# OZONE SENSOR-GS 5330

These are special semiconductor -gas sensorelements in hybrid - technology.
Their function based on the change of conductivity of a sensitive layer during the influence of gases.

The gas sensor elements consist of an $Al_2O_3$-substrate with a structured Pt-film, covered by an insulating layer and a sensitive $SnO_2$ -semiconductor layer.
The structured Pt-film is used as a temperature sensor as well as a heater element.
The advantage of this is, that the operating temperature for gas sensor elements can be controlled by an external circuit. (fig.1 )
The change of air temperature can be compensated and the sensitivity of the gas sensor can be affected.

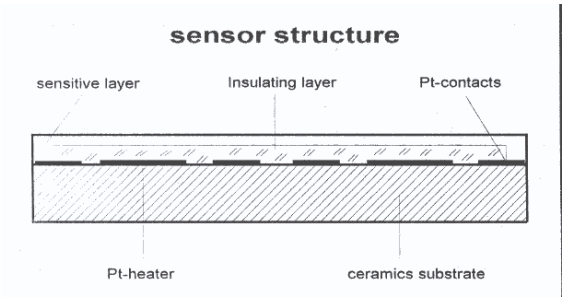


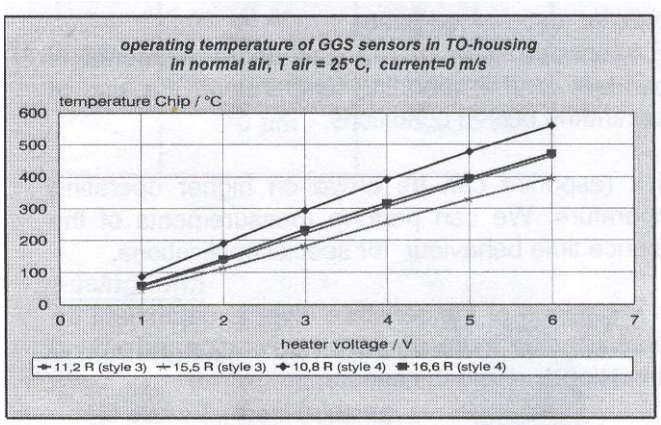

Fig. 1 sensor structure

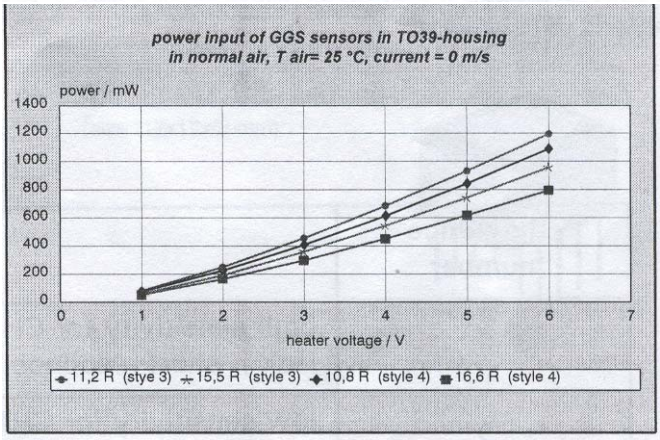
The basic resistance Ro of the sensitive layer is in normal atmosphere between 40... 150 kΩ and it dependent on the kind of the sensor. Without an external circuit the standard type works with a heater voltage of 5 VD.C. or A.C.

It is: $\mathbf{R_{heater} = Ro_{heater}(1+(T_{heater} - To))}$

NOTE! : HEATER RESISTANCE DEPENDS ON OPERATING TEMPERATURE.

The insulation resistance between heater element and sensitive layer is until an operating temperature of 420 °C more than 1 MΩ. With an external circuit the sensor works by a heater voltage of more than 8 V and the operating temperature can be stabilised.



