Introducing CCS sensors

We'd like to give you a brief explanation of the construction of our CCS sensors, as this might go some way to explaining how they might perform for you.

A CCS sensor is predominately a carbon ceramic amalgam housed in a hermetically sealed ceramic coating. These resistors were originally developed as electronic components which would survive high radiation fluxes (they are able to withstand neutron radiation in excess of $10^{17}N/cm^2$)

The sensors are sealed by inserting the ceramic tube into a hot press which presses them into their flat construction with a force of 15 tons at a temperature up to 800C
creating a very tight hermetic seal which is highly resistant to absorption and diffusion. This provides are very stable construction which has been tested in a vacuum of 10^{-11} on Cern's LHC beam line.

The high temperature causes the carbon particles to link up into long conductive chains.
They are very stable long term because they have many thousands of these long conducting carbon chains which would need to be broken to affect their performance, drift having been measured at less than 1mK per year over 20 years.

Because they have been formed under such large force, they are extremely robust and can withstand large mechanical forces and vibrations. They have been tested to be stable under pressures > 25 bar and withstand 20 G. Performance is stable in the harshest environments – coping well with magnetic fields and high dose radiation.

CCS sensors are extremely thermally responsive as their relatively large ceramic body has a low thermal capacitance and absorbs and transmits heat faster than normal sensors.

There is also very little self-heating as their many thermal sensing carbon elements are uniformly embedded within the thermally conducting body of the sensor.

We hope that your sensor testing verifies some of the above and look forward to receiving any comments you may have on using our CCS sensors.