cross sensitivity to hydrogen. Other ideal applications where the electrochemical sensor perform well are when volatile organic gas compounds and hydrocarbons are known to be in the gas composition. The electrochemical sensor has the same measuring range as a zirconium sensor, is designed as a disposable sensor, is maintenance free, low cost sensor replacement and can be field calibrated at a single point with calibration gas or ambient oxygen.

Please refer to the chart below for testing results:



Electrochemical O2 Transmitter

Zirconium O2 Transmitter

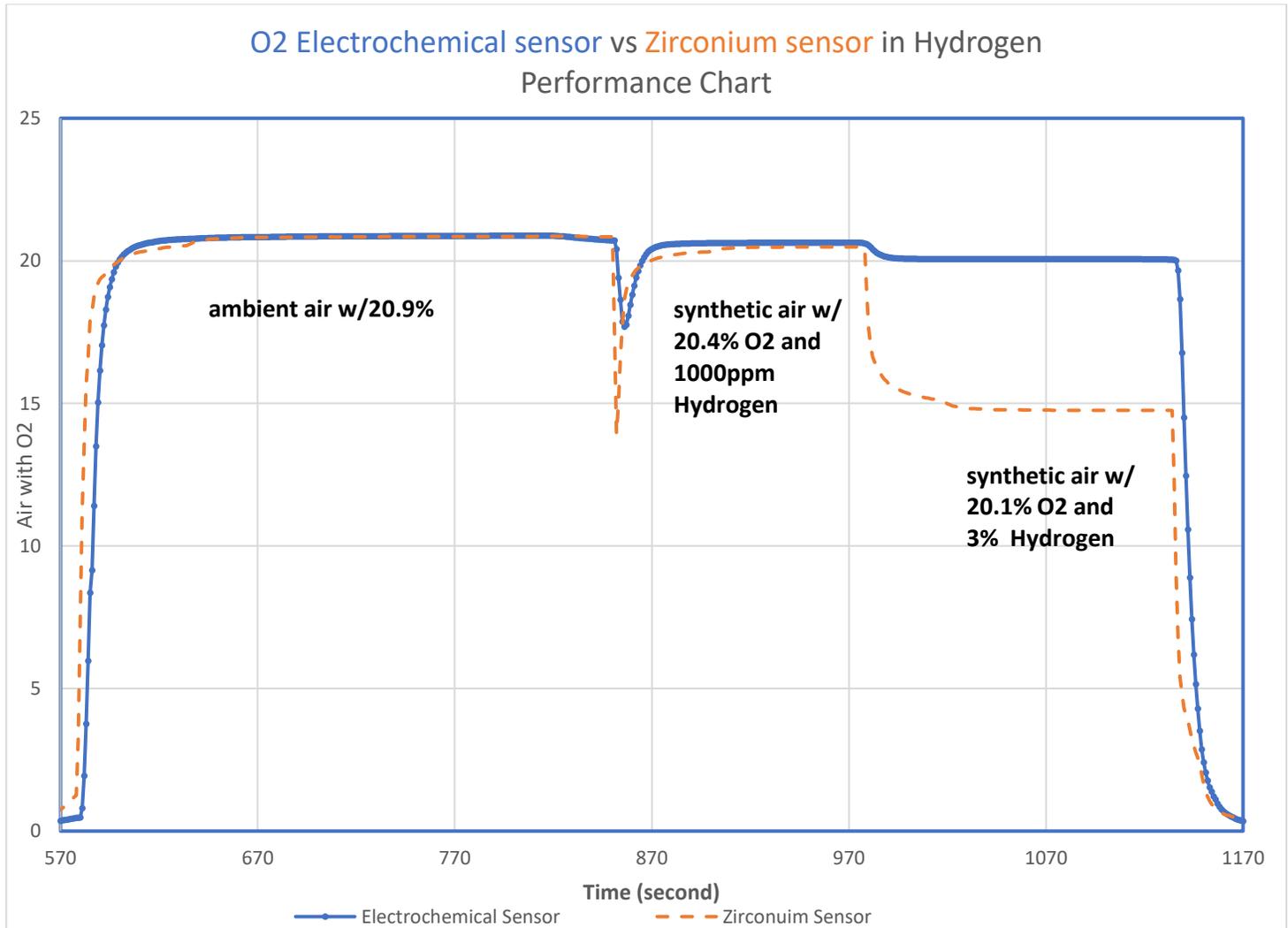
Hydrogen Transmitter

Roscid's electrochemical O2 transmitter (the model Oxytran II) is offered in four different range configurations, one for trace levels and the other three for the percent levels. For the trace level transmitter there are 4 field selectable ranges, 0-10ppm, 0-100ppm, 0-1000ppm and 0-10000ppm and for the percent levels, there are three configurations available and from those configurations there are three ranges available. First range offering is 0-0.25, 0-2.5 and 0-25%, second offering is 0-0.5%, 0-5% and 0-50%, and the third range configuration offered is 0-1%, 0-10% and 0-100%. KF40 flange mounting is optional. They are compatible with hydrogen and other VOC gases.

Roscid's zirconium transmitter (the model Zircon Trans) is currently designed to measure in the Percent range and the sensor has a long-lasting life. This device is offered in 2 different ranges, 0.1-25% and the other is 0.1 to 100%.

For application measuring hydrogen, Roscid's offers three different hydrogen transmitters, one for the percent range (0-5%) called the model Hydro-Trans, one for the trace levels (0-100ppm or 0-10000ppm) with oxygen present called the model H2Trans and one where no oxygen is present called the H2Trans-ZO. This unit is offered in three different ranges (0-100ppm, 0-1000ppm or 0-10000ppm). Visit our website for more information,

www.rosCIDtechnologies.com



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