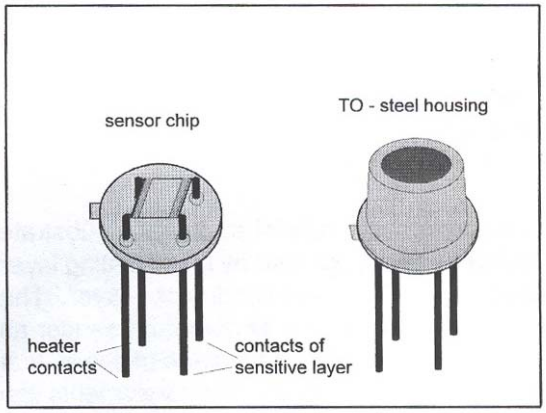
After aging, the gassensor will be selected for sensitivity and basic resistance Ro. **If** the gas sensor element has not been in use for a long time, the user must form it again for reasons of physics. This forming process is finished when the drift of Ro-value in synthetic atmosphere is less than 2% per hour . By applying of voltage and low power sensors between the electrodes of sensitive layer: $V_{max}$ = 100mV, $P_{max}$=1.2 mW

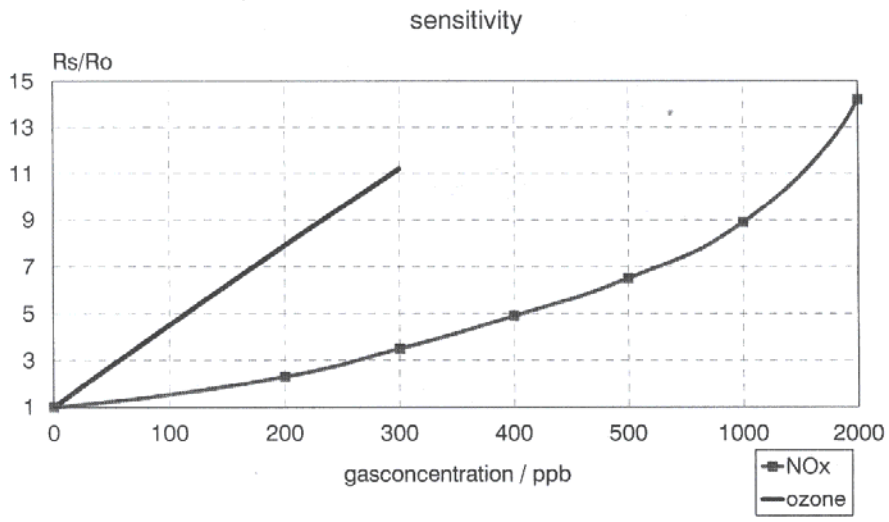
The gas sensor elements are sensitive for various gases and the selectivity is dependent on the kind of sensitive layer.
At concentration for 2-5 Vol% the sensor goes into the saturation. We can provide characteristic sensitivity curves for determined gases. The response time of the gas senso relements is dependent on the operating temperature, the kind of gases and the built-in conditions
Quick response can be arrive on higher operating temperature.
The resistance of the sensitive layer is dependent on operating temperature, on gas concentration and on kind of conditions around the sensor.

THE SENSITIVE LAYER REACTS TO REDUCABLE GASES WITH A DECREASING OF RESISTANCE - AND TO OXIDIZED GASES WITH AN INCREASING OF RESISTANCE.
Fig. 2 standard model of GS 5330

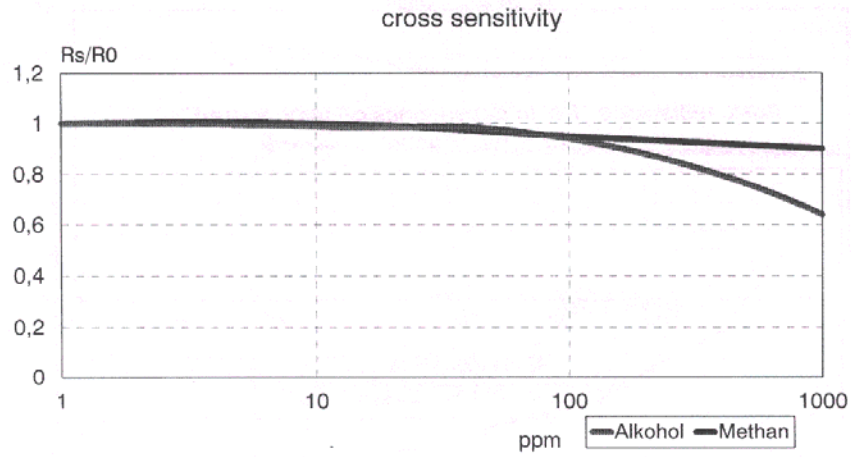
Ro heater =12Ω ±1.0

TO-3 housing




Sensitivity and change of resistance

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